LIFESAVING SOCIETY®
SOCIÉTÉ DE SAUVETAGE

*The Lifeguarding Experts*
*Les experts en surveillance aquatique*

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# Safety Standards
## for Canadian Swimming Pools and Waterfronts
### Swimming Pool Standard

## Pool Operator Training Standard

### Standard

Pool Operator training shall include the minimum content as outlined in the Lifesaving Society Pool Operator Training Program.

### Definitions

**Operator:** the trained individual designated by the owner to be responsible for the day to day operation of an aquatic facility.

**Owner:** the person or corporation who is the owner of an aquatic facility.

### Rationale

Regulations and guidelines require that the owner of a public swimming pool must designate a pool operator. This pool operator must be trained in the maintenance of safe water conditions in order to ensure the swimming pool remains a safe environment for bathers and that its operation is consistent with regulations and guidelines.

### Implementation

Owner/operators should ensure that all designated pool operators have the necessary training and certification to safely operate and maintain water treatment systems. This training and certification should either be required as a pre-requisite of employment or provided prior to their assumption of pool operation and water maintenance duties.

### References

- Ontario Regulation 565/90 and 428 for Public Pools/Spa
- Lifesaving Society Pool Operations Manual, 2009
- British Columbia Ministry of Health, Pool Reg. 296/2010

- National Swimming Pool Foundation, CPO Certification program
- Toronto Star “Safety Experts Want Tougher Standards for Pool Operators”, August 2011
- Manitoba Regulation 132/97
- Alberta Pool Standards, 2014
- Alberta Public Swimming Pool Regulation 2014

## Appendix 1

- Pool Operator Training Program

## Approval

- Approved by the Lifesaving Society Canada Board of Directors on 8 May 2016.

## Disclaimer

Lifesaving Society Canada’s National Safety Standards are developed using Coroners’ recommendations, the latest evidence-based research, and reflect the aquatic industry’s best practices at the time the publication was approved or revised.

The purpose of these standards is to encourage swimming pool, waterpark and waterfront owners, managers, operators and regulators to adopt these standards in order to prevent drownings in aquatic environments.

Lifesaving Society Canada’s National Safety Standards do not replace or supersede local, provincial/territorial or federal legislation or regulations, but they are considered the standard to which aquatic facility operators should work towards in order to enhance safety within their operations and to prevent drowning and aquatic-related injury.

# Appendix 1
# Pool Operator Training Program

## Introduction

1. Pool Operator roles and responsibilities.
2. Safety and the prevention of injury, Recreation Water Illness (RWI), exposure to the pool environment.
3. Protection (care and maintenance) of the public, staff and facility.
4. Overview of applicable legislation including provincial regulations, electrical code, building code, spa/wading pool/waterslide regulations.

## Physical Quality of Water

1. Describe water sources, fill water, effects of particulates in the water: suspended, dissolved and impact on water quality.
2. Describe the importance of effective recirculation - accumulation of soil and particulates and the physical removal from the bottom of the pool; dead spots.
3. Removal of physical materials.
4. Explain circulation/hydraulics including:
    - filtering using
        - sand filter systems,
        - non-permanent media (DE filter, perlite, etc.) systems and
        - cartridge filter systems
    - piping, valving, pumps
    - hair and lint strainers
    - skimmer/gutter operation
    - pool inlets
    - drains and suction fittings
    - backwashing; cleaning filters
    - draining and refilling pools
    - heating systems
    - measuring devices: i.e. flow meters; gauges, thermometers.
5. Describe care and basic maintenance of the equipment (pool operating equipment).
6. Explain the importance of flow rates and turnover period and the requirements of the regulations.
7. Explain water clarity or turbidity, assessment of clarity, troubleshooting water clarity problems including use of clarifiers.
8. Explain multiple tank filtration and water flow minimum calculations.

## Managing Water Chemistry

1. Explain pH, total alkalinity, calcium hardness, total dissolved solids, temperature effects, expected ranges, management of parameters.
2. Review Langelier Saturation Index to discuss water balance.
3. Explain chlorine chemistry including free chlorine, total chlorine, chloramines, breakpoint chlorination, shock chlorination, superchlorination; effect of pH, particulates, physical contaminants, bather load disinfection.

4. Describe regulation requirements for disinfectants (chlorine, bromine), ph and alkalinity.
5. Describe delivery of disinfectants and other chemicals to the pool (dosing/feeders) and review types of equipment.
6. Provide manual preparation, delivery of chemicals and dosing calculations based on volume.
7. Discuss safe use, handling and storage of chemicals and chemical volatility.
8. Explain automated delivery systems; operation and maintenance of those systems including, calibration, monitoring and cleaning of probes. Explain oxidation reduction potential, its application.
9. Explain and practice testing, both manual and other, of chlorine and pH, total alkalinity, cyanuric acid, calcium hardness, TDS ; review frequency of testing for each parameter, discuss reagent quality, factors that influence accuracy of test results, and the limitation of testing procedures.
10. Explain requirements for recordkeeping of all test results including the use of bacteriological testing.
11. Describe the management of swimming pool air circulation and treatment.

## Microbiological Quality of Water

1. Explain the role of disinfectants.
2. Types of approved disinfectants:
   - Chlorine: gas, calcium hypochlorite; sodium/di/ hypochlorite, tri-chloramine, lithium hypochlorite; salt generated chlorine
   - Bromine
   - Supplemental
     - Ozone
     - Ultraviolet light
     - Monopersulfate
3. Describe the use of cyanuric acid in your outdoor pool .
4. Describe development of chloramines the impact on the aquatic environment including chemical removal.
5. Bacteriological transmission to surface contamination – care and prevention.
6. Explain the maintenance of staff and bather comfort, reasons for eye, skin and respiratory irritation.
7. Describe how to prevent RWI and response.
8. Explain the steps to respond to blood and body fluids (refer to the CDC Fecal Response Guideline); appropriate response to other body fluids or pool contaminants. Describe CT (product of the residual disinfectant concentration (C) in milligrams per liter (mg/l) determined before or at the first customer, and the corresponding disinfectant contact time (T) in minutes) and its significance in responding to fecal incidents.
9. Explain biofilm development and risks associated with them.
10. Discuss the impact of the bathers on water quality and bather load requirements (fresh water).
11. Discuss other chemicals such as : degreasers, de-foamers, flocculants, algaecides, sequestering agents, clarifiers, non-chlorine based oxidizers, other speciality pool chemicals.

## Safety

1. Discuss the management of facility attendance.
2. Discuss safe temperature ranges in, swimming pools, whirlpools and showers.
3. Describe signage requirements for all types of pools.
4. Describe the minimum safety equipment (ring buoy, reaching pole, etc.).
5. Discuss emergency and operating procedures.
6. Discuss incident recording and reporting.
7. Describe the risk associated with water entrapment and maintenance of protective devices and equipment.
8. Review other requirements such as clock, emergency stop button, timers, signage, etc.
9. Review recommended lifesaving equipment (refer to Lifesaving Society Guides).
10. Renovation and repairs- permits, process, consultation, legislation.
11. Facility Management- access, egress, fire plan, evacuation plan, security.

## Overview of Legal Liabilities & Responsibilities

### General Sanitation

1. Describe steps to clean the pool, whirlpool; and the pool facility, ie decks, hallways, showers, washroom, saunas.
2. Review the safe and unsafe types of products for cleaning surfaces in all areas of a pool facility.
3. Describe possible steps to prevent contamination of the pool: advise patrons when not to swim, children swimming with diapers, showering, change tables.

### Other Pools including Whirlpools and Hot Tubs, Wading pools, splash pads

1. Regulations and Guidelines.
2. Explain reasons for foam in the whirlpool and response.
3. Effect of Temperature on chemical and bacteriological conditions.
4. Effect of small water volumes i.e. turnover, contamination, organic materia.l
5. Cleaning Issues related to hot water pools.
6. Safety Devices.

### Optional Learning Opportunities:

1. Hands-on procedural, operational, and testing environment.