GUIDELINES FOR FLOATATION TANKS

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HEALTH PROTECTION BRANCH
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PREFACE

If you are an operator who provides floatation tank services to the general public, these guidelines should be of interest to you. Their purpose of these guidelines is to clarify what is expected of operators of floatation tank establishments and provide guidance on preventing health hazards. The guidelines were produced by a working group of representatives from the Ministry of Health and health authorities. Consultation was also undertaken with industry.

CONTENTS

1 INTRODUCTION

A floatation tank (also known as an isolation tank, float tub or sensory deprivation tank) is a small, lightless, sound-proof tank containing body-temperature salt water (pharmaceutical magnesium sulfate/Epsom salt solution) in which a person floats for relaxation. A floatation therapy system can be open or enclosed, though traditionally the term "floatation tank" refers to a cocoon-like device with a lid or door. The term also refers to systems that are rooms or walk-in cabins. People use floatation tanks for meditation, therapeutic and relaxation purposes.

Floatation tanks are considered a personal service. They are regulated under the *Public Health Act* and Regulated Activities Regulation (the regulation covering personal service establishments). Floatation tanks are not regulated under the Pool Regulation.

Bacteria can survive and grow in floatation tank water and pose health risks to people using the tanks. For example, exposure to *Pseudomonas aeruginosa* may result in a skin rash or an eye infection.

The *Guidelines for Floatation Tanks* are designed to supplement the *Guidelines for Personal Service Establishments*. Together, these documents offer guidance to help operators take all necessary measures to prevent health hazards that may endanger, or transmit infection to clients and/or themselves. The *Guidelines for Personal Service Establishments* can be accessed at http://www2.gov.bc.ca/assets/gov/health/keeping-bc-healthy-safe/industrial-camps/pse-guidelines.pdf.

Floatation tank operators are responsible for ensuring they are in compliance with municipal bylaws and other regulatory requirements. They must also obtain business licences and/or approval to operate from the appropriate licensing authorities.

The *Guidelines for Floatation Tanks* may be reviewed and updated from time to time. See the Ministry of Health's Personal Service Establishments website for updates, at http://www2.gov.bc.ca/gov/content/health/keeping-bc-healthy-safe/pses.

2 FACILITY

All floatation tank establishments should comply with the criteria in the *Guidelines for Personal Service Establishments.* This includes maintaining an establishment that is clean, sanitary, pest free and in good repair. The following are points made in the *Guidelines for Personal Service Establishments*, but worthy of repetition here, or are specific to floatation tank establishments.

2.1 SITE AND PLAN REVIEWS

If you are planning to open a floatation tank establishment, it is advisable to notify your local health authority to review local requirements relating to the construction, maintenance and operation of a floatation tank. The health authority may direct you to provide a site plan, operation details, and arrange a final inspection of your establishment before you begin operating.

Site plans for floatation tank establishments should include:

- A scale layout (floor plan) of all areas of the proposed facility, identifying each area, activity and procedure.
- A list of construction materials used for finishes on floors, walls, ceilings and work surfaces.
- Details on lighting, ventilation (suitable for use of required chemicals), and plumbing – including hand-washing sinks and instrument/equipment wash sinks/drainage.
- A completed floatation tank data sheet (see Appendix 1).
- Detailed public health specifications for the floatation tank unit (including information on the disinfection system, system filters, system circulation, system maintenance and scaled technical drawings of the unit and disinfection system).
- An operational manual (see Section 3.1.2. for details).

2.2 FACILITY DESIGN CRITERIA

Facility design is a crucial component of health hazard prevention. Floatation tank establishments should adhere to the following facility design criteria:

- Keep client procedure areas separate from any part of the establishment used for traffic flow or retail purposes.
- Construct floors and walls with nonslip, impervious, easily cleanable materials.
- Construct stairs that are nonslip and well marked.
- Construct stable and sturdy hand rails.
- Construct contact surfaces and furnishings (e.g. counters, tables and lamps) with smooth, nonabsorbent, mould-resistant finishes.
- Design private client-area doors that can be unlocked from the outside during an emergency.
- Install enough lighting in work areas to facilitate cleaning and injury prevention (Section 4.65 and Table 4-1 of the Occupational Health and Safety Regulation).
- Provide secure and cleanable space for storing instruments/equipment and supplies.
- Install and maintain ventilation systems in accordance with manufacturer's specifications, local building bylaws and the BC Building Code.
- Ensure adequate ventilation in each room and enclosed tank.
- Provide washroom(s) with a toilet, hand sink, hot and cold running water, liquid hand soap, paper towels and a garbage bin.
- Provide a laundry facility on site or use a laundry service (if towels are provided to clients).

- Install the following sinks (please contact the health authority if you would like to discuss alternative sink arrangements):
    - Staff hand-washing sink(s) located in a common area.
    - Instrument/equipment cleaning sink(s) separate from client areas.
    - Janitorial sink (or written procedures for sanitation if using an instrument/equipment sink).

2.2.1 FLOATATION TANK ROOMS

The following provides guidance on designing facilities that accommodate ease of maintenance and cleaning to prevent transmission of disease.

GENERAL DESIGN CONSIDERATIONS

- Each floatation tank room should have room for changing and a shower with single-use soap.
- Lockers and cubby holes, supplied for storing bathers' clothing, should be well ventilated and easily cleanable.
- To prevent standing water, floors in each floatation tank room should be designed with a slope for adequate drainage and equipped with a floor drain. Drains and covers should be designed and installed with no sharp edges that could harm bare feet. A coved base should be provided in wet areas.
- Drainage systems should be designed in accordance with good engineering practice and the BC Building Code.

WALKWAY DESIGN

Floatation tank rooms must have enough room to allow clients to pass safely, and allow staff and emergency workers to access the tank.

- Walkways should:
    - Be made of durable material that is impervious to moisture, is designed to minimize bacterial growth and allows for thorough cleaning.
    - Retain a nonslip texture and causes no discomfort to bare feet.
    - Slope to drain to comply with BC Building Code.
    - Be free of tripping hazards such as uneven surfaces or changes in elevation.
    - Be free from physical hazards that could injure bare feet.
- Tile proposed for all tank rooms should have a nonslip surface as the Epsom salt solution is slippery.
- Doors and windows within the tank area should have frames, glazing and materials that:
    - Minimize uncontrolled condensation.
    - Withstand humid and corrosive environments.
    - Minimize or do not contribute to bacterial growth.
- Walls and partitions should be made of smooth, durable, impervious material and be free from cracks or open joints.
- Hose bibs should be provided in sufficient number to allow for cleaning or filling floatation tanks, and should be equipped with a CSA or equivalent hose bib vacuum breaker. Hoses should be stored away from traffic areas to avoid injury.
- Plumbing fixtures should be designed so that they may be readily cleaned. Fixtures should be able to withstand frequent cleaning and disinfection.

TEMPERATURE OF SHOWER WATER

- Thermostatic tempering of mixing valves should be installed to prevent scalding of bathers.

- In the event that manual valves are used, each should be suitably marked to differentiate between hot and cold supply.
- Regardless of the controls used, the water temperatures at the shower head are recommended to be between 32°C (90°F) and 43°C (109°F), and must never be above 49°C (120°F).

2.2.2 UTILITIES

LIGHTING

- Sufficient lighting should be provided to ensure:
  - Clients are able to move safely throughout the facility.
  - First aid can be performed.
  - Cleaning and maintenance can be performed (refer to WorkSafeBC illumination requirements).
- Sufficient emergency lighting should be provided to allow floatation tank patrons to evacuate in the event of a power failure.

ELECTRICAL REQUIREMENTS

- All electrical devices, including ground fault circuit interrupters (GFCIs), must be installed in accordance with the BC Electrical Code.
- Operators should test ground fault interrupters at least monthly and immediately rectify any problems.
- Extension cords must not be used in the tank area if they are run from plugs that are not designed to be used in wet areas.

2.2.3 CHEMICAL STORAGE

Section 5.24 – Incompatible Substances of the Occupational Health and Safety Regulation states:

> *Substances which are incompatible must not be stored in a manner that would allow them to mix in the event of container leakage, breakage or other such circumstance.*

Consult the material safety data sheet (MSDS) for each chemical to determine incompatible chemicals and individual storage requirements.

- Space should also be provided for storing chemicals and auxiliary equipment:
  - Chemicals should be stored in a cool, dry place with adequate ventilation that is secure from entry by unauthorized persons, and separate from areas accessible to patrons.
- When sizing chemical storage rooms, consideration should also be given to providing sufficient storage space for reserve containers of chemicals.
- Chemical storage-room design aspects related to safety – such as ventilation, fire protection and suppression systems, containment systems, storage limits, separation distances, and means of exit – should be considered. Consult the current editions of the BC Building Code and BC Fire Code for guidance.
- Protection of workers from chemical hazards is under the jurisdiction of WorkSafeBC, and designs must give consideration to its requirements. Information on WorkSafeBC requirements can be found at http://www.worksafebc.com.

2.3 FLOATATION TANK CONSTRUCTION

- Floatation tank system components should be Underwriters Laboratories (UL) and/or National Sanitation Foundation (NSF) certified. Certified components can be found on the UL website (http://www.ul.com) and the NSF website (http://www.nsf.org/).
- Water and air circulation system components should be accessible for inspection, maintenance, repair and replacement. These components include pumps, motors, skimmers, filters, and chlorination, UV and ozone systems.

2.3.1 TANK INTERIOR

- The tank basin interior should:
  - Be designed to reduce the risk of injury to users.
  - Be capable of being completely drained of water.
  - Be structurally sound and watertight – constructed of durable, impervious material that provides a finish free from cracks and open joints.
  - Have smooth tank walls to reduce the risk of bacterial growth and to promote ease of cleaning.
  - Have a floor with a slope not exceeding one inch per square foot (maximum pitch 1:12).
- Tank basin finishes can include tile, plastic, acrylic liners and glass. The tank basin finish should have the following properties:
  - Non-toxic.
  - Does not pose a cutting, pinching, or abrasive hazard under normal use.
  - Easy to clean.
  - Durable and impervious.
  - Creates a watertight structure.
  - Able to withstand design stresses.
- Steps and ladders leading into and out of the floatation tank should be nonslip and well marked.
- Tank handrails should be sturdy and made from corrosion-resistant materials.
- To prevent patrons from becoming entrapped, tank handrails should be less than 9 cm (3.5 in), or greater than 23 cm (9 in) from tank walls, or rails should be inset into tank walls.
- Tanks should be designed and operated to minimize risks of entrapment.

PUMPS

- Pumps should be self-priming (flooded suction). Pumps should be accessible for inspection, service and maintenance, and protected from damage.

PIPING

- Piping should be made of non-toxic material, resistant to corrosion by tank water, able to withstand operating pressures and installed according to manufacturer's recommendations.

TANK INLETS

- If tanks are plumbed in, tank inlets should be:
  - Placed as near to the floor as possible.
  - Located to produce, in so far as possible, a uniform circulation of water and maintain a uniform disinfectant concentration throughout the tank.

TANK OUTLETS

- Tank outlets should:
  - Be positioned to allow the tank to be completely and easily emptied.
  - Have each opening covered by a grating which is not readily removable by bathers and precludes the possibility of a body forming a seal against the cover.
  - Have openings in the gratings that will not entrap hair, fingers, toes or limbs.

CROSS-CONNECTION CONTROL

Cross-connections are actual or potential connections between potable water and non-potable water supply – and are a serious public health hazard. Cross-connections between tanks and water systems can be eliminated by careful design:

- The water in a floatation tank should have:
  - An air gap between the main drain and the sewer line in compliance with Plumbing Code.
  - A reduced pressure backflow assembly on a hard plumbed in-fill line.
- Any hose bib with an attached hose should have a hose bib vacuum breaker.

VENTILATION

- The tank should be designed or ventilated to prevent the accumulation of condensation, disinfection by-products, odours or hazardous toxic substances within the tank.
- A minimum of four to six air changes are recommended per hour.

2.3.2 TANK WATER TREATMENT

Measuring devices should be used to evaluate the operation of pumps and filters, turnover period, disinfection rates and other aspects of tank operation.

RATE OF FLOW INDICATOR

- A rate-of-flow indicator should be provided and maintained for each tank to show the rate of tank water circulation. The indicator should be conveniently located for ease of viewing and calibrated in either litres per minute or gallons per minute.
- All flow indicators should be installed in accordance with the manufacturer's specifications.

DISINFECTION EQUIPMENT

It is recommended that automatic disinfection equipment be installed in floatation tanks for public use. Systems should be of one or more of the following types and meet applicable NSF 50 standards (http://www.nsf.org/).

- Mechanical chemical feeding systems.
- Electrolytic in-line or batch chlorine/bromine generators.
- Electrolytic or off-line chlorine/bromine generators.

Chlorine and Bromine

- Primary disinfection of floatation tank systems should be accomplished using chlorine or bromine. All tanks using chlorine or bromine as the primary disinfectant should maintain an acceptable disinfectant residual, as outlined in section 3.2.2.
- Cyanuric acid (stabilized chlorine) should **not** be used in floatation tanks. Cyanuric acid is intended to reduce the loss of free chlorine caused by the sun's ultraviolet rays. Since floatation tanks are not exposed

to direct sunlight, there is no benefit in adding cyanuric acid to tank water or using products containing cyanuric acid.

- Other supplemental forms of disinfection or water treatment may be used to improve water quality, and reduce both the formation of disinfection byproducts, and chlorine consumption. Supplemental disinfectants cannot replace chlorine or bromine as the primary disinfectants.

Ozone

- Ozone may be used as a supplemental form of disinfection or water treatment.
- Ozone systems should be certified to NSF 50, installed in accordance with manufacturer's specifications and conform with WorkSafeBC requirements in the current edition of the *Ozone Safe Practices Manual* (BK 47), at http://www.worksafebc.com/publications/high_resolution_publications/assets/pdf/bk47.pdf.

UV Devices

- UV treatment may be used as a supplemental form of disinfection or water treatment.
- UV devices should:
  - Be equipped with medium-pressure UV lamps for effective control of chloramines and for supplementary disinfection.
  - Be certified to NSF Standard 50.
  - Have their lamps and sensors replaced according to the manufacturer's recommendations.

FILTRATION

Filtration is an essential part of the circulation system as it removes dirt, oils and bacteria from the water that assist in maintaining desirable and safe water quality.

- The recirculation system should be provided with a filter capable of removing insoluble contaminants.
- All filters should be NSF 50 certified.
- The recirculation rate for the floatation tank should allow for three turnovers of the tank between tank users. A turnover rate of one turnover every five minutes is recommended.

3 OPERATIONS

The floatation tank and associated facilities should be maintained in a sanitary condition at all times.

3.1 FACILITY OPERATION

3.1.1 OPERATION

- The facility should be kept clean, tidy and free of clutter.
- Records sheets should be kept up-to-date and on-site (cleaning, water testing, humidity, fecal/urine incidents and maintenance).

3.1.2 OPERATION MANUAL

- Operators should develop an operational manual that provides direction on tank operation and maintenance procedures. The manual should include:
  - Guidance on when to close tanks (e.g., when there is a fecal or vomit incident or a power outage).
  - Tank chemistry testing procedures and testing frequency.
  - Instruction on when and how to adjust tank water chemistry.
  - Procedures for safe handling of chemicals.
  - Locations of equipment operating manuals and a tank maintenance schedule.

3.1.3 FACILITY CLEANING AND DISINFECTION

Removing or destroying micro-organisms to make instruments/equipment safe for use involves cleaning and disinfection. Operators need to ensure proper methods are followed in all cases. Refer to the *Guidelines for Personal Service Establishments* for complete details.

3.1.4 GENERAL SANITATION

- Floors, walls counters and equipment should be clean, sanitary and in good repair.
- Hand-washing facilities should be adequately equipped and maintained with single-use towels or dryers and single-use soap dispensers.
- A shower, with single-use soaps, should be provided in each floatation tank room.
- A nearby toilet and hand sink should be provided.
- The facility should be pest free.
- Waste disposal bins should be located within easy access.
- Procedures describing cleaning and disinfection of the facility and equipment should be provided.
- Personal protective equipment such as ear plugs and non-slip slippers must be single-use and/or disinfected with the appropriate disinfectant. Disinfection procedures must be indicated in floatation tank establishment plan proposal.

3.1.5 GENERAL SAFETY REQUIREMENTS

- All areas should be well lit.
- All areas should be well ventilated.
- Safety procedures should be affixed to equipment to inform clients.
- Safety procedures (i.e., written emergency response procedures) should be in place and kept on site.
- A first aid kit should be supplied and must be:

  - Kept within the vicinity of the tank.
  - Accessible at all times that the tanks are in operation.
  - Checked regularly for defects and the need for maintenance or replacement.
- Staff should know where all emergency equipment is located and be trained to use it.

EMERGENCY RESPONSE PLAN

- Operators should develop a written emergency response plan on how to deal with serious injuries, emergencies and other incidents. The plan should:
  - Include procedures for handling serious injuries, emergencies and other incidents efficiently and safely.
  - Describe both the equipment required in these situations and the related emergency procedures for staff to follow.
  - Identify preventative measures to reduce risk of emergencies occurring.
- Situations that may be addressed in a facility's emergency response plan include:
  - fecal/vomit incidents (see Appendix 2)
  - medical emergencies
  - power failures
  - chemical spills
  - fires
  - gas leaks
  - earthquakes
- The plan should also include post-emergency procedures, as well as the location of the emergency telephone, first aid kit and emergency exits.

3.1.6 STAFF AND CLIENT EDUCATION

Operators should have adequate training to recognize, prevent and respond to a health hazard that may arise during a procedure. Operators should also have training in tank circulation and filtration, maintenance of water chemistry and tank maintenance. The facility operator is responsible for ensuring all employees are adequately trained and clients adequately informed.

- Staff should be:
  - Familiar with and following the operational manual.
  - Trained in equipment maintenance.
  - Trained in water quality testing.
  - Trained to educate clients. Written procedures for using the facility should be available or posted in a place where clients will notice it.
- Clients should be:
  - Provided with information on personal hygiene, as well as safety procedures (e.g., how to safely enter/exit the tank, how to safely float, emergency and safety features).
  - Provided with information on removal of all eyewear especially contact lenses.
  - Not allowed in the tank if they are ill or were recently ill (e.g., infectious respiratory disease including a cold or influenza, gastrointestinal illness, skin disease, epilepsy and asthma), are under the influence of drugs or alcohol, or have any cause for concern about using the equipment.
  - Instructed on how to rinse salt out of their eyes at eye-washing stations.
  - Instructed to advise staff of any fouling of the tank.

REMINDER
Bathers should shower and use the toilet before entering the floatation tank. Shampoos, moisturizers and other skin products will adversely affect tank water quality, so bathers should ensure these products are washed off.

- Signs should be provided in the reception area and floatation tank room indicating that:
  - Clients should take a cleansing shower and shampoo their hair prior to entering the tank.
  - Clients should not use floatation tanks if they have diarrhea, an infectious skin disease or a medical or physical condition that would be affected by using the floatation tank.
  - Clients should relieve their bowels and bladder just prior to showering and entering a tank.
  - Clients under the influence of drugs or alcohol should not use the floatation tank.
  - Clients should not pollute the water by spitting, blowing the nose, urinating or defecating.
  - Unless the tank is designed to accommodate two occupants, only one client at a time is allowed in the floatation tank.
  - No food or drink is allowed in the floatation tank area.
  - No smoking is permitted on the premises.

3.1.7 DOCUMENTATION

Documenting safety procedures and maintaining records are essential for floatation tank operators to show due diligence in maintaining their operation.

- The following documents should be kept site and reviewed by staff on a regular basis:
  - operational manual
  - emergency response plan
  - safety procedures and personal hygiene information for educating clients
- Records of the following should be available on-site for potential follow-up and inspection purposes:
  - daily water chemistry testing (see Appendix 3)
  - number of floats/clients per day
  - scheduled cleaning and maintenance
  - fecal/urine/vomit incidents
- Updated material safety data sheets (MSDS) provided by suppliers for all hazardous products should be kept on site.
- The floatation tank operator should keep all records on-site for a minimum of one year, and on file (available upon request in accordance with privacy legislation) for a minimum of five years. Information should be collected and stored according to provincial privacy legislation.

3.2 FLOATATION TANK OPERATION AND MAINTENANCE

3.2.1 TANK RECIRCULATION

- For floatation tanks with recirculation between clients, the recirculation system should be operated until three turnovers have been obtained between clients.
- The recirculation system should be run continuously when the floatation tank is not occupied, and overnight.

3.2.2 WATER CHEMISTRY

To maintain water chemistry, it is important to encourage good hygienic standards among patrons. Bathers should be strongly encouraged to visit the toilets, and shower before using the floatation tank. Introduction of shampoos, moisturizers and other skin products will adversely affect the water balance, so clients should ensure these products are washed off before they enter the tank.

Maintaining tank water parameters within the acceptable ranges will help promote adequate disinfection and good water clarity, which are essential to the health and safety of clients. Balanced water chemistry also helps reduce corrosion and scaling of the tank infrastructure. The following items should be used to test and document water quality:

- water chemistry test kit(s)
- thermometer(s)
- a log of daily record sheets

The following water chemistry parameters should be tested daily (before each client use or every four hours).

  - free available chlorine level (1.5 ppm – 5 ppm) or
  - bromine (2.5 ppm – 5 ppm)
  - pH level (7.2 – 7.8)
  - total alkalinity (80 ppm – 120 ppm)
  - water temperature (< 37^{o} C)

Note: Chlorine or bromine are accepted sanitizers for floatation tanks. Hydrogen peroxide should not be used as a disinfectant because of its limited ability to control bacteria, and its capacity to reduce or destroy any chlorine or bromine in the water. Should scientific data or peer-reviewed studies become available indicating the effectiveness of alternative disinfectants, these guidelines may be revised to include them.

CHEMICAL TESTING EQUIPMENT

- Suitable testing equipment should be provided for the reliable determination of disinfectant residuals.
- Testing equipment should be used, stored and maintained as per manufacturer's recommendations.
- Individuals should be trained in the proper use of test kits. They should know how to respond to a specific reading and/or to whom the reading should be reported (e.g., supervisor).
- Chemical test results should be recorded on a daily water chemistry log and kept on-site.
- Regularly testing tank water and recording the results will help operators maintain good water quality.

3.2.3 EQUIPMENT MAINTENANCE

Tasks between Clients

- The interior of the tanks should be inspected, cleaned and disinfected as required.
- Tank water should be visually inspected for contamination (hair, scum and debris). Material should be moved toward the tank skimmer.
- Appropriate chemicals should be added to maintain disinfection and pH levels.

Daily Tasks

- The floatation tank exterior should be cleaned and inspected to ensure hand rails are secure, and inlet and outlet piping are in good condition.
- The floatation tank interior should be cleaned and inspected to ensure the lining is not deteriorating and interior lights are working.
- The tank recirculation system should be operated for at least three turnovers to remove the material loosened during tank cleaning.
- The tank water should be skimmed.

Weekly Tasks

- The tank interior, exterior and filtration system should be visually inspected.
- The inside and outside of filter unit casings should be cleaned and disinfected.

- Pumps should be dismantled, cleaned and disinfected. A visual inspection of the pump's structure and mechanics should be conducted.
- UV disinfection lamps should be cleaned and maintained as per manufacturer's instructions.
- Heaters should be inspected to ensure the power supply is safe, and is working as per manufacturer's instructions.
- The filtration system for each tank should be dismantled and cleaned. If necessary, filters should be replaced.
- The recirculation system should be operated for at least three turnovers after adding chemicals to allow adequate contact time with the water for disinfection.
- Ground fault circuit interrupters should be tested.

3.2.4 TANK CLEANING AND DISINFECTION

Operators should set up appropriate cleaning schedules to ensure the health and safety of clients, including a posted schedule to help organize cleaning tasks. A cleaning schedule should include the methods, equipment and cleaning products to be used for each task, including the following:

- Filters should be washed and replaced as per manufacturer's recommendations.
- The tank and recirculation system should be drained and thoroughly cleaned and disinfected:
  - When water clarity is poor.
  - When the operator is unable to maintain adequate levels of disinfectant residual.
  - When the operator deems it necessary.
- Instruments/equipment should be taken apart for effective cleaning. See the instrument manufacturer's cleaning instructions.
- Tank water and the walls and bottom of the pool should be kept free of visible dirt, litter, body oil and algae growth.
- Pipes should be inspected to ensure they are free from leaks and mould.
- Interior surfaces of the floatation tank should be disinfected with a low-level disinfectant
- A schedule for tank cleaning and maintenance should be developed. It should include the nature and frequency of cleaning, as well as the methods, equipment and cleaning products.

Quaternary ammonium cation cleaners/sanitizers should not be used for cleaning tank surfaces. This is because they interact with the chorine to produce disinfection byproducts such as chloramines – decreasing the disinfecting efficacy of the tank water and contributing to the chlorine smell associated with pools.

APPENDIX 1: SAMPLE FLOATATION TANK DATA SHEET

FACILITY	
Facility Name:	
Facility Address:	
City:	
Owner or Operator Name:	
Owner:	
Operator:	
FLOATATION TANK	
Type of Tank (Model/Manufacturer):	
Maximum Tank Capacity (person(s):	
Tank Volume:	l. gals.
Number of Turnovers between Clients:	
Filters:	
Make/Model:	
Surface Area (each filter):	sq. ft.
Surface Area (each element):	sq. ft.
Filtration Rate:	l. gpm/sq. ft.
Total Filter Capacity: (filtration rate x total area)	l. gpm/sq. ft.
Gauges:	
Flow Indicator Make/Model:	
Disinfection:	
Method (e.g. chlorine):	
Unit Make/Model:	
Main Drain (only relevant if the unit is hard plumbed):	
Velocity through Grate Opening:	
Make-up Water:	
Air Gapped: ☐ Yes ☐ No	
Backflow Preventer: ☐ Yes ☐ No	

APPENDIX 2: PROTOCOL FOR HANDLING FECAL INCIDENTS IN FLOATATION TANK WATER

Fecal incidents are a health concern and inconvenience to floatation tank operators and clients. There is an increased health risk to patrons if the stool contains illness-causing germs that get released into the tank solution. Operators should explain to patrons why the tank needs to be closed in response to the fecal incident.

Operators should take the following steps when dealing with fecal incidents:

1. Stop circulation if the system is engaged.
2. Remove all large contaminant particles using a sieve or a mesh wand. This equipment must then be cleaned and disinfected with a low-level disinfectant, at a minimum.
3. Remove the filter.
4. Drain the tank.
5. Fill the tank and circulate a 1:9 bleach solution through the system for 10 minutes. The room should be ventilated during this process.
6. Drain the bleach solution and rinse the basin with fresh potable water.
7. Refill the tank with fresh floatation tank solution.
8. Record incident on daily records or contact your local health authority on the next working day to advise it of the actions you have taken.

APPENDIX 3: EXAMPLE OF A FLOATATION TANK DAILY WATER CHEMISTRY LOG

Parameter	Minimum	Maximum
Water Temperature (T)		< 37^0C or 98.6^0F
Free Chlorine (FC)	1.5 ppm	5 ppm
Combined Chlorine (CC)	< 1 ppm	1 ppm
pH	7.2	7.8
Bromine (B)	2.5 ppm	5 ppm
Total Alkalinity (TA)	80 ppm	120 ppm
Depth (D)	10” or 254 mm	12” or 305 mm
Relative Density (RD)	1.25	1. 3

Floatation Tank								
Date and Time	TA (ppm)	FC (ppm)	CC (ppm)	pH	T (^{0}F)	D	RD	Initials

Missed Target Ranges	Time	Corrective Action	Re-test Value (15 min after)
Circle: TA FC CC pH T D RD			
Circle: TA FC CC pH T D RD			
Circle: TA FC CC pH T D RD			

APPENDIX 4: REFERENCES

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http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/161_2011

APPENDIX 5: GLOSSARY

Alkalinity: The measure of the ability of the water to resist changes in pH. The higher the alkalinity, the more difficult it can be to adjust the level of the pH. The ideal range for alkalinity is 80 to 120 ppm.

Backflow: The backing up of water through a pipe in the direction opposite to normal flow.

BC Building Code: Provides the minimum requirements for a safe building environment. The requirements include construction, plumbing and fire codes that each building in B.C. must meet before the public can enter.

Chlorine: An effective disinfectant widely used to maintain sanitation within a tank.

Cleaning: The physical removal of foreign material (e.g., dust and soil) and organic material (e.g., blood, secretions, excretions and micro-organisms). Cleaning removes rather than kills micro-organisms. It is accomplished with water, detergents and mechanical action. Thorough cleaning is required before disinfection.

Construction: Includes the design, installation, repair, renovation and alteration of a tank.

Design Flow Rate: The quantity of water flowing past a designated point within a specified time, such as the number of litres flowing past a point in 1 minute.

Disinfectant: A chemical agent that kills most disease-producing micro-organisms, but not necessarily bacterial endospores. They are applied only to inanimate objects.

Disinfection: A process that kills most disease-producing micro-organisms. It does not destroy all bacterial endospores. Instruments/equipment must be cleaned thoroughly before effective disinfection can take place.

Equipment: Any implement, item, instrument, device, object, or tool used when carrying out personal services.

Filter: The piece of equipment used for filtering dust and other fine debris from tank water. Filtering agents include diatomaceous earth filters, silica sand, or a cloth cartridge.

Filtration: The process of passing tank water through the filter medium to remove dirt and debris particles.

Flooded Suction: Occurs when the top of the fluid supply is above the pump inlet.

Free Available Chlorine (FAC): The available disinfectant that is active in the water.

Ground Fault Circuit Interrupters (GFCI): A device that shuts off an electric power circuit when it detects that current is flowing along an unintended path, such as through water. It is an important safety device around tanks.

Hose Bib: The location in a water line where a hose is connected.

Low-level Disinfection (LLD): A process capable of killing most vegetative bacteria, some fungi, enveloped (lipid) viruses and some non-enveloped (nonlipid) viruses. Low-level disinfectants cannot be relied on to kill mycobacteria or bacterial endospores. This disinfection level is required when processing noncritical instruments/equipment or some environmental surfaces.

Magnesium Sulfate ($MgSO_4$): An inorganic salt containing magnesium, sulfur and oxygen, commonly called Epsom salt. It used in floatation therapy where high concentrations raise the bath water's specific gravity, making the body more buoyant.

Personal Service: A service to or on the body of another person. This does not include services identified as "restricted activities" under the *Health Professionals Act* and Health Professionals Regulation.

Personal Service Establishment (PSE): An establishment in which a person provides a personal service to or on the body of another person.

pH: The measure of acid and base levels for liquids. Water that has a pH level of 7.0 is "neutral." A pH level above 7.0 is basic, and below 7.0 is acidic. The ideal range for pH is 7.2 to 7.8.

Tank Inlets: Inlets that return filtered, heated and chemically treated water to the tank. Tank inlets provide strong jets of water. They are usually on the tank walls, but some are on the tank bottom.

Potable Water: Water that is safe to drink and fit for domestic purposes without further treatment.

Pump: A mechanical device, usually powered by an electric motor, that creates hydraulic flow and pressure for filtering, heating and circulating tank water.

Rate of Flow Indicator: A device that measures pressure differential across a calibrated orifice and indicates the rate of flow at that point.

Self-Priming Pump: A pump that evacuates the air inside it, which allows the fluid to rise and enter the pump.

Suction Hazards: Suction has caused many deaths and severe injuries that could have been prevented. Water inlets can cause suction strong enough to entrap body parts or hair, causing a bather's head to be held under water, leading to drowning. In addition, there have been reports of incidents in which the suction from the pool or spa drain had led to disembowelment. Any drain the body can cover completely, combined with a plumbing layout that allows a build-up of suction if the drain is blocked, presents a suction hazard.

Turnover: The rate (measure of time) it takes the full volume of water in the tank to circulate, and be physically cleansed and replaced.

WorkSafeBC: Agency that keeps workers/workplaces safe from injury, illness and disease. It monitors the safety and working conditions on the worksite, and provides educational resources for employees and employers.