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Lifesaving Society Canada
Suite 001 - 1145 Hunt Club Road, Ottawa, Ontario, K1V 0Y3
Telephone: 613-746-5694
E-mail: experts@lifesaving.ca Web: www.lifesaving.ca

Safety Standards for Canadian Swimming Pools and Waterfronts Swimming Pool Standard

Prevention of Entrapment and Suction Hazards

Standard

Every owner and operator shall ensure that there are no elements, fixtures or points within a swimming pool that would cause entrapment due to suction or other means.

Definitions

- **Equalizer Line:** an outlet used to provide an alternate source of water to the pool filter system.
- **Operator:** the trained individual designated by the owner to be responsible for the day-to-day operation of an aquatic facility.
- **Outlet:** an opening in the pool tank that can generate suction.
- **Owner:** the person or corporation who is the owner of an aquatic facility
- **Swimming Pool:** an artificially constructed basin, whether indoor or outdoor, lined with concrete, fiberglass, vinyl or similar material in which a person can swim, wade, or dive.
- **Vacuum Fitting:** an outlet in the pool designed to connect to a swimming pool vacuum system.

Rationale

In a swimming pool, water must be kept clean of particulate and free of microorganisms through disinfection and filtration. To maintain good water quality, water must circulate continuously. The central element to mechanical circulation is good hydraulic motion, starting with water leaving the pool through outlets either by overflow or direct suction. Water movement is frequently maintained by means of a water pump which creates pull.

Submerged suction sources, such as loose or deteriorated drains, vacuum and equalizer lines, have proven to entrap swimming pool bathers.^{1,2,3,4,5,6,7,8,9,10,11,12}

Most sources of dangerous suction in swimming pools have been reduced or eliminated through new construction standards, pool planning, and newly engineered products such as pool outlet/drain covers.^{13,14,15,16} Older facilities constructed with a single source main drain may require the installation of an emergency shut-off switch and an approved automatic anti-entrapment device such as an SVRS (Suction Vacuum Release System) which automatically shuts down the pool pumps when the drain is blocked.^{17,18} Proper assessment of any system retrofit must be conducted before a secondary anti-entrapment device or system change can be recommended. Ideally, submerged single source suction outlets should be eliminated in swimming pools.

Standards and regulations have been established by industry, regulatory agencies, and government to eliminate suction risk.^{19,20,21,22,23,24,25,26,27,28,29,30,31,32} However, swimming pool systems change over time. Pool systems and components can become loose or deteriorate, possibly leading to unsafe suction conditions.

Owners and operators have a responsibility to ensure that bathers in any swimming pool are always appropriately protected from suction sources.^{33,34,35} A regular inspection program will alert operators when outlet covers become loose or deteriorated.

Implementation

To prevent entrapment and suction hazards drain outlet covers must be installed in accordance with the manufacturer's specifications. To ensure that a pool remains free of suction and entrapment hazards, all pool owners and operators should implement a regular inspection program of all outlet covers as part of a compliance program.^{36,37}

Following a Safe Operating Procedure (SOP), the inspection program should ensure that all outlet covers are at a minimum:

- Inspected visually each day of operation to ensure that covers are in place
- Inspected monthly to ensure covers are in good physical condition
- Inspected following any maintenance performed on the pool tank
- Inspected in detail annually to ensure:
 - No visible structural issues/defects
 - Covers are secure and tamper resistant
 - Covers remain installed in accordance with the manufacturer's specifications
 - Covers remain current to all applicable regulatory requirements
 - Covers remain current within any documented or stamped product expiry dates

In the event that an outlet cover is determined to be loose or damaged, the swimming pool should be closed immediately until repairs have been completed.

NB.

Many swimming pool main drain manufacturers are based in the United States or supply American swimming pool supply retailers. These producers are required by law to meet the requirements of the Virginia Graeme Baker Pool and Spa Safety Act (VGB). This legislation is not law in Canada but does significantly affect the market of available products in Canada. Owners and operators should be aware of legislated requirements that apply in their area, including building codes and health regulations.

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Approval

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Disclaimer

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

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.