



Each year, about 280 children under 5 drown in swimming pools. In addition, the suction from drains in swimming pools and spas, under certain conditions, can entrap swimmers underwater. To help protect your family, be sure to take the following steps.

### Use Layers of Protection

To prevent swimming pool drownings, layers of protection are essential. Place barriers completely around the pool, closely supervise young children, and be prepared in case of emergency.

In addition:

- o If a child is missing, always look first in the pool. Seconds count !
- o Knowing how to swim doesn't make a child drown-proof. Never use flotation devices as a substitute for supervision.
- o Keep rescue equipment and a phone next to the pool.
- o Learn cardiopulmonary resuscitation (CPR).
- o Install physical barriers around the pool to limit access.
  - Fences and walls should be at least 4-feet high and installed completely around the pool.
  - Gates should be self-closing and self-latching. The latch should be out of reach of small children.
- o If your house forms one side of the barrier for the pool, doors leading from the house to the pool should be protected with alarms that sound when the doors are unexpectedly opened. Or, use a power safety cover, a motor-powered barrier placed over the water area, to prevent access by young children.
- o For above-ground pools, steps and ladders to the pool should be secured or removed when the pool is not in use.



### Pool and Spa Entrapment Dangers

- o Never use a pool or spa with a missing or broken drain cover. Be sure a newer, safer drain cover is in place. The new drain covers are usually domed-shaped – instead of the old flat drain covers.
- o Consider installing a Safety Vacuum Release System (SVRS) , a device that will automatically shut off a pump if a blockage is detected.\*
- o Have a professional regularly inspect your pool or spa for entrapment or entanglement hazards.
- o Plainly mark the location of the electrical cut-off switch for the pool or spa pump.
- o If someone is entrapped against a drain, cut off the pump immediately. Instead of trying to pull the person away from the powerful suction, pry a hand between the drain and the person's body to break the seal.

\*See inside pages for more information on SVRS devices.

# Safety Precautions for Spas, Hot Tubs and Whirlpools

CPSC Document 5112

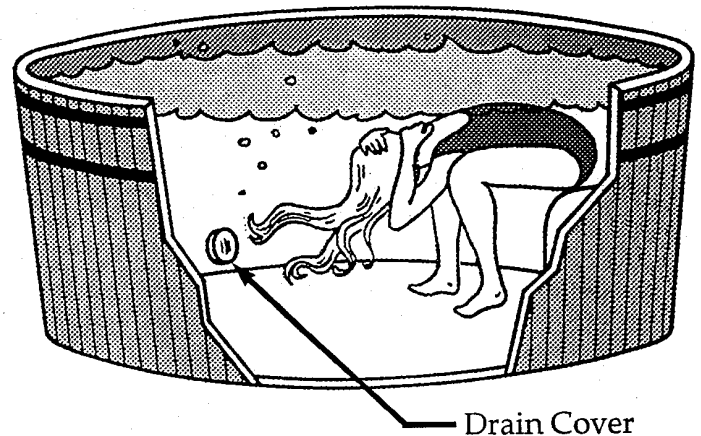
The U.S. Consumer Product Safety Commission (CPSC) helped develop standards to prevent hair entanglement and bodypart entrapment in spas, hot tubs, and whirlpools. These standards should help prevent deaths and injuries. Consumers should fix their old spas, hot tubs, and whirlpools with new, safer drain covers. CPSC warns about these hazards:

**Drownings** — The main hazard from hot tubs and spas is the same as that from pools - drowning. Since 1990, CPSC has reports of more than 800 deaths in spas and hot tubs. About one-fifth of those were drownings to children under age five. Consumers should keep a locked safety cover on the spa whenever it is not in use and keep children away unless there is constant adult supervision.

**Hair Entanglement** — Since 1990, CPSC has reports of 43 incidents (including 12 deaths) in which people's hair was sucked into the suction fitting of a spa, hot tub, or whirlpool, causing the victim's head to be held under water. Hair entanglement occurs when a bather's hair becomes entangled in a drain cover as the water and hair are drawn through the drain. In some incidents, children were playing a "hold your breath the longest" game. Permitting their long hair to be sucked into the drain. CPSC helped develop a voluntary standard for drain covers that helps reduce the risk of hair entrapment. Consumers should be sure they have new drain covers that meet this standard. If you are not sure, call a pool or spa professional to check the spa. Never allow a child to play in a way that could permit the child's hair to come near the drain cover. If a drain cover is missing or broken, shut down the spa until the cover is replaced.

**Bodypart Entrapment** — CPSC knows of 74 incidents since 1990 in which parts of the body have been entrapped by the strong suction of the drain of pools, wading pools, spas, and hot tubs. Of these, two resulted in disembowelment and 13 other people died. CPSC helped develop a standard requiring dome-shaped drain outlets and two outlets for each pump. This reduces the powerful suction if one drain is blocked. Consumers with older spas should have new drain covers installed and may want to consider getting a spa with two drains.

**Hot Tub Temperatures** — CPSC knows of several deaths from extremely hot water (approximately 110 degrees



Fahrenheit) in a spa. High temperatures can cause drowsiness which may lead to unconsciousness, resulting in drowning. In addition, raised body temperature can lead to heat stroke and death. In 1987, CPSC helped develop requirements for temperature controls to make sure that spa water temperatures never exceed 104 degrees Fahrenheit. Pregnant women and young children should not use a spa before consulting with a physician.

## ***CPSC recommends these safety precautions when using a hot tub, spa, or whirlpool:***

1. Always use a locked safety cover when the spa is not in use and keep young children away from spas or hot tubs unless there is constant adult supervision.
2. Make sure the spa has the dual drains and drain covers required by current safety standards.
3. Regularly have a professional check your spa or hot tub and make sure it is in good, safe working condition, and that drain covers are in place and not cracked or missing. Check the drain covers yourself throughout the year.
4. Know where the cut-off switch for your pump is so you can turn it off in an emergency.
5. Be aware that consuming alcohol while using a spa could lead to drowning.
6. Keep the temperature of the water in the spa at 104 degrees Fahrenheit or below.

# Install a SVRS in your pool or spa for safety.



When a swimmer becomes stuck to a drain or suction outlet in a swimming pool, spa, wading pool, or hot tub, the force of the circulation system can be tremendous. This suction force will not allow a person to free themselves, no matter how strong a swimmer they may be. It is extremely difficult for onlookers to break this suction by lifting the person off the drain — to do so, you would have to be able to lift more than 500 pounds. Even several people working together may not be able to accomplish this. This “suction entrapment” will hold the bather in its grip until the vacuum is broken. A person held underwater in this manner can suffer severe body or limb injury, or even death.

## What is an SVRS?

A **Safety Vacuum Release System** — or SVRS for short — is an automatic suction force release system. When a drain becomes blocked, the SVRS provides a rapid vacuum release. This quickly frees anyone whose body or limb is trapped on the drain.

An SVRS works whether or not there is a cover on the drain, and does not interfere with the pump function. Once installed, an SVRS requires little or no maintenance.

## How does a mechanical SVRS prevent entrapment?

A spring loaded piston located in the SVRS unit forms a seal to prevent air entering the suction system during normal operation. Should a sudden rise in vacuum occur due to an entrapment event, the piston is forced open and the air seal is broken. Under this condition, outside air is allowed to enter the suction side of the pump causing the pump to lose prime, thereby releasing the vacuum.

## How is an SVRS installed?

A mechanical SVRS unit is easily installed, adjusted and tested with standard tools and supplies. The SVRS unit is mounted vertically, above or off a tee installed in the main drain suction line close to the circulation pump. Since the SVRS is an air passageway only, the unit does not convey water, and therefore can be installed on small or large pipe sizes. Most installations can be completed in less than 30 minutes. An electrical SVRS unit may also be used and is installed by a licensed electrician.

## I have multiple drains in my pool — do I still need an SVRS?

Having multiple drains is no assurance that someone will not become entrapped by the suction force on one of the drains. One or more of the drain lines can become clogged or completely obstructed by leaves, debris, towels, toys, etc. However, the pool/spa system will appear to be functioning normally, as there is still one functioning drain. An SVRS provides a quick release of a person's body or limb trapped on a drain.

## What features should I look for in an SVRS?

- Easy to install (within 30 minutes). It is recommended to have a pool professional install the SVRS.
- Self-monitoring, and low maintenance.
- Covered by a warranty of more than one year.
- Won't damage your pump when activated.
- Meets all requirements of the International Code Council — both the International Building Code (IBC) and the International Residential Code (IRC).
- Meets or exceeds all the ANSI/ASME performance standards for safety vacuum release systems.
- Constructed of non-corroding parts to ensure long life and superior performance.



*Vac-Aleri™ Model VA-2000 SVRS, with cutaway showing the interior.*



*The SVRS is mounted in the main drain suction line, close to the circulation pump.*

## How can I learn more?

Contact **Safe Kids Worldwide** at 202-662-0600, or [www.safekids.org](http://www.safekids.org), or **Safe Kids Grand Forks** at Altru Health System, 701-780-1489.

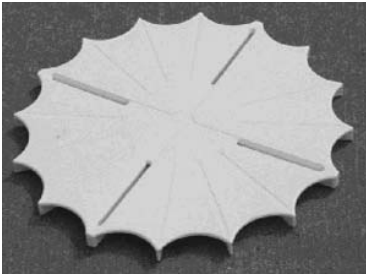


# Anti-Entrapment Drain Covers

Pools and spas can provide hours of fun and entertainment but there can also be hidden dangers for children and adults alike. Drowning can occur for a variety of reasons but entrapment hazards are often not highlighted or discussed when talking about pool safety. Safe Kids Grand Forks provides this information as a means of highlighting the dangers of entrapment in pools and spas. The following devices are methods which can prevent this type of injury or death.

The Star 100 and Anti-Hair Snare Plus covers both meet the current ASME/ANSI A112.19.8 performance requirements for preventing entrapment and also improved standard requirements under discussion and revision within the aquatic safety community. The two covers work in different ways to prevent the suction of the drain from causing body/limb entrapment, disembowelment, or hair entanglement. Each of these products are made with a UV inhibitor to keep the cover from breaking down as a result of exposure to sunlight. If a cover is broken, there is a higher risk of entrapment as the suction force is greater. If a drain cover is broken, stop the pump and close the pool or spa until it is replaced. Never operate any pool or spa if the drain cover is broken or missing. Below is more detailed information about how each of these covers work.

## Star 100



### General suction design:

Water flows underneath the cover through the scalloped edges, so the strongest suction is not pulling straight downward.

### Preventing body/limb entrapment and disembowelment:

The design, with a 13" diameter and scalloping along the edges, prevents the suction from making a complete seal and holding the person's body against the drain.

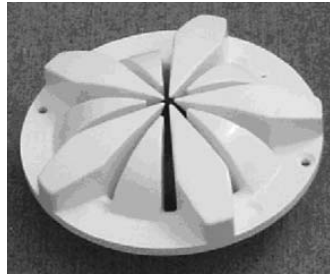
### Preventing hair entanglement:

The water flow through the rectangular holes in the drain cover is not strong enough to trap hair in or below the drain cover. (The flow through the rectangular holes is less than 1.2 feet per second if the pump flow rate is 80 gallons per minute; the existing maximum flow rate in the ASME/ANSI A112.19.8 standard is 1.5 feet per second.

The Star 100 cover is NOT recommended for use on a spa or hot tub, as larger pumps with higher flow rates are generally used in these. The Star 100 utilizes a low flow rate to qualify as an anti-entrapment cover. It is certified at 80 gallons per minute.

The Star 100 drain cover is manufactured by World Wide Sports, L.L.C.

## Anti-Hair Snare Plus



### Preventing body/limb entrapment and disembowelment:

The top of the drain cover has a dome shape with wedges at different heights. This prevents the suction from making a complete seal and holding a person's body against the drain.

### Preventing hair entanglement:

The shape of the wedges on the top of the cover prevents hair from getting caught – the hair naturally flows to the center of the cover and can be pulled out easily. The geometry of the design precludes hair entanglement. This is certified at 109 gallons per minute.

The anti-Hair Snare Plus cover can only be used in the HORIZONTAL position for the anti-entanglement feature to work correctly. This cover should not be used if the drain is positioned vertically.

The Anti-Hair Snare Plus drain cover is manufactured by Triodyne Safety Systems, L.L.C.



**For more information on entrapment hazards or general pool/water safety, contact Safe Kids Grand Forks at 701-780-1489 or visit [www.safekids.org](http://www.safekids.org) or [www.cpsc.gov](http://www.cpsc.gov).**