

# DRAFT

(3-14-08)

## CPSC Staff Interpretation of the Pool and Spa Safety Act Section 1404<sup>1</sup>

*(Text portions from the Act are in blue and italics)*

**Drain Covers:** ...*each public pool and spa in the United States shall be equipped with anti-entrapment devices or systems that comply with the ASME/ANSI A112.19.8 performance standard, or any successor standard;*

Staff interpretation: All public pools and spas must have ASME/ANSI A112.19.8<sup>2</sup> compliant Drain Covers by December 19, 2008. The basic requirements of the ASME/ANSI standard are:

- Cover material must be tested for structural integrity
- Cover must be tested for body entrapment and hair entrapment/entanglement
- Cover must display a flow value in gallons per minute (gpm) that indicates the maximum flow rate for which the cover has been approved

*Main Drain: The term “main drain” means a submerged suction outlet typically located at the bottom of a pool or spa to conduct water to a recirculating pump.*

**Single Main Drain:** ...*each public pool and spa in the United States with a single main drain other than an unblockable drain...*

Staff interpretation: a **main drain** is a term usually referring to a plumbing fitting installed on the suction side of the pump in pools, spas and hot tubs (a **suction outlet**). Sometimes referred to as the drain, it is normally located in the deepest part of the pool, spa or hot tub. It does not literally drain the pool, spa or hot tub as a sink drain would, but rather connects to the pump to allow water to be drawn from the pool, spa or hot tub for circulation and filtration.

Staff interpretation: a **single main drain** is one submerged suction outlet with or without a skimmer connected to a pool pump.

Staff interpretation: *Section 1404(c)(1)(A)(ii) of the Pool and Spa Safety Act* excludes pools with multiple main drains from the requirements of *Section 1404(c)(1)(A)(ii)*.

Staff interpretation: **multiple main drains** consist of, at minimum, two fully submerged suction outlets per pump, with drain cover centers at least 3 feet apart and no more than 6 feet apart.

Staff interpretation: suction outlets would have *ASME/ANSI A112.19.8* listed covers/grates in place, and flow through the drain (outlet) cover(s) would not exceed 1.5 feet per second (fps) according to requirements of ANSI/NSPI-1.

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<sup>1</sup> This interpretation is that of the CPSC staff, has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

<sup>2</sup> The current approved version of this standard is A112.19.8-2007. There is an Addendum moving forward through the ASME/ANSI ballot process to correct errors in the test method for UV light exposure. The prior version of this standard is 1987 (reaffirmed in 1996) and addresses only hair entrapment potential.

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**Unblockable Drain:** *(7) UNBLOCKABLE DRAIN - The term unblockable drain means a drain of any size and shape that a human body cannot sufficiently block to create a suction entrapment hazard.*

Staff interpretation: an unblockable drain, to be consistent with the test procedures found in *ASME/ANSI A112.19.8*, would have a minimum measure of 18" x 23", which represents the shoulder to waist measurement of the 99<sup>th</sup> percentile adult male.

Staff further interpretation: unblockable drain may include:

- drain configurations that prevent a seal from occurring (large aspect cover, such as 18" x 23" or larger covers)
- long channels that cannot be blocked by the body (see figure a. below)
- large outlet grate (diagonal measure of 29" or more) (see figure b. below)
- circulation designs that do not include fully submerged suction outlets

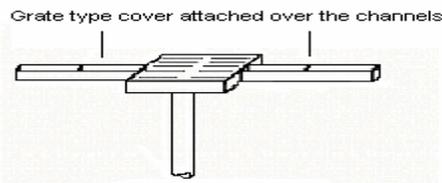


Figure a. Long Channel

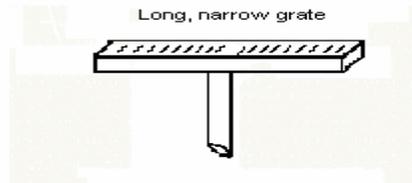


Figure b. Large Grate

## Alternate Drain Configurations

**Devices or Systems Designed to Prevent Entrapment:** *...each public pool and spa in the United States with a single main drain other than an unblockable drain shall be equipped, at a minimum, with 1 or more of the following devices or systems designed to prevent entrapment...*

**SAFETY VACUUM RELEASE SYSTEM:** *The term "safety vacuum release system" means a vacuum release system capable of providing vacuum release at a suction outlet caused by a high vacuum occurrence due to a suction outlet flow blockage.*

*(I) SAFETY VACUUM RELEASE SYSTEM - A safety vacuum release system which ceases operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected, that has been tested by an independent third party and found to conform to ASME/ANSI standard A112.19.17 or ASTM standard F2387.*

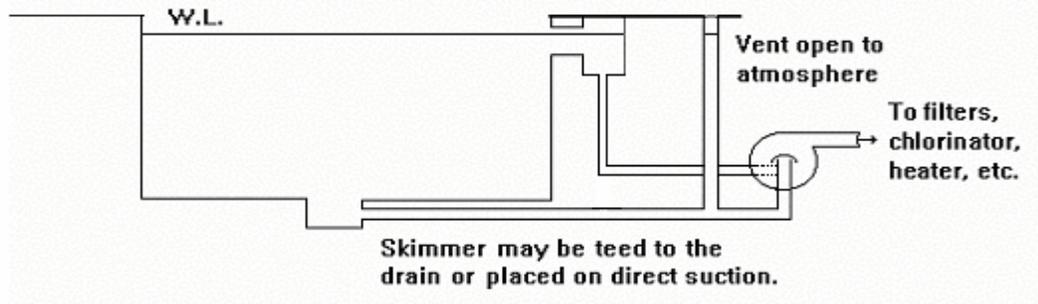
*(II) SUCTION-LIMITING VENT SYSTEM - A suction-limiting vent system with a tamper-resistant atmospheric opening.*

Staff interpretation: A suction-limiting vent system is also called an **atmospheric vent**. It is a pipe teed to the suction side of the circulation system on one end and open to the atmosphere on the opposite end. The pipe is normally full of water

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equal to the same height as the pool. When a blockage occurs at the main drain, air is introduced into the suction line thus causing the pump to lose prime and relieving the suction forces at the main drain (suction outlet).

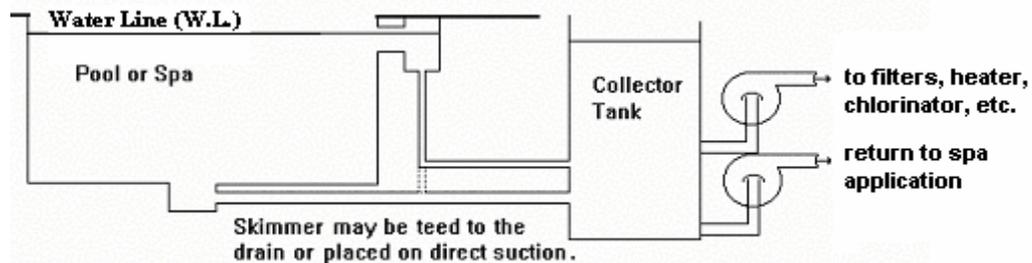


**Vent System to Relieve Main Drain Suction**

Currently there are no approved voluntary standards for suction-limiting vent systems; however, an ASTM International voluntary standards task group was formed in March 2004 and is currently developing minimum requirements for field-fabricated vent pipes. The performance of the vent, the ability to prevent obstructions from occurring within the vent, and a test procedure to assess performance are being addressed.

### *(III) GRAVITY DRAINAGE SYSTEM - A gravity drainage system that utilizes a collector tank.*

Staff interpretation: A gravity drainage system with a collector tank is a water storage vessel within the pool circulation system used to collect water displaced by bathers. The pool circulation pump draws water from this tank, thus removing direct suction from the pool. This type of system is also referred to as a reservoir, surge tank, or surge pit.



**Gravity Drainage System – Direct Suction Removed from the Pool**

Currently there are no voluntary standards for gravity drainage systems or collector tank specifications.

### *(IV) AUTOMATIC PUMP SHUT-OFF SYSTEM - An automatic pump shut-off system.*

Staff interpretation: An automatic pump shut-off system would be a device that could sense a drain blockage and shut off the pump system. Some safety vacuum release systems may meet this definition.

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One pump motor manufacturer has developed a circuit board for its motors which monitors current to the motor and shuts the pump off when a noticeable change in current occurs, possibly caused by an entrapped bather.

Currently there are no voluntary standards for automatic pump shut-off systems.

*(V) DRAIN DISABLEMENT - A device or system that disables the drain.*

Staff interpretation: Staff is not aware of a product that meets this description that is currently on the market. In the past, companies have developed products that sealed the suction outlet or shut off the pump when a cover is removed.

Additional consideration can be given to physically removing the submerged suction outlet (drain) by filling the sump with concrete (effectively removing the suction outlet from the bottom of the pool) as long as another source(s) of water for the suction side of the pump is(are) available, such as skimmers, re-plumbing the suction outlet into a return inlet (permanently reversing flow), or permanently disabling the suction outlet plumbing at the pump (removing the suction outlet connection to the pump) to remove the suction entrapment potential at the submerged outlet (drain).

Currently there are no voluntary standards for disablement devices or instructions for filling or re-plumbing the suction outlet.

*(VI) OTHER SYSTEMS - Any other system determined by the Commission to be equally effective as, or better than, the systems described in subclauses (I) through (V) of this clause at preventing or eliminating the risk of injury or death associated with pool drainage systems.*

Staff interpretation: This will allow the development of future products.

Currently there are no voluntary standards for such other systems.