UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

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BALLOT VOTE SHEET

Date: November 28, 2012

TO : The Commission
Todd A. Stevenson, Secretary

THROUGH: Kenneth R. Hinson, Executive Director
Mary T. Boyle, Acting General Counsel

FROM : Barbara E. Little, Attorney, RAD

SUBJECT : Petition CP12-1; Petition for Classification of "BeeSafe System" as an Anti-Entrapment System under Virginia Graeme Baker Pool and Spa Safety Act ("VGB Act")

BALLOT VOTE DATE: December 4, 2012

Staff is forwarding to the Commission a briefing package concerning a petition (CP12-1) submitted by Bonnie Snow and Teri Snow requesting that the Commission initiate rulemaking to determine that "BeeSafe Systems," are equally effective, or better than, the other systems enumerated in the VGB Act. The staff recommends that the Commission deny the petition.

Please indicate your vote on the following options:

I. Grant Petition CP 12-1and direct staff to draft a notice of proposed rulemaking (NPRM).

_____ _____
Signature Date

II. Deny Petition CP12-1 and direct staff to draft a letter of denial to the petitioner.

_____ _____
Signature Date

III. Defer decision on Petition CP12-1.

_____ _____
Signature Date

IV. Take other action (please specify):

_____

_____

_____

_____ _____
Signature Date

Attachment: Staff Briefing Package for Petition CP12-1, Petition for Classification of "BeeSafe System" as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act

Staff Briefing Package

Petition CP12-1

Petition for Classification of "BeeSafe System" as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act

November 28, 2012

Contents

Executive Summary

The Virginia Graeme Baker Pool and Spa Safety Act (the Act) addresses entrapment hazards to bathers in public pools and spas due to the unseen forces generated by the water circulation system in these facilities. The Act requires that all drain covers in public pools and spas meet the requirements of ASME/ANSI A112.19.8, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot Tubs, and Whirlpool Bathtub Appliances*, and that single main drains, other than unblockable drains, be equipped with a secondary anti-entrapment device or system that is designed to prevent bather entrapment on the drain cover. The ANSI/APSP-16 2011 standard, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs*, has been adopted as the successor to the ASME/ANSI standard, effective September 6, 2011. The Act specifically describes five secondary anti-entrapment devices or systems that may be used in order to be in compliance with the law: (I) a safety vacuum-release system, (II) a suction-limiting vent system, (III) a gravity drainage system, (IV) an automatic pump shut-off system, and (V) drain disablement. An additional provision is made to allow for future development of secondary anti-entrapment systems. Section 1404(c)(1)(A)(ii)(VI) of the Act states that other systems ". . . 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" may be used in order to be compliant with the Act.

BeeSafe Systems, LLC, petitioned the U.S. Consumer Product Safety Commission (CPSC) to find that its products, the BeeSafe Model 1 and the BeeSafe Model 2 qualify as "other systems" that are equally effective as the five secondary systems enumerated in the Act. A Commission determination to that effect would mean that no additional anti-entrapment safety device or system would be required to be installed in pools or spas equipped with the BeeSafe products.

The BeeSafe Model 1 and Model 2 are intended to be permanently mounted only on concrete or aluminum swimming pool floors. They are installed using an adhesive specified by the manufacturer, as well as stainless steel screws, which are included with the product when it is purchased. The BeeSafe products may be mounted over an existing sump, or over a drain pipe that simply terminates at the pool floor. Both models function by collecting water from a large number of small tubes located around the periphery of the device, and channeling it toward what is, in effect, an integral centralized sump where the water is collected. The Model 2 is a smaller version of the Model 1.

Staff evaluated the design and the performance of the two products. When all parts are properly installed, both products effectively prevent all types of hazards addressed by the Act when used at their rated water flow rates.

Staff compared the features of the BeeSafe products to the five secondary anti-entrapment methods enumerated in the Act: safety vacuum-release system (SVRS), suction-limiting vent system, gravity drainage system, automatic pump shut-off, and a drain disablement device or system. A distinguishing feature of all of the approved systems is that they function by limiting the suction available to the drain cover. The BeeSafe products perform their function by denying bathers access to the suction outlet; therefore, staff considers these products to be primary, and not secondary, anti-entrapment devices.

Both BeeSafe products feature a removable center cover. This cover is removed in order to aid in winterizing the pool or to allow maintenance on circulation piping located beneath the product. When this cover is removed, or if it is broken, bathers have direct access to the suction outlet. With such direct access, limb entrapment, suction entrapment, and evisceration are possible.

CPSC staff tested the BeeSafe Model 1 and Model 2 products to the hair and suction entrapment portions of ANSI/APSP-16 with the removable cover not in place. The test specimen removal forces were in excess of the allowable limits set by the standard. The full-head-of-hair test specimen was drawn completely into the suction outlet by the flow of water. It should be noted that many primary entrapment-protection devices present the same hazards to bathers when their removable portions are not installed. That is, the hazards presented when removable portions of the drain cover are missing are not unique to the BeeSafe products.

A factor for consideration is the current definition of "unblockable drain." The Commission's September 2011 revocation of its interpretive rule defining an unblockable drain states explicitly: ". . . a blockable drain cannot be made unblockable by use of a cover alone." The BeeSafe products are effectively surface-mounted sumps with removable covers. Therefore, the use of the BeeSafe products as a single main drain would not adequately address the risk under the Commission's interpretation.

CPSC staff recommends denying the petition to approve the BeeSafe Model 1 and Model 2 as method 6, "other systems" in the Act, for the following reasons:

- the existing approved secondary-entrapment systems focus on limiting the suction available, not on denying bathers access to the suction hazard. The BeeSafe products are located at the suction hazard itself and in no way limit the available suction.
- many of the injuries associated with drain covers occur when the cover, or portion of the cover, is missing. If the removable portions of the products are missing, both of the BeeSafe products effectively become blockable drains, exposing bathers to suction hazards in excess of the limits prescribed in the applicable standard, without the benefit of any secondary entrapment device.

Therefore, CPSC staff concludes that the BeeSafe systems are not "other systems" that are "equally effective as, or better than" the five backup systems enumerated in Section 1404(c)(1)(A)(ii)(VI) of the Act.

BeeSafe Petition Team Members

Mark Eilbert, Mechanical Engineer, Laboratory Sciences, Division of Mechanical Engineering

Kevin Gipson, Mathematical Statistician, Directorate for Epidemiology, Division of Hazard Analysis

Barbara Little, Attorney, Office of the General Counsel

Stefanie Marques, Physiologist, Health Sciences, Division of Pharmacology and Physiology

Dale Ray, Economist, Directorate for Economic Analysis

Perry Sharpless, BeeSafe Petition Project Manager, Laboratory Sciences, Division of Mechanical Engineering

Timothy Smith, Engineering Psychologist, Division of Human Factors

Troy Whitfield, Mechanical Team Lead, Division of Regulatory Enforcement, Office of Compliance and Field Operations

Foreword

Since the enactment of the Virginia Graeme Baker Pool and Spa Safety Act (the Act), the pool industry has updated the terminology used to describe various features associated with pool circulation systems. These changes were made in an attempt to avoid confusing different parts of a pool with one another. Thus, certain terms used to describe pool components within the Act no longer appear in the applicable standard. An example is the term "cover." When used in the context of circulation systems, the pool and spa industry has replaced the term "cover" with the term "cover/grate." This change was made to avoid confusion with winter and solar covers that are placed over the entire pool surface.

Another example is the term "drain." Within the industry, this term is now obsolete when used to refer to the water circulation system. In this context, the drain is now called the "suction outlet." Where "drain" is used in the legislation, it usually refers to the suction outlet, or more appropriately, the suction outlet fitting assembly (SOFA), which encompasses all parts of the sump, including the suction outlet, the sump, and the cover. The industry now solely uses the term "drain" to describe a fitting that serves, when the pool is closed for maintenance and bathers are not present, to empty the pool to a sewer or other waste system where the water is not intended to be returned to the pool.

To be consistent with the Act, in this document we use the terminology used in the Act, including "cover" and "drain," to describe pool components. Other relevant definitions and descriptions of terms are found on pages 9 and 10 of the briefing memorandum.

Where used in this document, the word "pool" means any of the structures specified in the Act. The word "bather" means any person engaged, in the words of the Act, in ". . . swimming or recreational bathing . . ." in the subject pool.

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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BETHESDA, MARYLAND 20814

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Memorandum

DATE: November 28, 2012

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Mary T. Boyle, Acting General Counsel
Kenneth R. Hinson, Executive Director

FROM: DeWane Ray, Executive Director
Office of Hazard Reduction and Identification

Perry N. Sharpless, BeeSafe Petition Project Manager
Directorate for Laboratory Sciences

SUBJECT: CP 12-1: Petition for Classification of "BeeSafe System" an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act

Introduction

The submerged components of a pool circulation system can create unseen hazards. When the circulation pump draws the water toward the drain, it creates an invisible force strong enough to hold adults against the pool floor. Escape can be impossible. A single 8-inch diameter drain opening, connected to a commonly available pool pump, can generate hold-down forces of several hundred pounds if completely blocked. In addition to the suction entrapment hazard, the pump suction can generate vacuum sufficient to eviscerate an individual who orients his or her body in the appropriate geometry over the cover. The suction hazard created by the circulation pump is not the only hazard associated with drain covers. Swimsuits, jewelry, and other items worn by bathers can be caught on the cover, even when the pump is turned off.

There are five types of hazards associated with pool circulation systems: body entrapment, limb entrapment, mechanical entrapment, hair entrapment, and evisceration.

Body entrapment injuries are associated with the flow of water into the drain cover. While no drain cover that meets the requirements of the Act would permit body entrapment when used at or below its rated water flow, body entrapments are possible if a cover, or a portion of a cover, is missing, or if the secondary anti-entrapment device servicing a blockable single main drain fails to function properly. Body entrapment injuries typically involve the torso, which can cover all or substantially all of the drain cover. When pliable human skin is placed in close proximity to the drain cover, the water that is being drawn into the drain by the circulation pump can draw a bather's skin tightly against the drain cover. Once any portion of the drain cover is blocked, the

water velocity through the remaining open area of the drain cover increases. Any skin adjacent to the open area of the drain cover is then more easily pulled down against the drain cover. The suction force in the already-blocked area of the drain cover, as well as through the remaining open area of the drain cover, also increases. Blockable drain covers, when coupled with sufficient circulation pump flow, can result in a person drowning due to the ability of the drain to hold a person underwater for as long as the suction is maintained. Typically, a bather experiencing body entrapment can be freed if the pump is subsequently turned off.

Limb entrapments typically occur when a drain cover is broken or missing, and a person's hand, arm, or foot becomes lodged in the broken drain cover or sump piping. Limb entrapments may occur with or without the circulation pump running. The result of the entrapment can be death by drowning.

Mechanical entrapments encompass all forms of entrapment associated with the openings of the drain cover or piping. They may involve sources other than the bather's body, and typically, do not involve forces induced by the pump suction. Typical sources of mechanical entrapment include: necklaces, rings, swimsuits, swimsuit strings or straps, ankle bracelets, dog tags, and similar items that become entangled in the drain cover, whether or not the pump is circulating water. The result of the entrapment can be death by drowning. Mechanical entrapment is the only type of hazard that does not require the bather's body to contact the drain cover in order to cause injury.

Hair entrapment results when the bather's hair is drawn into and beneath the drain cover. Turbulent flow of water within the sump can cause the bather's hair to become entangled in the cover preventing the bather from escaping before drowning. These entrapments can occur only while the circulation pump is operating. Unlike body entrapment, even if the pump is subsequently turned off after the entrapment occurs, the hair entanglement persists, and the bather remains trapped.

Evisceration injuries are the result of a bather's buttocks coming into contact with the drain in a very specific orientation. If the geometry of the drain is conducive to a person being able to orient his or her body over an area of concentrated flow into the drain cover, suction from the circulation pump can be powerful enough to draw the bather's intestines out of their body. Evisceration can occur with as little as 2.2 pounds per square inch (psi) pressure differential, which is easily attained by many pool circulation systems. These injuries usually occur when a drain cover is missing and the bather completely seals the open sump.

The Act was passed in December 2007 to address potential injuries related to publicly accessible pools, hot tubs, spas, and non-portable wading pools. The text of the Act, available in Tab A, mandated that publicly-accessible outdoor or indoor swimming pools, including in-ground and above-ground hot tubs, spas, portable spas, and non-portable wading pools, shall have drain covers installed that comply with the previously existing consensus standard jointly developed by the American Society of Mechanical Engineers (ASME) and American National Standards Institute (ANSI), namely ASME/ANSI A112.19.8, *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, Hot tubs and Whirlpool Bathtub Appliances*, or any successor standard.

ASME later withdrew from supporting this standard. Subsequently, ASME was replaced as a standards body by the Association of Pool and Spa Professionals (APSP). ASME/ANSI 112.19.8 was superseded by ANSI/APSP-16 (2011) *Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs*, which is the current successor standard.

Section 1404(c)(1)(A)(ii) of the Act provides that any public pool with a single main drain, other than an unblockable drain, shall be equipped with one or more of five specified devices or systems designed to prevent entrapment by pool or spa drains. The approved methods and a brief summary of their principles of operation are enumerated below.

SAFETY VACUUM-RELEASE SYSTEM (SVRS) — A safety vacuum-release system ceases operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected by means of a change in the pressure in the suction line.

SUCTION-LIMITING VENT SYSTEM — This type of system is designed so that if the drain is sufficiently blocked, as would be the case during an entrapment condition, air is drawn into the suction line of the pump through a vent that is open to the atmosphere. When air enters the pump suction line, it reduces the pump's ability to pump water, which reduces the suction supplied to the sump and drain cover. To be compliant with the Act, this system is required to be equipped with a tamper-resistant atmospheric opening. A conceptual schematic of this type of system is provided in Figure 1.

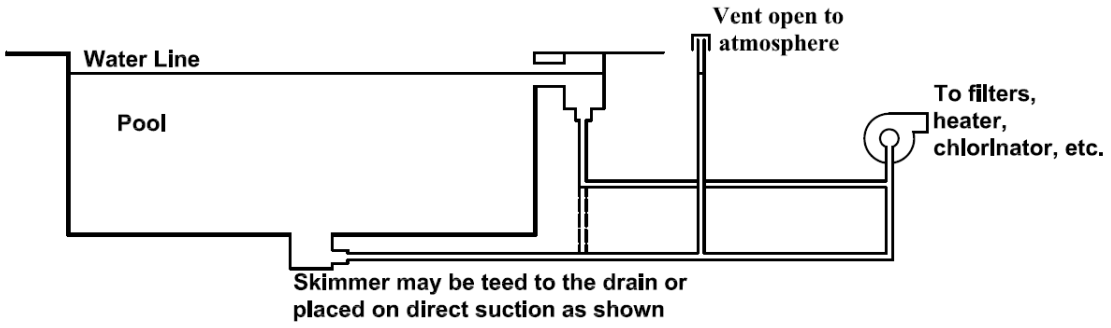


Figure 1. Components of a suction-limiting vent system.

GRAVITY DRAINAGE SYSTEM — In this system, there is no direct connection between the pool and the pump. Instead, a gravity drainage system incorporates a collector tank that is located in the suction lines between the pool and the pump. During operation, water is withdrawn from the collector tank by a circulation pump. The water is then filtered or heated, as required, before being returned to the pool. When the water level in the collector tank drops below the water level in the pool, gravity causes water in the pool to flow into the collector tank. Thus, the suction available at the drain cover is limited, and is governed by the relative vertical placement of the piping between the pool, the collector tank, and the pump. A schematic of this type of system is provided in Figure 2.

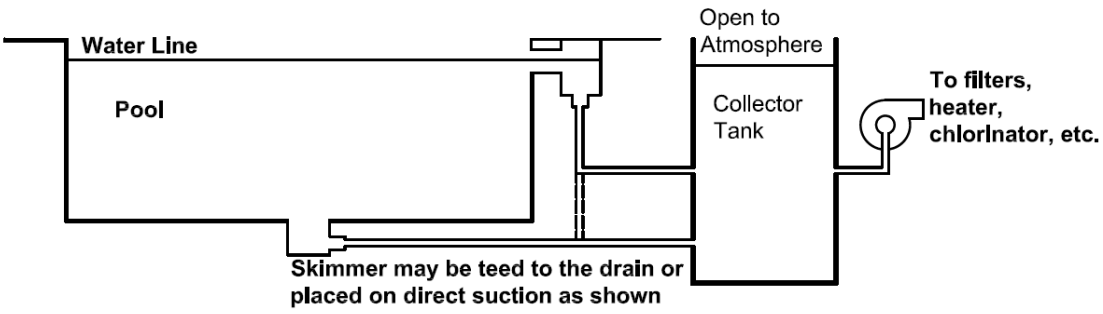


Figure 2. Components of a gravity drainage system.

AUTOMATIC PUMP SHUT-OFF SYSTEM — The Act does not provide any details or specifications of such a system. To meet the requirements of the Act, such a system would have to automatically detect a blockage at the drain cover and then shut-off the pump.

DRAIN DISABLEMENT — This is a device or system that disables the drain. The Act does not provide any additional details or specifications. To meet the requirements of the Act, such a system would have to automatically detect a blockage at the drain cover and then stop the flow of water from the drain.

ANSI/APSP-16 addresses performance requirements for pool drain covers. The objective of the standard is to provide recommended minimum guidelines for design, testing, and labeling requirements for pool drain covers that are designed to be used on submerged suction outlets, as well as determine the appropriate gallon-per-minute flow rating (gpm) for the cover. The standard covers various aspects related to drains, including the requirements for any fasteners used to secure covers, degradation of materials by ultraviolet light, mechanical properties of materials, propensity of hair to become entangled, the allowable values for hold-down forces generated on simulated human bodies due to the pump suction, entrapment, and requirements for installation instructions.

The Act places additional requirements on pools that have a single main drain that is not unblockable. Blockable drains are required to have one of the five specified back-up methods of preventing entrapment, or:

> "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."

BeeSafe Systems, LLP, is the first manufacturer to request a determination that its products be found to be an acceptable "other system" through which to achieve compliance with the Act.

Issue

BeeSafe Systems, LLP, petitioned the Commission to determine that its products, the BeeSafe Model 1 and Model 2, were suitable as an "other system" to comply with the Act. This petition asserts that the products are equally effective as, or better than, the five methods enumerated within the Act at preventing or eliminating the risk of injury or death associated with pool drainage systems. The complete text of the petition is available in Tab B.

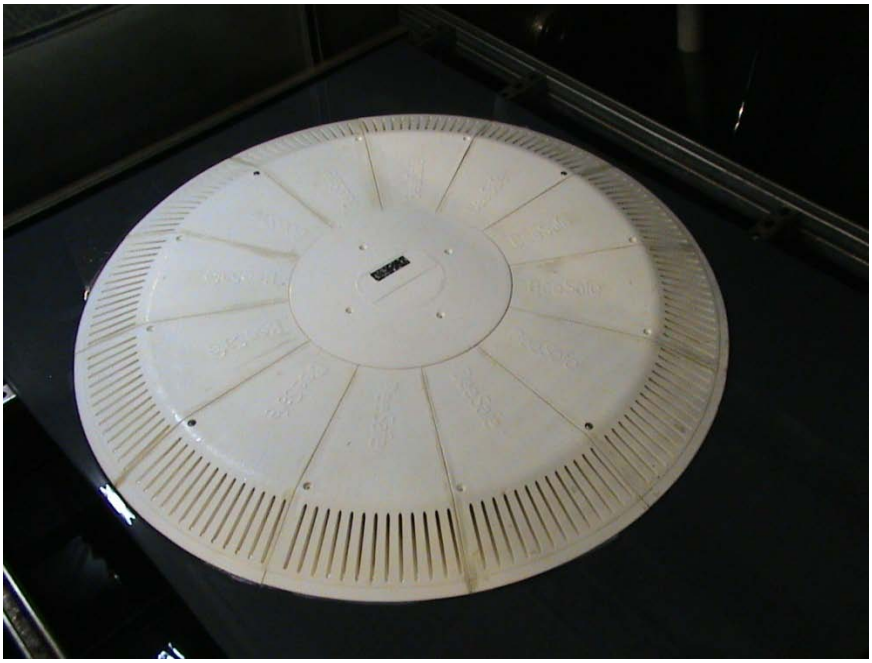
The Act requires that pools with a single main drain other than an unblockable drain must have one or more of the five approved secondary anti-entrapment systems installed to prevent entrapment by pool or spa drains. In the petition, BeeSafe Systems, LLP, asserts that its products are, indeed, as equally effective as the systems described in subclauses (I) through (V) of the Act at preventing or eliminating the risk of injury or death associated with pool drainage systems.

The petitioner emphasizes the unique patented feature of the device, which is a series of individual tubes that collect the water from the periphery of the product and direct it into what the company describes as an "internal sump."[1] The petitioner maintains "that an abundance of tubes combine to effectively eliminate the possibility of entrapment behind a grate. By using enough tubes in a large enough configuration all forms of entrapment are addressed."[2]

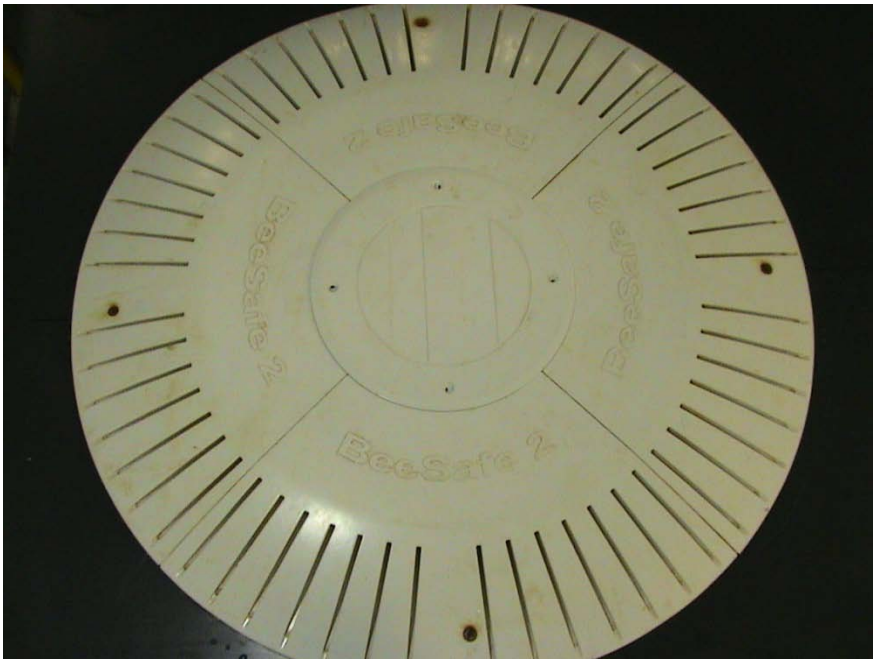
Product Description

Both the Model 1 and the Model 2 are relatively large circular devices that are intended to be mounted to the floor of a concrete or aluminum pool using Mr. Sticky's Underwater Glue and stainless steel screws. Photographs 1 and 2 show the two subject products. Water enters each device through a large number of slots around the perimeter. A removable winterizing cover is located in the center of each model. This cover, which is attached to the main body of the units with four Phillips-head screws, provides access to hydrostatic drains or other pool components that may be located underneath of the product.

[1] CPSC petition CP12-1, page 3
[2] Ibid



Photograph 1. Top view of BeeSafe Systems, LLP Model 1. Overall diameter is 46 inches.



Photograph 2. Top view of BeeSafe Systems, LLP Model 2. Overall diameter is 34 inches.

Installation of the product begins by positioning the product over the suction outlet, which may be an existing sump, or up to an 8-inch diameter pipe that terminates flush with the pool floor.[3] The product is attached to the pool floor by use of expanding type-316 alloy stainless steel anchors and type-316 alloy stainless steel screws. To attach the product to the pool, holes are drilled into the pool floor. The anchors are then hammered into the holes. The product is attached to the pool floor using the supplied stainless steel screws. The perimeter of the product is then sealed with Mr. Sticky's Underwater Glue, "around and slightly under the outside edge of the BeeSafe system."[4] The removable center cover is attached using the four included screws, and the installation is then complete.

The first page of the installation manual for the Model 2 describes the product as a "drain cover." Page 3 of the Model 2 installation manual states: "The type of fitting of the BeeSafe System is a submerged suction outlet. It is designed to make a single main drain unblockable, but for compliance with VGB can be used as an added layer of protection with an SVRS device or dual drains." These features combine to create a product that is essentially a surface-mounted sump and integral cover, which also has a removable center cover.

Discussion of Deaths, Injuries, and Incident Data (Tab C)

Fundamentally, deaths caused by drain covers are the result of disembowelment through evisceration, and drowning. Drowning can be caused by hair, limb, body, or mechanical entrapment. The types of injuries sustained by bathers from drain covers vary according to the nature of the entrapment hazard. These range from minor injuries, such as lacerations, contusions, and abrasions, to more severe injuries, such as fractures, rectal prolapses, and near-drowning submersions.

In the most recent study period, which spanned from January 1, 2008 to August 31, 2012, there were reports of two fatalities and 24 injuries. Three additional reports regarding drain covers included no apparent injury. During this period, 69 percent of the injuries occurred in public locations, while 28 percent occurred in residential locations. Most victims were young and female; 90 percent of the victims were under 18 years of age, and 72 percent of the victims were female.

Incidents involving missing or improperly installed drain covers were well represented in the injury data. Forty-six percent of the injuries involved accident scenarios in which the drain cover was loose or missing. Even more significantly, both of the fatalities occurred at locations in which the drain cover was loose or missing. In each fatal incident, there were no secondary anti-entrapment devices. The BeeSafe system would present a similar scenario if the removable center cover was missing. If the Commission granted the petition and considered BeeSafe products "other systems" status under section 1404(c)(1)(A)(ii)(VI) of the Act, the prevention of entrapment by the BeeSafe products would rely on the removable covers remaining in place without any backup system.

[3] BeeSafe Systems, LLC Model 2 installation manual, page 3.
[4] Ibid.

Review of Existing Standards (Tab D)

The Act established ASME/ANSI A112.19.8, or any successor standard, as the mandatory regulation governing drain covers manufactured for use on pools, spas, and wading pools. The current standard, ANSI/APSP-16, addresses not only entrapment hazards, but also requirements for structural integrity, determination of flow rating, labeling, and the packaging and installation instructions.

In addition to the ANSI/ASME standard for drain covers, the Act also cites standards that may be in existence for the secondary anti-entrapment devices or systems named in the Act. The status of standards for the secondary anti-entrapment systems referenced in the Act is as follows:

> **(I)** SAFETY VACUUM RELEASE SYSTEM (SVRS) - A safety vacuum release system is required to be tested by ". . . an independent third party and found to conform to ASME/ANSI A112.19.17-02 standard or ASTM F2387-04 (2012) standard."
>
> **(II)** SUCTION-LIMITING VENT SYSTEM - The current voluntary standard for suction-limiting vent systems is ASTM F2707-10, *Standard Safety Performance Specification for Safe Design and Installation of Field Fabricated Suction-Limiting Vent Systems for Suction Entrapment Prevention in Swimming Pools, Spas, Hot Tubs, and Wading Pools.*
>
> **(III)** GRAVITY DRAINAGE SYSTEM - Staff is not aware of any current, applicable standards for gravity drainage systems or collector tank specifications; however, the ASTM subcommittee F15.51 has a working draft for the safe design and installation of suction-limiting gravity systems for Suction Entrapment Prevention in Swimming Pools, Spas, Hot Tubs, and Wading Pools.
>
> **(IV)** AUTOMATIC PUMP SHUT-OFF SYSTEM - An automatic pump shut-off system would be a device similar to the SVRS, and the SVRS standards could be used to determine the effectiveness of the system in lieu of a dedicated standard.
>
> **(V)** DRAIN DISABLEMENT – This is a device or system that disables the drain. Staff is not aware of any current, applicable standards describing drain disablement methods.

Before issuance of the Act, the Association of Pool and Spa Professionals (APSP) developed a voluntary standard intended to address entrapment in pool facilities. ANSI/APSP-7 2006, *Standard for Suction Entrapment Avoidance,* covers similar issues identified in the Act. The standard, while not mandatory or discussed in the Act, covers design and performance criteria for circulation systems, including components, devices, and related technology installed to protect against entrapment hazards in residential and public swimming pools, wading pools, and spas. The standard applies to new construction and when retrofitting existing installations.

Results of Laboratory Testing (Tab E)

CPSC staff conducted laboratory testing to establish the validity of the petitioner's claims that the BeeSafe system is equally effective as, or better than, the systems described in the Act. The testing that was conducted consisted of those portions of ANSI/APSP-16 that dealt with hair entrapment (both the ponytail and full-head-of-hair tests), and body entrapment.

The BeeSafe Model 1 and Model 2 were tested for the manufacturer by the International Association of Plumbing and Mechanical Officials (IAPMO) to the ANSI/APSP-16 standard. CPSC staff used the rated flow published by the manufacturer as the basis for conducting the CPSC hair and body block tests. The goal was to verify the BeeSafe flow ratings. Ratings are established by determining the highest flow rate at which the pull-off forces for the ponytail, full head of hair, or body block all are less than or equal to the maximum values for each test, which are established in ANSI/APSP-16. When all parts of the BeeSafe Model 1 and Model 2 are properly installed, including the removable center covers, the CPSC laboratory testing results were in agreement, within acceptable measurement tolerances, with the marked flow ratings on the BeeSafe Models 1 and 2.

CPSC staff tested the BeeSafe Model 1 and Model 2 in the CPSC laboratory with the removable winterizing covers not installed for two reasons: (1) if accepted as an "other system" means of compliance, no additional anti-entrapment device would be required on pools where the products were installed, and (2) many injuries and all of the deaths during the study period occurred with portions of the drain covers missing. Without the winterizing covers installed, both the Model 1 and the Model 2 failed to meet the requirements of ANSI/APSP-16 at their rated flows.

The petitioner claims[5] that its products will meet the standard even without the winterizing cover installed. CPSC staff, however, found that the pull-off forces for the body-block tests exceeded the forces allowed by the standard. When CPSC staff conducted the full-head-of-hair tests, the simulated human head that was used to conduct the test was pulled completely into the winterizing cover opening, stopped only by the plumbing underneath of the product.

Discussion

The Act addresses hazards to bathers in public pools, spas, and wading pools due to the unseen forces generated by the water circulation system in these facilities. The Act requires that an ASME/ANSI A112.19.8-compliant drain cover (a primary anti-entrapment device) be installed over the drain, and that single main drains, other than unblockable drains, be equipped with a secondary anti-entrapment device or system that is designed to prevent bather entrapment on the drain cover. The Act embraces the concept of providing protection from death or injury through the use of layers of protection.

The Act specifically describes five secondary anti-entrapment devices or systems that may be used to comply with the law: (I) a safety vacuum-release system, (II) a suction-limiting vent system, (III) a gravity drainage system, (IV) an automatic pump shut-off system, and (V) drain

[5] CPSC petition CP12-1, pages 23, 24, and 26.

disablement. An additional provision allows for future development of secondary anti-entrapment systems. Section 1404(c)(1)(A)(ii)(VI) of the Act states that other systems ". . . 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" may be used to comply with the Act.

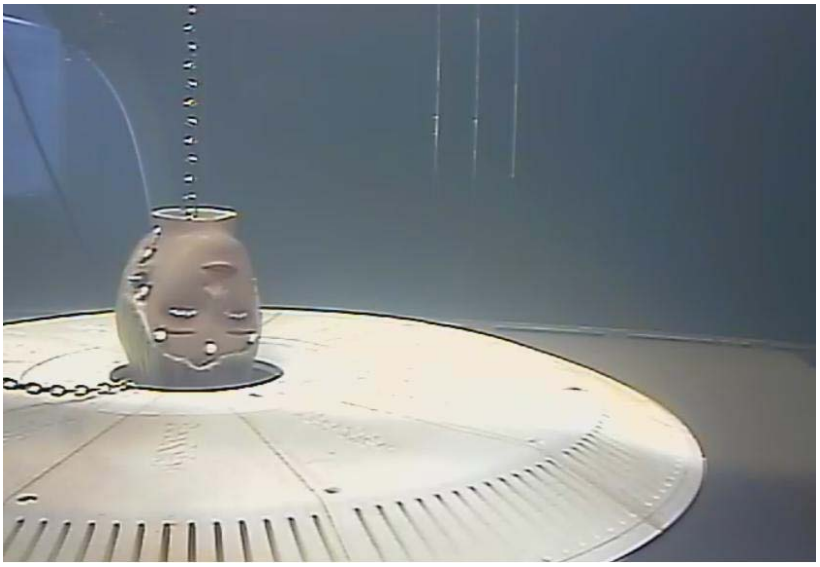
Staff considered the factors affecting whether a product or system could be considered equally effective as, or better than, the secondary systems described in subclauses (I) through (V) of this clause at preventing or eliminating the risk of injury or death associated with pool drainage systems. Each of these five stated methods affords protection by controlling or limiting the suction available to the drain, either through a passive means (suction-limiting vent system and gravity drainage systems), or by actively controlling the suction that is available to the drain (SVRS, automatic pump shutoff, and drain disablement).

According to the manufacturer's literature, the BeeSafe products are surface-mounted drain covers[6] with integral sumps.[7] Furthermore, the installation manual of the Model 2 states: "It is designed to make a single drain unblockable, but for compliance with the VGB can be used as an added layer of protection with an SVRS device or dual drains."[8] These statements effectively acknowledge that use of these products makes a blockable drain unblockable, and that regardless of whether a BeeSafe Model 1 or 2 is installed, a back-up system would be required.

It should be noted that the Commission's 2011 revocation of its previous interpretive rule defining an unblockable drain stated: ". . . a blockable drain cannot be made unblockable by the installation of a cover alone." This determination recognizes that many of the injuries associated with suction outlets occur due to missing or broken covers. If a cover is broken or missing on a blockable drain, bathers are directly exposed to entrapment hazards.

The BeeSafe petition states: "But what would happen if the winterizing lid were to go missing? The answer is simple: most likely nothing. There would be no body entrapment because the tubes would still be functioning and there would be no possibility of blocking them to create a suction entrapment."[9] In addition, the petition contends that "independent testing has shown that even if the cover were missing, BeeSafe Model 2 would not subject a body to entrapment . . .."[10] CPSC laboratory testing, however, revealed that not only do the products fail the body-blocking portion of APSP-16 when the winterizing cover is not installed, but that an adult human head can be drawn down into the exposed opening. Such a scenario is shown for the Model 1, pictured in photograph 3, and for the Model 2, pictured in photograph 4. CPSC laboratory testing determined that when tested at the rated flow, a force in excess of 150 pounds was required to extricate the simulated human head from the Model 2 winterizing cover hole when the winterizing cover was not installed. CPSC staff obtained similar results when testing the Model 1.

[6] BeeSafe Model 2 installation manual cover sheet.
[7] BeeSafe petition submission, page 14.
[8] BeeSafe Model 1 installation manual, page 3.
[9] BeeSafe petition submission, page 23.
[10] BeeSafe petition submission, page 24.



Photograph 3. Model 1 full-head-of-hair testing with winterizing cover removed.

Photograph 4. Model 2 full-head-of-hair testing with the winterizing cover removed. The simulated human head that is used for the full-head-of-hair testing was able to be drawn completely into the BeeSafe Model 2.

The manufacturer states on page 19 of the petition: "The screws require a specialty screwdriver and cannot be removed with a straight screw driver or knife." In fact, the screws that were provided with the three samples from the manufacturer for review during this petition were not specialty fasteners. Page 2 of the Model 2 installation manual includes a description of the contents of the box. The image shows the four screws that are used to secure the winterizing cover and describes them as "Phillips flat head machine screws," drivers for which are commonly available.

BeeSafe Systems, LLP, states in their petition: "BeeSafe Systems offer the best available option to avoid suction entrapment at the pool outlet even if the winterizing cover were to go missing."[11] This statement is contradicted by CPSC laboratory testing.

Staff Response to Public Comments (Tab F)

Two people submitted comments during the public comment period. One commenter urges denial of the petition, and one commenter favors granting the petition. A summary of each point raised in the comments is provided below, followed by staff's response.

Comment: *One commenter states that the BeeSafe system is designed with a removable suction outlet cover, and that covers can come off, break, or go missing. The commenter asserts that while the BeeSafe system protects against body and hair entrapment, it does not protect against limb entrapment. The commenter would "highly recommend" the BeeSafe system if it is incorporated with an additional back-up layer of protection. The commenter questions whether BeeSafe's unblockable suction outlet cover is approved under APSP-16.*

Response: Staff agrees that pools equipped with the BeeSafe products would require some kind of back-up system in order to comply with the Act. Staff is aware that suction outlet covers can be removed for maintenance, can break through use and aging, and that the screws can become lost. A safety vacuum-release system (SVRS) or other secondary system is required for most single suction outlets. The BeeSafe system cover plate can be detached by removing four screws, exposing an 8-inch diameter central hole that is close to the suction outlet located below the cover. Under these circumstances, testing performed by Commission staff shows that hair and body entrapments are possible. Depending on the function of a secondary system, an entrapment may not be released. For example, an SVRS provides entrapment protection by reducing or eliminating the low pressure that is causing entrapment, but SVRS devices do not effectively push out obstructions or relieve entrapments once they occur. Therefore, an entrapped limb that is mechanically trapped in a pipe may not be freed by the SVRS devices that are currently available. The BeeSafe Models 1 and 2 are certified to ASME/ANSI A112.19.17-2007, the predecessor to ANSI/APSP-16 2011. The manufacturer has provided documentation of third party testing establishing that the cover screws and the material strength of the assembled suction outlet conform to ANSI/APSP-16 requirements. Those requirements include all structural tests, except for the pull test. That test requires a finger grip or grasping edge. The BeeSafe products have no grasping edges when the cover plate is installed.

[11] BeeSafe petition submission, page 23.

Comment: *One commenter supports the petition and requests that the CPSC establish "well-defined performance criteria" under which a product may qualify as an "other system" in response to the petition.*

Response: The petition requests that the Commission evaluate the BeeSafe systems to determine whether they are equally effective as, or better than, the secondary anti-entrapment systems enumerated in the Act. Staff notes that all of the methods codified in the Act are secondary anti-entrapment systems that limit the suction that is available to the sump. The BeeSafe products, which are located at the suction hazard itself, are not secondary anti-entrapment systems, and they do not limit the suction available to the sump. Development of specific performance criteria beyond this, under which any product may qualify as an "other system" under the Act, is outside the scope of this petition.

Options Available to the Commission:

The options available to the Commission are:

- Grant the petition and direct CPSC staff to draft a notice of proposed rulemaking.
- Defer the petition, and direct staff to conduct further work on the matter.
- Deny the petition, and find that the BeeSafe Model 1 and Model 2 do not qualify as an "other system" means of complying with Section 1404(c)(1)(A)(ii)(VI) of the Act.

Recommendation

All of the methods of compliance codified in the Act address secondary anti-entrapment designs that limit the suction available at the drain. The BeeSafe Model 1 and Model 2 attempt to prevent bathers from becoming injured at the suction outlet itself; therefore, they constitute primary anti-entrapment devices. Furthermore, the BeeSafe products have covers that can come off, exposing bathers to suction hazards in excess of those allowed by APSP-16. Because the BeeSafe products can expose bathers to excessive suction hazards, and because they in no way limit the suction available, as the other codified methods do, they are not "equally effective as, or better than, the (other five backup) systems" enumerated in the Act. An additional factor for consideration is that the Commission indicated in the 2011 revocation of its interpretative rule defining an unblockable drain that a blockable drain cannot be made unblockable by the use of a cover alone. For these reasons, CPSC staff recommends that the Commission deny the petition.

TAB A: The Virginia Graeme Baker Pool and Spa Safety Act

TAB A

(ii) whether duplicative facilities are necessary or desirable.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to Congress a report that describes the results of the study conducted under subsection (a).

SEC. 1309. DOE STUDY OF SECURITY ATTRIBUTES OF SMART GRID SYSTEMS.

Deadline. Reports.

(a) DOE STUDY.—The Secretary shall, within 18 months after the date of enactment of this Act, submit a report to Congress that provides a quantitative assessment and determination of the existing and potential impacts of the deployment of Smart Grid systems on improving the security of the Nation's electricity infrastructure and operating capability. The report shall include but not be limited to specific recommendations on each of the following:

(1) How smart grid systems can help in making the Nation's electricity system less vulnerable to disruptions due to intentional acts against the system.

(2) How smart grid systems can help in restoring the integrity of the Nation's electricity system subsequent to disruptions.

(3) How smart grid systems can facilitate nationwide, interoperable emergency communications and control of the Nation's electricity system during times of localized, regional, or nationwide emergency.

(4) What risks must be taken into account that smart grid systems may, if not carefully created and managed, create vulnerability to security threats of any sort, and how such risks may be mitigated.

(b) CONSULTATION.—The Secretary shall consult with other Federal agencies in the development of the report under this section, including but not limited to the Secretary of Homeland Security, the Federal Energy Regulatory Commission, and the Electric Reliability Organization certified by the Commission under section 215(c) of the Federal Power Act (16 U.S.C. 824o) as added by section 1211 of the Energy Policy Act of 2005 (Public Law 109–58; 119 Stat. 941).

TITLE XIV—POOL AND SPA SAFETY

Virginia Graeme Baker Pool and Spa Safety Act. 15 USC 8001 note.

SEC. 1401. SHORT TITLE.

This title may be cited as the "Virginia Graeme Baker Pool and Spa Safety Act".

15 USC 8001.

SEC. 1402. FINDINGS.

Congress finds the following:

(1) Of injury-related deaths, drowning is the second leading cause of death in children aged 1 to 14 in the United States.

(2) In 2004, 761 children aged 14 and under died as a result of unintentional drowning.

(3) Adult supervision at all aquatic venues is a critical safety factor in preventing children from drowning.

(4) Research studies show that the installation and proper use of barriers or fencing, as well as additional layers of protection, could substantially reduce the number of childhood residential swimming pool drownings and near drownings.

SEC. 1403. DEFINITIONS. 15 USC 8002.

In this title:

(1) ASME/ANSI.—The term "ASME/ANSI" as applied to a safety standard means such a standard that is accredited by the American National Standards Institute and published by the American Society of Mechanical Engineers.

(2) BARRIER.—The term "barrier" includes a natural or constructed topographical feature that prevents unpermitted access by children to a swimming pool, and, with respect to a hot tub, a lockable cover.

(3) COMMISSION.—The term "Commission" means the Consumer Product Safety Commission.

(4) 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.

(5) 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.

(6) SWIMMING POOL; SPA.—The term "swimming pool" or "spa" means any outdoor or indoor structure intended for swimming or recreational bathing, including in-ground and above-ground structures, and includes hot tubs, spas, portable spas, and non-portable wading pools.

(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.

SEC. 1404. FEDERAL SWIMMING POOL AND SPA DRAIN COVER STANDARD. 15 USC 8003.

(a) CONSUMER PRODUCT SAFETY RULE.—The requirements described in subsection (b) shall be treated as a consumer product safety rule issued by the Consumer Product Safety Commission under the Consumer Product Safety Act (15 U.S.C. 2051 et seq.).

(b) DRAIN COVER STANDARD.—Effective 1 year after the date of enactment of this title, each swimming pool or spa drain cover manufactured, distributed, or entered into commerce in the United States shall conform to the entrapment protection standards of the ASME/ANSI A112.19.8 performance standard, or any successor standard regulating such swimming pool or drain cover. Effective date.

(c) PUBLIC POOLS.—

(1) REQUIRED EQUIPMENT.—

(A) IN GENERAL.—Beginning 1 year after the date of enactment of this title— Effective date.

(i) 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; and

(ii) 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 by pool or spa drains that meets the requirements of subparagraph (B):

(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.

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

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

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

(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.

(B) APPLICABLE STANDARDS.—Any device or system described in subparagraph (A)(ii) shall meet the requirements of any ASME/ANSI or ASTM performance standard if there is such a standard for such a device or system, or any applicable consumer product safety standard.

(2) PUBLIC POOL AND SPA DEFINED.—In this subsection, the term "public pool and spa" means a swimming pool or spa that is—

(A) open to the public generally, whether for a fee or free of charge;

(B) open exclusively to—

(i) members of an organization and their guests;

(ii) residents of a multi-unit apartment building, apartment complex, residential real estate development, or other multi-family residential area (other than a municipality, township, or other local government jurisdiction); or

(iii) patrons of a hotel or other public accommodations facility; or

(C) operated by the Federal Government (or by a concessionaire on behalf of the Federal Government) for the benefit of members of the Armed Forces and their dependents or employees of any department or agency and their dependents.

(3) ENFORCEMENT.—Violation of paragraph (1) shall be considered to be a violation of section 19(a)(1) of the Consumer Product Safety Act (15 U.S.C. 2068(a)(1)) and may also be enforced under section 17 of that Act (15 U.S.C. 2066).

15 USC 8004.

SEC. 1405. STATE SWIMMING POOL SAFETY GRANT PROGRAM.

(a) IN GENERAL.—Subject to the availability of appropriations authorized by subsection (e), the Commission shall establish a grant program to provide assistance to eligible States.

(b) ELIGIBILITY.—To be eligible for a grant under the program, a State shall—

(1) demonstrate to the satisfaction of the Commission that it has a State statute, or that, after the date of enactment of this title, it has enacted a statute, or amended an existing statute, and provides for the enforcement of, a law that—

(A) except as provided in section 1406(a)(1)(A)(i), applies to all swimming pools in the State; and

(B) meets the minimum State law requirements of section 1406; and

(2) submit an application to the Commission at such time, in such form, and containing such additional information as the Commission may require.

(c) AMOUNT OF GRANT.—The Commission shall determine the amount of a grant awarded under this title, and shall consider—

(1) the population and relative enforcement needs of each qualifying State; and

(2) allocation of grant funds in a manner designed to provide the maximum benefit from the program in terms of protecting children from drowning or entrapment, and, in making that allocation, shall give priority to States that have not received a grant under this title in a preceding fiscal year.

(d) USE OF GRANT FUNDS.—A State receiving a grant under this section shall use—

(1) at least 50 percent of amounts made available to hire and train enforcement personnel for implementation and enforcement of standards under the State swimming pool and spa safety law; and

(2) the remainder—

(A) to educate pool construction and installation companies and pool service companies about the standards;

(B) to educate pool owners, pool operators, and other members of the public about the standards under the swimming pool and spa safety law and about the prevention of drowning or entrapment of children using swimming pools and spas; and

(C) to defray administrative costs associated with such training and education programs.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Commission for each of fiscal years 2009 and 2010 $2,000,000 to carry out this section, such sums to remain available until expended. Any amounts appropriated pursuant to this subsection that remain unexpended and unobligated at the end of fiscal year 2010 shall be retained by the Commission and credited to the appropriations account that funds enforcement of the Consumer Product Safety Act.

SEC. 1406. MINIMUM STATE LAW REQUIREMENTS. 15 USC 8005.

(a) IN GENERAL.—

(1) SAFETY STANDARDS.—A State meets the minimum State law requirements of this section if—

(A) the State requires by statute—

(i) the enclosure of all outdoor residential pools and spas by barriers to entry that will effectively prevent small children from gaining unsupervised and unfettered access to the pool or spa;

(ii) that all pools and spas be equipped with devices and systems designed to prevent entrapment by pool or spa drains;

(iii) that pools and spas built more than 1 year after the date of the enactment of such statute have—

(I) more than 1 drain;

(II) 1 or more unblockable drains; or

(III) no main drain;

(iv) every swimming pool and spa that has a main drain, other than an unblockable drain, be equipped with a drain cover that meets the consumer product safety standard established by section 1404; and

(v) that periodic notification is provided to owners of residential swimming pools or spas about compliance with the entrapment protection standards of the ASME/ANSI A112.19.8 performance standard, or any successor standard; and

Notification. Comment period.

(B) the State meets such additional State law requirements for pools and spas as the Commission may establish after public notice and a 30-day public comment period.

(2) NO LIABILITY INFERENCE ASSOCIATED WITH STATE NOTIFICATION REQUIREMENT.—The minimum State law notification requirement under paragraph (1)(A)(v) shall not be construed to imply any liability on the part of a State related to that requirement.

(3) USE OF MINIMUM STATE LAW REQUIREMENTS.—The Commission—

(A) shall use the minimum State law requirements under paragraph (1) solely for the purpose of determining the eligibility of a State for a grant under section 1405 of this Act; and

(B) may not enforce any requirement under paragraph (1) except for the purpose of determining the eligibility of a State for a grant under section 1405 of this Act.

(4) REQUIREMENTS TO REFLECT NATIONAL PERFORMANCE STANDARDS AND COMMISSION GUIDELINES.—In establishing minimum State law requirements under paragraph (1), the Commission shall—

(A) consider current or revised national performance standards on pool and spa barrier protection and entrapment prevention; and

(B) ensure that any such requirements are consistent with the guidelines contained in the Commission's publication 362, entitled "Safety Barrier Guidelines for Home Pools", the Commission's publication entitled "Guidelines for Entrapment Hazards: Making Pools and Spas Safer", and any other pool safety guidelines established by the Commission.

(b) STANDARDS.—Nothing in this section prevents the Commission from promulgating standards regulating pool and spa safety or from relying on an applicable national performance standard.

(c) BASIC ACCESS-RELATED SAFETY DEVICES AND EQUIPMENT REQUIREMENTS TO BE CONSIDERED.—In establishing minimum State law requirements for swimming pools and spas under subsection (a)(1), the Commission shall consider the following requirements:

(1) COVERS.—A safety pool cover.

(2) GATES.—A gate with direct access to the swimming pool or spa that is equipped with a self-closing, self-latching device.

(3) DOORS.—Any door with direct access to the swimming pool or spa that is equipped with an audible alert device or alarm which sounds when the door is opened.

(4) POOL ALARM.—A device designed to provide rapid detection of an entry into the water of a swimming pool or spa.

(d) ENTRAPMENT, ENTANGLEMENT, AND EVISCERATION PREVENTION STANDARDS TO BE REQUIRED.—

(1) IN GENERAL.—In establishing additional minimum State law requirements for swimming pools and spas under subsection (a)(1), the Commission shall require, at a minimum, 1 or more of the following (except for pools constructed without a single main drain):

(A) 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, or any successor standard.

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

(C) GRAVITY DRAINAGE SYSTEM.—A gravity drainage system that utilizes a collector tank.

(D) AUTOMATIC PUMP SHUT-OFF SYSTEM.—An automatic pump shut-off system.

(E) DRAIN DISABLEMENT.—A device or system that disables the drain.

(F) OTHER SYSTEMS.—Any other system determined by the Commission to be equally effective as, or better than, the systems described in subparagraphs (A) through (E) of this paragraph at preventing or eliminating the risk of injury or death associated with pool drainage systems.

(2) APPLICABLE STANDARDS.—Any device or system described in subparagraphs (B) through (E) of paragraph (1) shall meet the requirements of any ASME/ANSI or ASTM performance standard if there is such a standard for such a device or system, or any applicable consumer product safety standard.

SEC. 1407. EDUCATION PROGRAM. 15 USC 8006.

(a) IN GENERAL.—The Commission shall establish and carry out an education program to inform the public of methods to prevent drowning and entrapment in swimming pools and spas. In carrying out the program, the Commission shall develop—

(1) educational materials designed for pool manufacturers, pool service companies, and pool supply retail outlets;

(2) educational materials designed for pool owners and operators; and

(3) a national media campaign to promote awareness of pool and spa safety.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Commission for each of the fiscal years 2008 through 2012 $5,000,000 to carry out the education program authorized by subsection (a).

15 USC 8007.

SEC. 1408. CPSC REPORT.

Not later than 1 year after the last day of each fiscal year for which grants are made under section 1405, the Commission shall submit to Congress a report evaluating the implementation of the grant program authorized by that section.

TITLE XV—REVENUE PROVISIONS

SEC. 1500. AMENDMENT OF 1986 CODE.

Except as otherwise expressly provided, whenever in this title an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1986.

SEC. 1501. EXTENSION OF ADDITIONAL 0.2 PERCENT FUTA SURTAX.

26 USC 3301.

(a) IN GENERAL.—Section 3301 (relating to rate of tax) is amended—

(1) by striking "2007" in paragraph (1) and inserting "2008", and

(2) by striking "2008" in paragraph (2) and inserting "2009".

26 USC 3301 note.

(b) EFFECTIVE DATE.—The amendments made by this section shall apply to wages paid after December 31, 2007.

SEC. 1502. 7-YEAR AMORTIZATION OF GEOLOGICAL AND GEOPHYSICAL EXPENDITURES FOR CERTAIN MAJOR INTEGRATED OIL COMPANIES.

26 USC 167.

(a) IN GENERAL.—Subparagraph (A) of section 167(h)(5) (relating to special rule for major integrated oil companies) is amended by striking "5-year" and inserting "7-year".

26 USC 167 note.

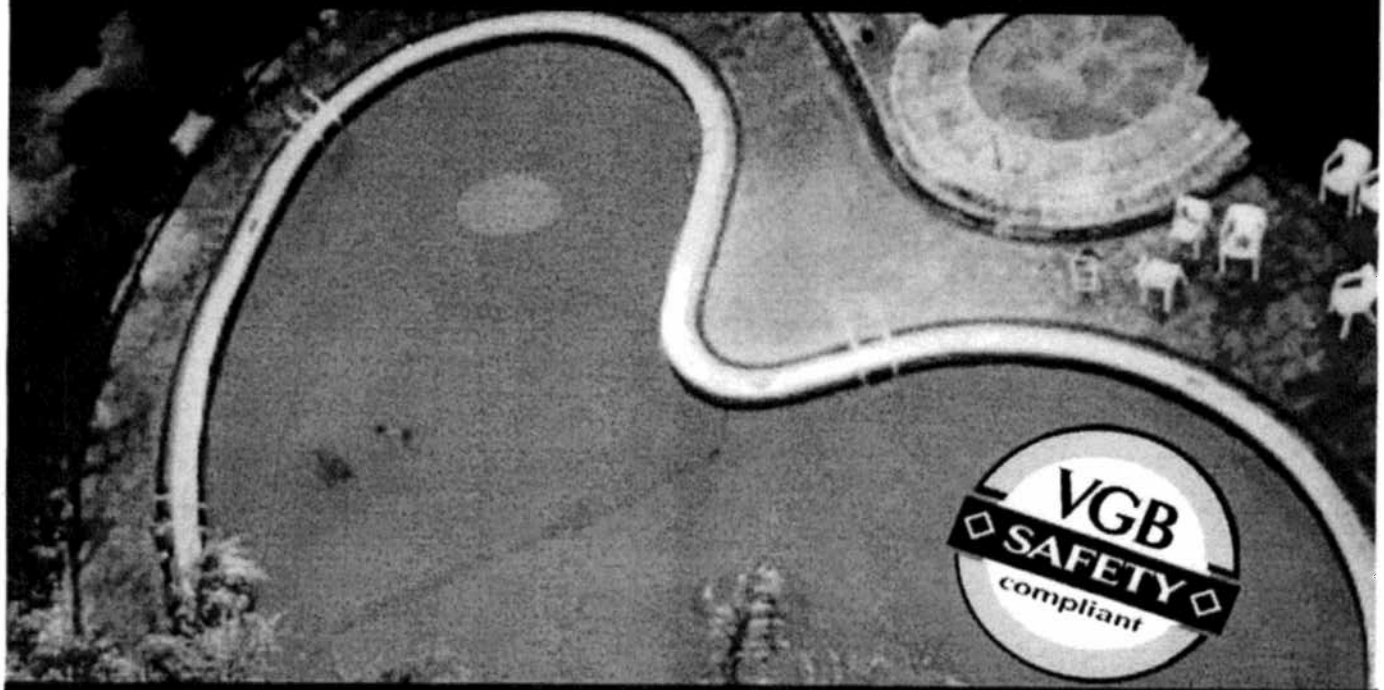
(b) EFFECTIVE DATE.—The amendment made by this section shall apply to amounts paid or incurred after the date of the enactment of this Act.

TAB B: Petition from BeeSafe Systems, LLP

TAB B

Petition

Bonnie Snow and Teri Snow owners of BeeSafe Systems are Requesting Equal to or Better Than Status of the Virginia Graham Baker Act from The Consumer Product Safety Commission.



H.R. 6—303 to 309
Title XIV—Pool and Spa Safety Act

Section 1404. FEDERAL SWIMMING POOL AND SPA DRAIN COVER STANDARD

(c) PUBLIC POOLS

(1) REQUIRED EQUIPMENT

(A) IN GENERAL.—Beginning 1 year after the date of enactment of this title—

(i) 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; and (ii) 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 by pool or spa drains that meets the requirements of subparagraph (B):

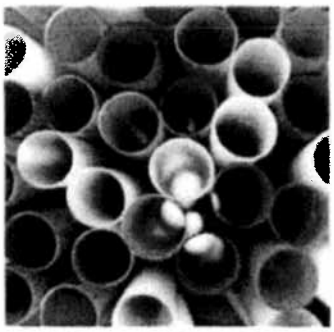
(VI) OTHER SYSTEMS.—Any other system determined by the Commission to be equally effective as, or better than, the systems described in subclauses (I) through (V) of this clause at preventing or eliminating the risk of injury or death associated with pool drainage systems.

BeeSafe SYSTEMS, LLP

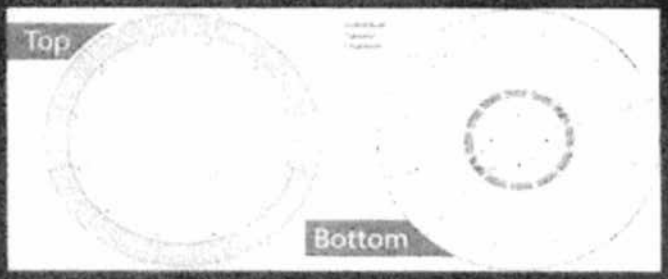
795 W Center Street Provo, Utah 84601 • Phone 801-375-6881 • Fax 801-691-5761 • beesafesystems@gmail.com • www.beesafesystems.com

Table of contents

I. Introduction

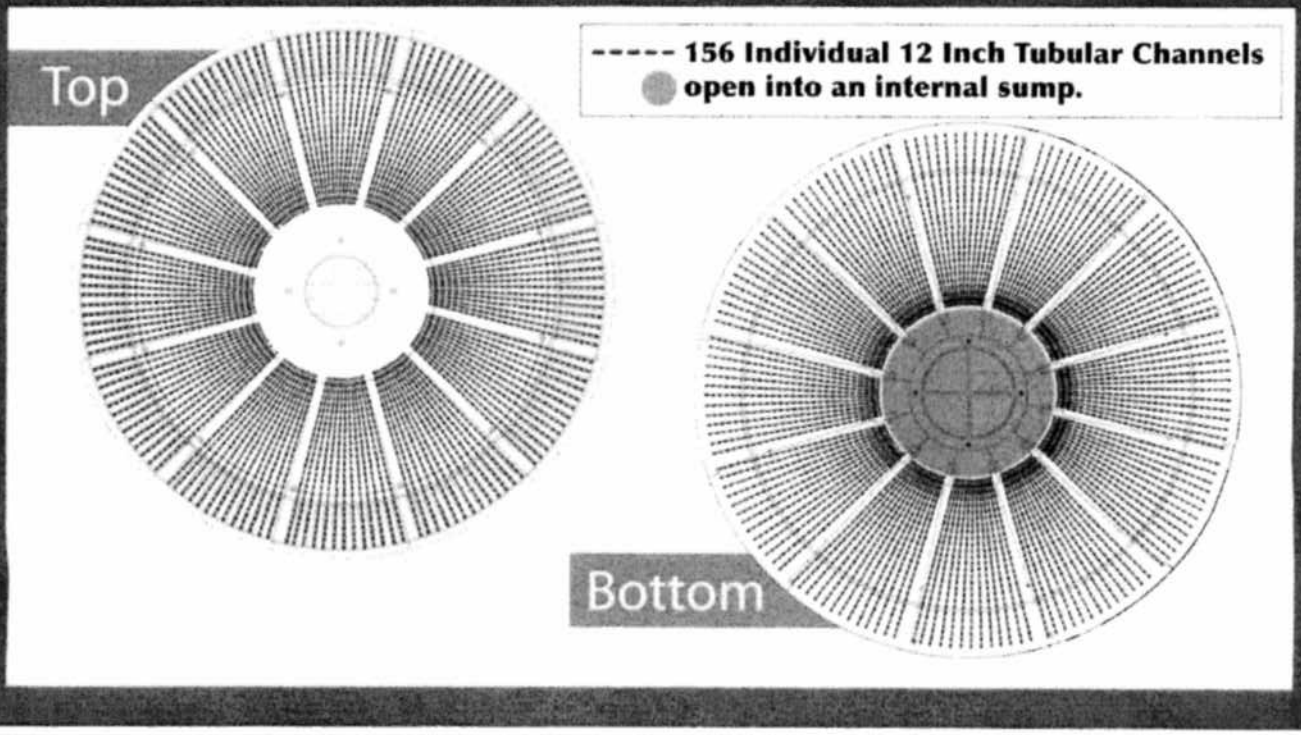


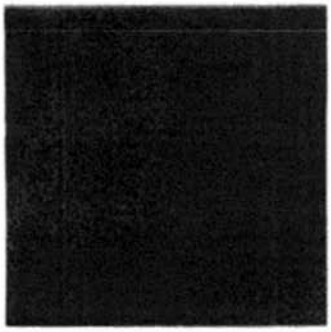
Designing the best solution to avoid all entrapment hazards.

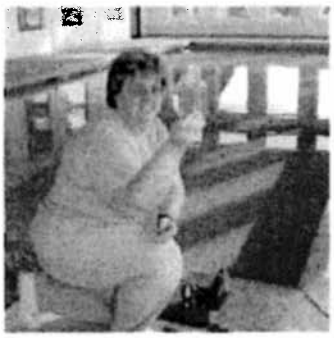


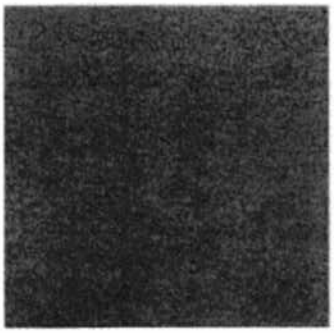
This paper covers the advantages of the BeeSafe System as well as makes comparisons to the other acceptable methods to bring pools into compliance with the Virginia Graeme Baker Pool and Spa Safety Act (VGB Act). The purpose is to present all of the necessary material to warrant action by the Commission to classify the BeeSafe System as (VI) equally effective, or better than, the systems described in subclauses (I) through (V) of this clause (VGB Act) at preventing or eliminating the risk of injury or death associated with pool drainage systems. We begin with a discussion of the most defining feature of our system.

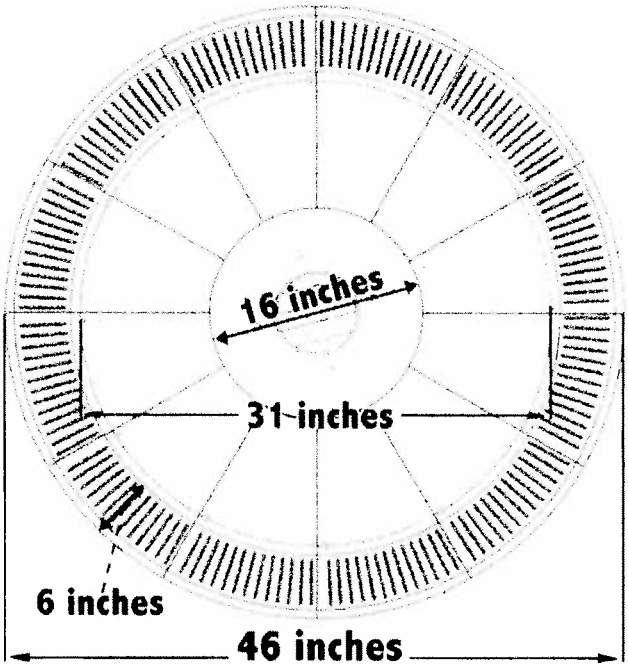
The one obvious feature of the BeeSafe System that makes it unique, and is the patented feature of our company, is the tube. We avoid entrapments with the use of many long tubes. Initially we thought of straws that water will flow through when suction is applied. We found that an abundance of tubes combine to effectively eliminate the possibility of entrapment behind a grate. By using enough tubes in a large enough configuration all forms of entrapment are addressed.







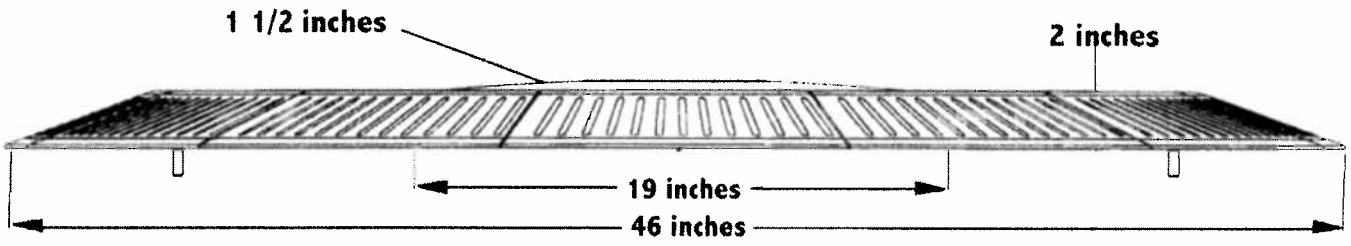




II. Background Information

A. BeeSafe Systems

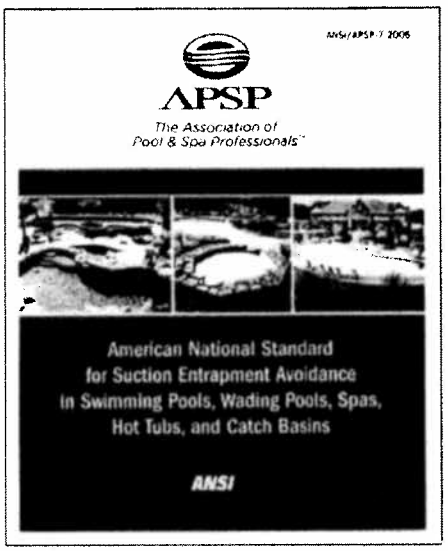
BeeSafe Systems, LLP is a small company that's one and only purpose for becoming a business was and is to produce the ultimate answer to resolving the problem of entrapment that is associated with swimming pool main drains. Bonnie Snow was an Environmental Health Scientist with Utah County from 1993 to 2006 and worked as an inspector of swimming pools as well as many other inspections. Her daughter, Teri Snow worked as a graphic designer from 1995 to 2006 and she brought her talents and background to the company to provide visual marketing of our product. Together they have developed, patented, and produced the BeeSafe System as the best possible solution for avoiding entrapment in swimming pools. Their products are large and meet the standard definition of unblockable as found in the pool industry literature and in the Virginia Graeme Baker Pool and Spa Safety Act (VGB Act). But there is so much more than just the size of these products that make them the best solution and reason why BeeSafe Systems should be considered as equally as effective as or better than either dual main drains or a single drain that is supplied with a secondary back-up system as described in the VGB Act.



B. Virginia Graeme Baker

When Virginia Graeme Baker died from an entrapment in a private spa, inspectors of swimming pools became more aware of the hazards associated with pool drains and anticipated the changes that needed to be made. There were very few products available and the pool industry was in transition to determine and develop new ways to resolve the issues. Starting with inspections in 2003 the inspector who developed the BeeSafe System started to recommend that each pool owner/operator try to find the best solution to avoid entrapment with their drains. Quickly these pool people let her know that there were no solutions available for the square openings of most of the Utah County pool drains. Additionally they let her know that the available solutions were not being recommended by the professionals at the pool stores.

The first anti-entrapment covers were introduced as anti-vortex drain covers but these proved to be equally if not more hazardous as the problem with hair entanglement increased and most of these products eventually were recalled or replaced by the companies that made them.

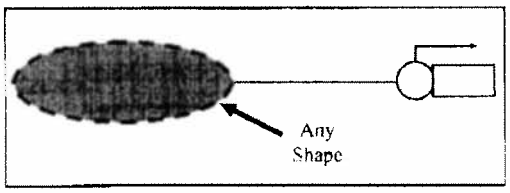


C. APSP Standard 2006

Between 2002 and 2006 a group of over 50 people who represented many companies and agencies concerned with the entrapment problem joined together to write a recommendation standard as a guideline for the development of safer drain covers. This resulted in the ANSI / APSP -7 2006 Standard that was titled: *American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs and Catch Basins.* This guideline was studied carefully and the information and pictures there provided us with the inspiration for development of the BeeSafe System.

Emphasis of the guideline was on making changes in the drain cover. The cover is the component of the drain or suction outlet for a pool that comes into contact with the bather and is the point of entrapment. Small covers that can be completely covered by a bather are the most likely to be involved in entrapment accidents (especially body and evisceration accidents).

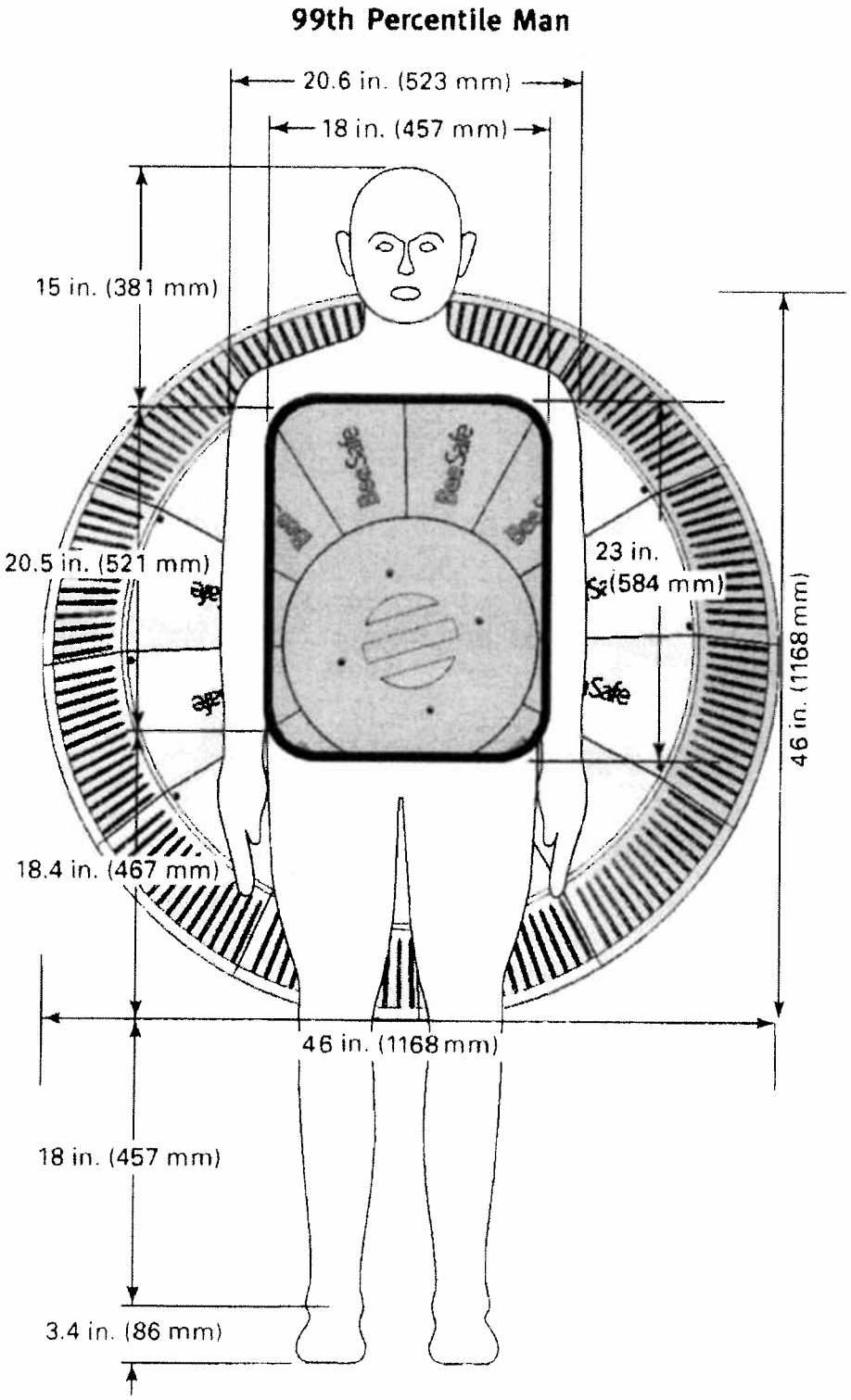
The obvious best answer becomes a cover or system that greatly reduces the suction force at the surface of the drain to avoid entrapment without reducing the flow through the drain system that is necessary to keep the pool in good chemical balance and able to reduce bacterial contaminants. The guidelines led us to the designing of the BeeSafe System, a large 46 inch diameter cover that weighs over 90 pounds. The system is placed over the existing sump or other outlet system. It then address all forms of entrapment, not just body entrapment. Better than any other available solution, the BeeSafe system addresses all of the other potential hazards for suction entrapment.

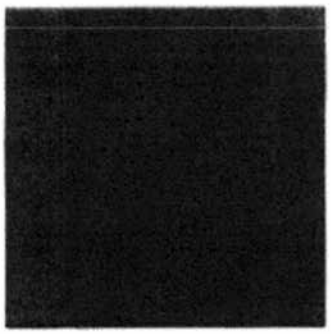


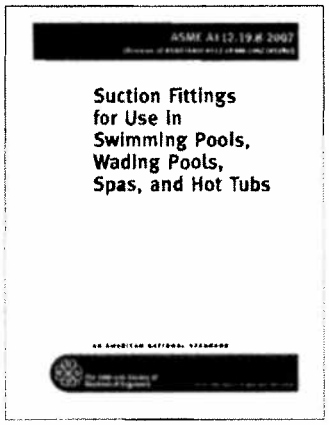
Large unblockable outlet of any shape to single pump

It is important to note that the definition specifically states covers without reference to the sump or any other component of the drain system.

After long consideration of the problem and the recommendations of the professionals, we decided that the reference to an unblockable drain would be the best possible solution. The exact wording of the guideline is found in section 5.5.2 Single unblockable outlet. (See Figure 13.) Single unblockable covers shall be of any size and shape that a representation of the torso of the 99th percentile adult male cannot sufficiently block it to the extent that it creates a body suction entrapment hazard. The torso is represented as a rectangle 18 inches x 23 inches (457 mm x 584 mm) with corners of radius 4 inches (102 mm).



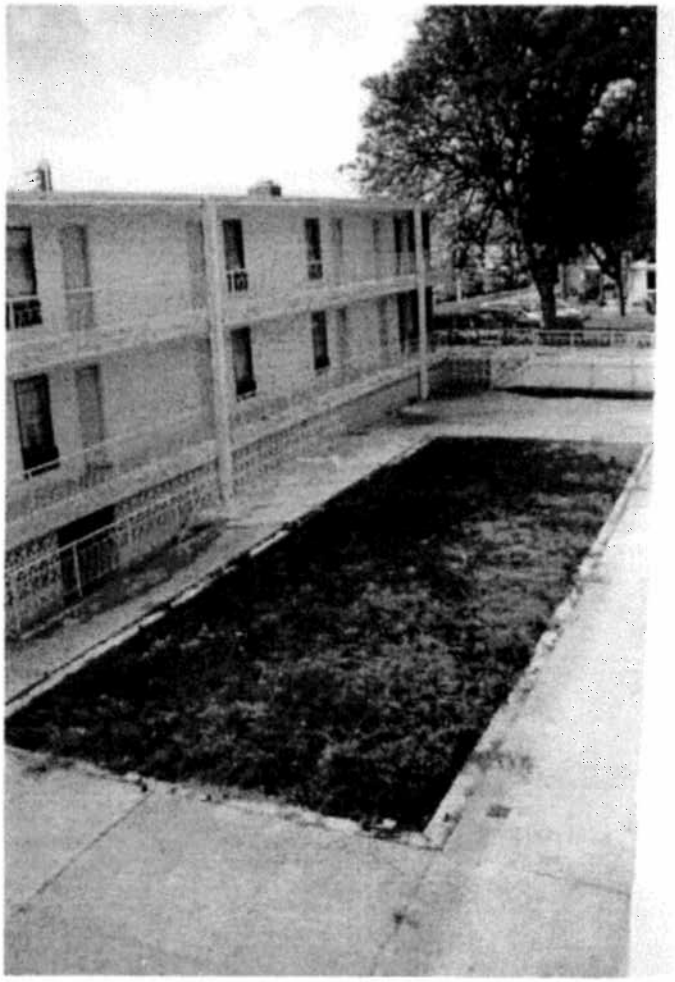




D. ASME A112.19.8-2007 +

The ASME A112.19.8-2007 Standard was the original testing standard for products to become compliant with the VGB Act. Over the past four years there have been newer versions of a-2008, b-2009 and now an APSP Standard that has been modified at least twice. With each change, there are pools that have been modified that need to make further modifications to remain in compliance. This coupled with the recall and reversal of the decision on unblockable drains has left the industry and pool owners even more confused and apprehensive about costly remodeling. Many pools across the country chose to close their pool rather than go to the expense of remodeling. This has resulted in fewer facilities for children to take swimming lessons. Home owned pools, that have been teaching facilities, now need to meet the requirements of public pools so many no longer offer lessons. When children don't learn to swim the number of drowning (entrapment or other cases of drowning) only increases.

The BeeSafe System, if considered as another option, could be used in pools that otherwise will remain closed.



III. Virginia Graeme Baker Pool and Spa Safety Act.

Congress finds the following:

(1) Of injury-related deaths, **drowning is the second leading cause of death in children aged 1 to 14** in the United States.

(2) In 2004, **761 children aged 14 and under died as a result of unintentional drowning.**

(3) Adult supervision at all aquatic venues is a critical safety factor in preventing children from drowning.

(4) Research studies show that the installation and proper use of barriers or fencing, as well as **additional layers of protection,** could substantially reduce the number of childhood residential swimming pool drowning and near drownings.

(1) REQUIRED EQUIPMENT.--

(A) IN GENERAL.—Beginning 1 year after the date of enactment of this title—

(i) 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; and (ii) 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 by pool or spa drains that meets the requirements of subparagraph (B):

(I) SAFETY VACUUM RELEASE SYSTEM.—A safety vacuum release system which ceases operation of H. R. 6—305 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 A112.19.7 or ASTM standard F2387.

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

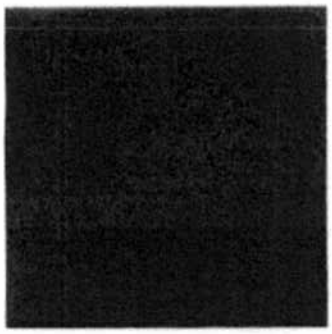
(III) GRAVITY DRAINAGE SYSTEM.—A gravity drainage system that utilizes a collector tank.

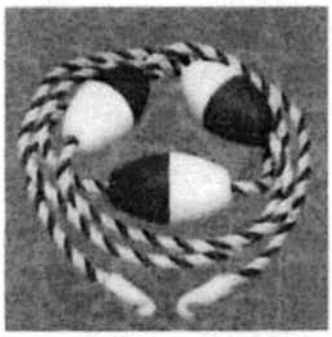
(IV) AUTOMATIC PUMP SHUT-OFF SYSTEM.-An automatic pump shut-off system.

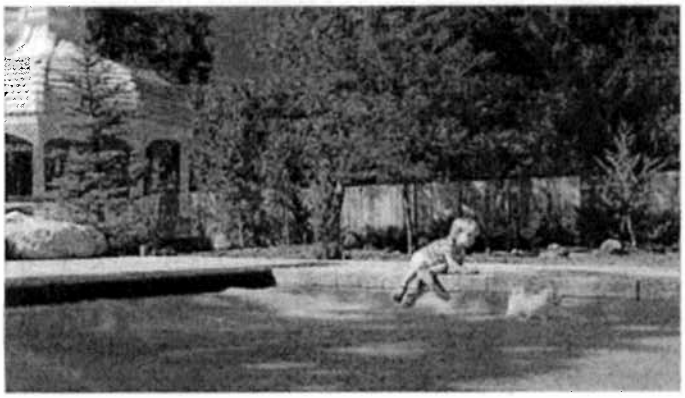
(V) DRAIN DISABLEMENT.—A device or system that disables the drain.

(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.

We are asking the Commission to take action on item (VI).







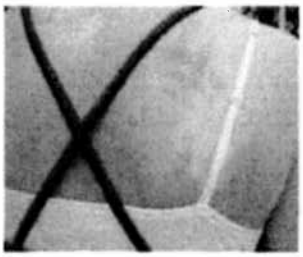
A. Layers of Protection.

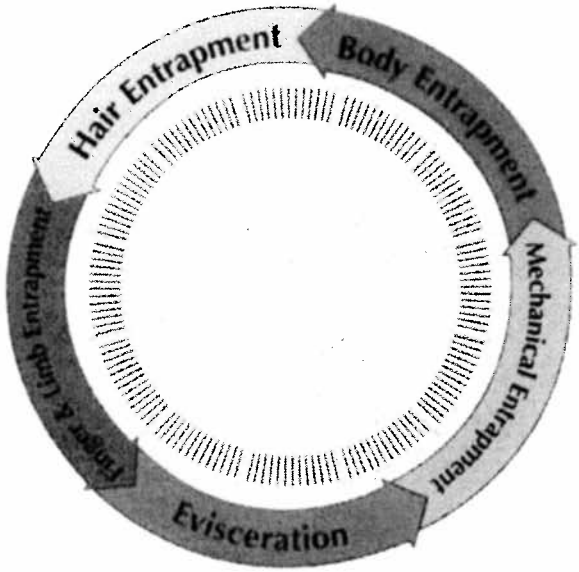
Only an example of fencing is mentioned in the act. There are many other layers of protection required by many state swimming pool regulations. Some examples are: self closing and self latching doors, less than 4 inch opening at the bottom of fencing, maintaining rescue equipment such as a shepherd's hook and a rope with a ring buoy, winterizing and pool closed cover barriers, appropriate warning signs, and safer drain covers. As the intent of the VGB Act is to make the drains safer, this discussion will continue with drain modification options for both existing and new pools.

As we consider the drains and the layers of protection it is also important to recognize all of the risk factors that the approved drain configurations need to address. While dual drains reduce the risk of body entrapment some, they are not a good solution alone for addressing hair and mechanical entrapments. The same is true of safety vacuum release, suction limiting vent, gravity drainage, and automatic pump shut off systems. Unless the entrapment involves a cover blockage, these systems will fail to avoid the accident. Once hair is entangled it doesn't matter if the pump remains on or off, the entrapment has occurred. In order to compare all of the systems and to show that the BeeSafe System is equal to or better than these at resolving entrapment, a short discussion of the risk factors or types of entrapment that have been identified by CPSC and the pool industry is covered here.

B. Identification of how we resolve all 5 types of entrapment

Body Entrapment - If a body comes into contact with a drain cover a body entrapment might occur. This is the most often discussed type of entrapment and the one that most of the compliant products have addressed. Obviously a small drain cover is much easier to cover with a body than a large drain cover. Both size and shape of the BeeSafe system make it the best choice for resolving body entrapment.





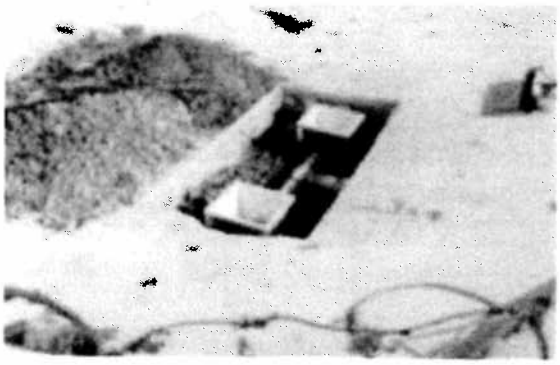
Hair Entrapment – It is estimated that hair entrapment is involved in more than half of the suction entrapment accidents. Very few of the available covers do much if anything to avoid this type of entrapment. What happens is that hair is pulled through the cover openings and the suction force will cause the various hairs to entangle with others. If hair can enter through the grate of a cover and become entangled then the cover has not addressed this form of entrapment. As the bather moves away from the drain the hairs that are entangled will become knotted behind the grate and the swimmer is trapped. The tubes of the BeeSafe System offer the best protection against hair entrapment.

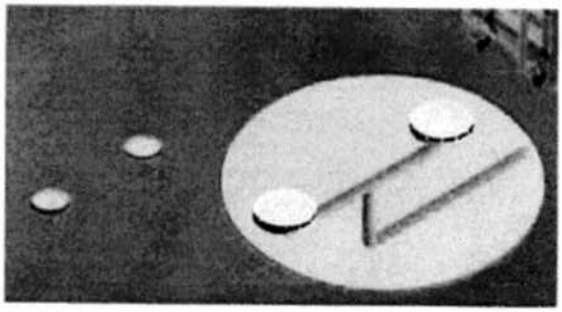
Limb & Finger Entrapment – Finger and limb entrapment is resolved by limiting the size of the opening to less than ¼" in diameter. Even a small child's finger or toe will not fit into the openings at the surface of the BeeSafe System. Limb entrapment may happen only if a cover is missing. Starting with the guidelines and in each and every standard for suction entrapment avoidance is the overriding conclusion that there is no "back-up" for a missing suction outlet cover.

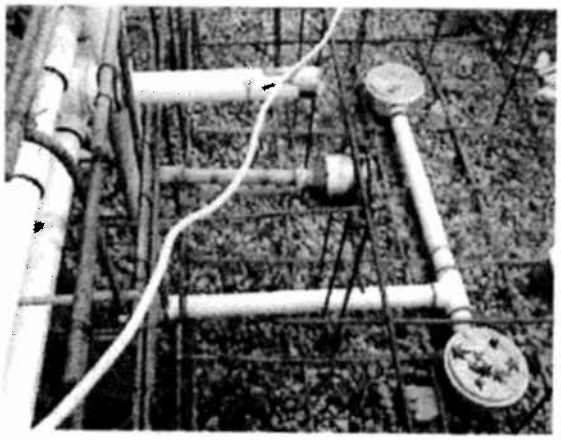
Mechanical Entrapment – There have been instances where a bather had jewelry or in some cases a dog tag on a chain that got entangled in or behind the grate of a drain cover and resulted in an entrapment accident. Limiting the size of the opening in our system was one method of resolving this type of entrapment. The length of the tubes again is the ultimate best solution. Other mechanical entrapments of clothing or other items were also considered and the BeeSafe System was designed to address all of these.

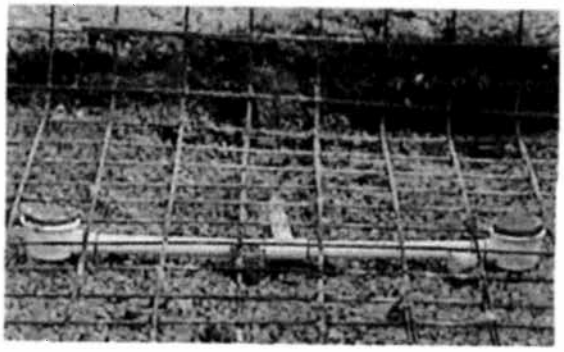
Evisceration - The Abigail Taylor accident happened because a drain cover was missing. If a child is able to sit on an open drain and create a complete blockage of the line, the force is so great that evisceration quickly results. This action is so swift that an SVRS system or pump shut off will not react quick enough to avoid the disaster. We came up with a permanent installation to greatly reduce this risk.

C. Drain Compliance Options









1. Dual Drains

While this is not mentioned in the VGB Act, it is accepted by the pool industry that as long as the drain has more than a single main drain with compliant covers then the pool is in compliance with the law. No one seems to question if this is really a good way to solve entrapment. Obvious problems of dual drains are differential hold down force, inconsistence balance and double entrapments. In addition, retrofitting an older pool with dual drains is very costly and may cause damage to the integrity of the pool floor.

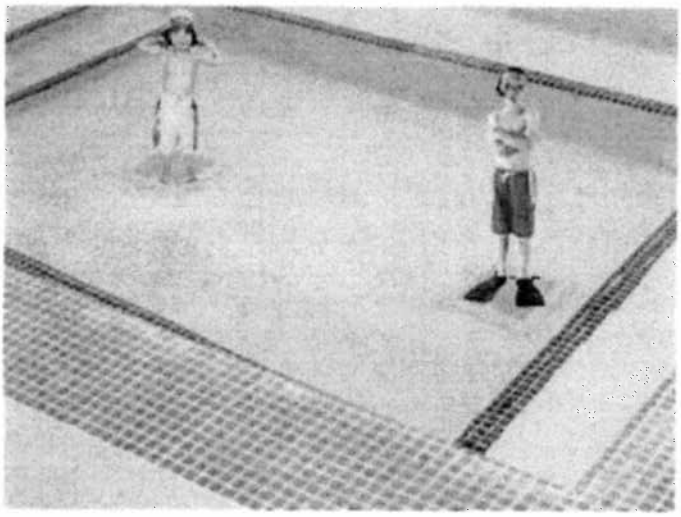
a. Differential hold down force.

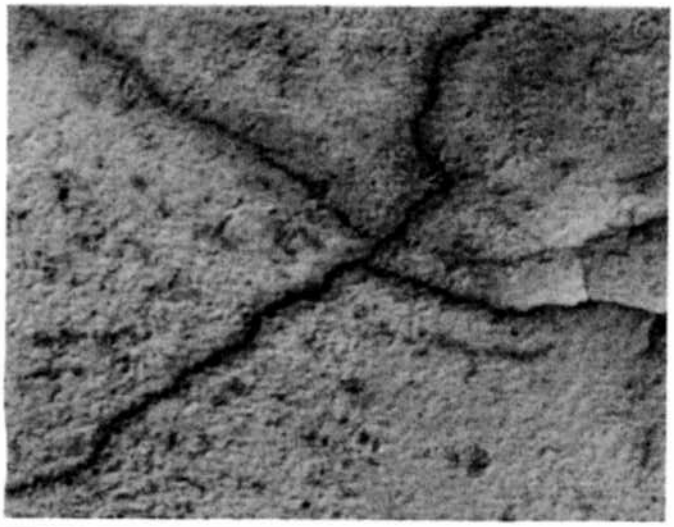
Differential hold down force refers to the force holding down an object blocking only one drain in a dual drain swimming pool. The force is created due to the restriction of flow created by restrictions on the unblocked drain. One example would be unequal length of lines. If lines are of different lengths then one will have more hold down force than the other. Under the wrong circumstance, the hold down force on one side of a dual drain system can exceed 200 lbs, even though the other drain is unblocked!

b. Balance

In order for a dual drain to function properly the lines must first be installed in complete balance. The lines branching from the main outlet line must be in vertical and horizontal balance as well as many other factors. Once installed the system must remain balanced.

It has been noticed in some of the pools that have installed dual drains in areas with a lot of sand that the drains quickly become unbalanced. If one of the drains starts to fill with sand, the flow will no longer be 50/50 between the drains. The one with sand will then continue to build up more sand as the flow to pull sand through the drain will be less and less on this arm of the dual system. Eventually the build-up of sand will leave the other branch of the drain with the same potential for suction entrapment as a single main drain.





c. Failure to address all types of Entrapment

As previously mentioned, dual drains are no better than the compliant cover used at resolving hair, mechanical, and finger/limb entrapments.

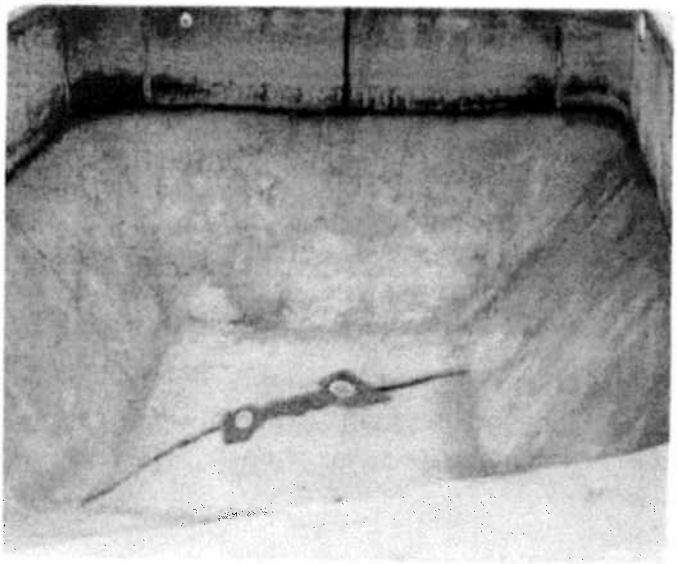
d. Double Entrapments

Consider the possibility of two children making a game of racing to the two drains of a dual system. Did you ever play a game where you dropped two pennies into the pool and then swimmers raced to retrieve them? This poses an entrapment hazard as everything is pulled towards the drain.

Dual Drains at the lowest part of the pool will pull the pennies toward the covers. This increases the possibility of two swimmers simultaneously experiencing any of the possible (body, hair, finger, mechanical) entrapments. Which do you see as the better solution: dual drains or the BeeSafe System?

e. Damage to the integrity of the pool floor.

When dual drains are installed into an existing pool the floor must be cut to modify the drain line. As the older concrete is probably of a different mix than the newer concrete mixes used in swimming pools, the possibility of a crack line developing exists. When this happens water will slowly erode the concrete and permanent damage to the pool may result.

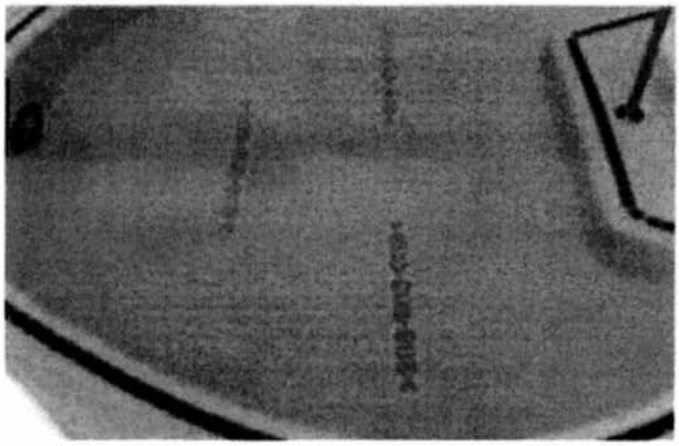


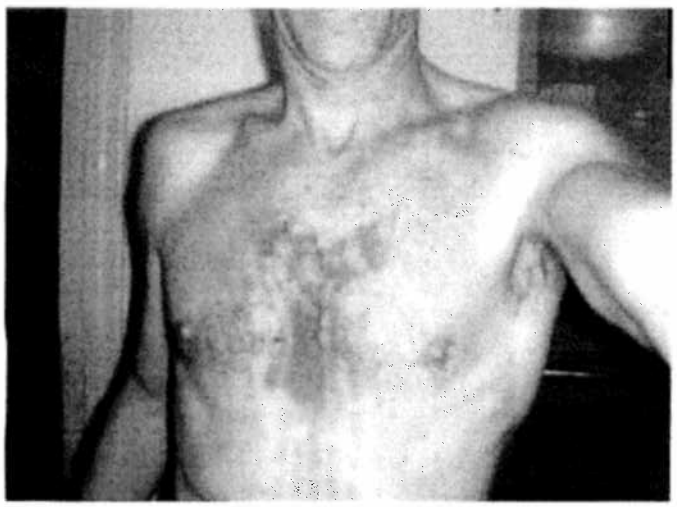
2. Unblockable Drains

The definition of an Unblockable drain led to the development of many products that again may address only one or two of the types of entrapment. Under the first interpretation of an unblockable drain, the cover simply had to be larger than the body blocking element and allow for flow when the element was placed on the drain cover. Channel drains have been classified here as well as square, rectangular and circular drain covers of large size. If the large cover just provides grate openings then hair, mechanical and finger entrapment may still be hazards not addressed.

Tim McIntyre made the news as he wanted to see if the new VGB compliant covers in his condo complex pool were in fact safer than the old drains. While he avoided drowning, the pictures show the result.

Just being large in size is not enough to solve the issues of all types of entrapment.





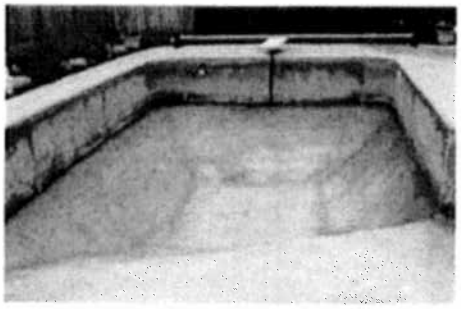
3. Single Drains with additional protection

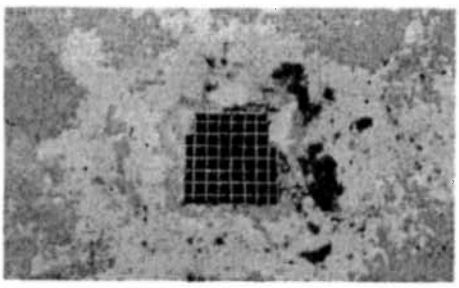
For the sake of this paper, only SVRS and turn-off switches will be considered for comparison. This is because the other mentioned systems (suction limiting vent and gravity drainage) in the VGB Act, will have been existing rather than added for retrofit, and are both great systems to be used with the BeeSafe System. As we discuss the advantages of the BeeSafe System it will become evident that SVRS and turn off switches will not give any additional protection beyond that which is built into the BeeSafe System.

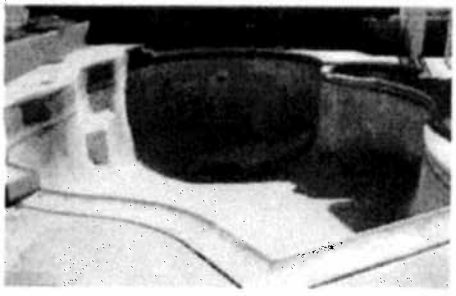
One unique feature that makes the BeeSafe System equal to or better than an SVRS or back-up breaker is the emptying of the tubes if they become blocked. With such a large number of tubes, water will be flowing through all tubes that are not blocked. Any that become blocked will simply empty the water into the built in sump and any suction at the surface will be released when this happens. This action can be compared to a hydraulic switch. The action is as fast as or faster than any of the breaker secondary systems currently on the market. Because of this benefit of the BeeSafe System there would be no advantage gained by the addition of an SVRS device. Both NSF and IAPMO testing showed that BeeSafe Systems Model One can handle over 6,000 gpm with no body entrapment.

Turn-off switches really only protect against body entrapment. If hair or jewelry gets stuck there most likely will not be a detectable drop in flow until the struggling swimmer collapses onto the drain. Limb entrapment only happens if a cover is missing and the appendage is not likely to come out, once it is trapped, even if the pump turns off. Evisceration is so rapid that a turn-off switch doesn't avoid this entrapment either. BeeSafe Systems really does address all five types of entrapment and will be discussed more completely in the following sections. The BeeSafe System is better alone than with an SVRS or back-up breaker.

IV. What must be done to bring a pool into compliance with the Virginia Graeme Baker Pool and Spa Safety Act.





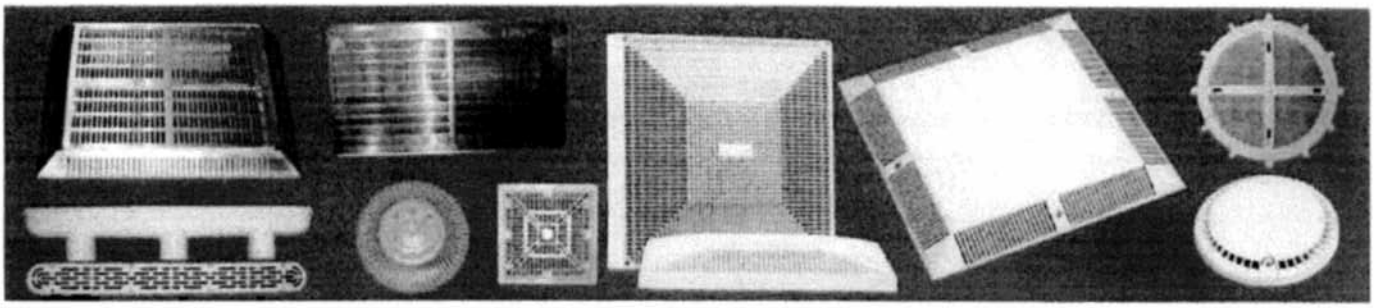


A. Evaluation of the existing pool and outlets.

Every pool has had to evaluate their existing drain systems to determine how they would comply with the VGB Act. There is no one best solution for all pools. Some were built with square outlets, some with round. Some covers were as small as 2-4" covers similar to a standard floor drain cover, some 6-8"round covers, some 12-24" square covers and many field built variations of different sizes and shapes of large unblockable covers etc. All of these needed to be replaced with covers compliant with the ASME A112.19.8-2007 or a newer standard to be compliant with the VGB Act.

The material that the pool is made of becomes a factor in the evaluation, as some will not be able to remodel the bottom without serious damage to the pool floor. While a concrete pool at great cost can be modified by cutting into the floor for adding additional outlets to a drain line, an aluminum bottom or vinyl pool cannot be modified in this manner.

Cost to become compliant was probably the most important factor in most pool evaluations. The National Multi Housing Council/ National Apartment Association surveyed and found the average cost associated with the new VGB drain covers was $6,539 per respondent, additionally they found that the May 2011 drain cover recall cost additionally $2,235 per respondent. They project that the revocation of "Unblockable drain" interpretation estimates range from $1,000 to $70,000 per respondent. If at all possible most owner/operators wanted to become compliant without a total remodel of the pool.



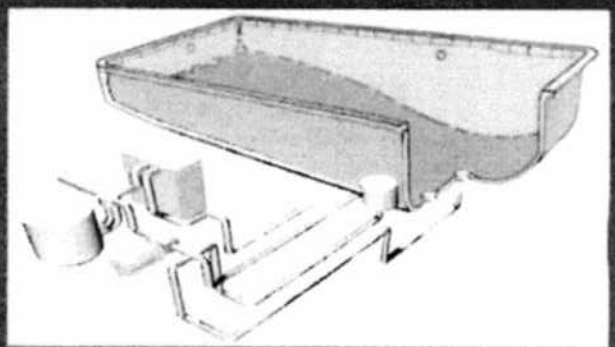
B. Determining the right size drain cover for a pool.

The main factor in finding the right cover has to do with the flow rate of the pool. Flow rate is determined by the volume of the pool and the required turn-over rate. Most low to moderate usage pools are required to have a turn-over rate of 8 hours (three times per day) while high usage pools must maintain a six hour (4 times per day) turn-over rate. This means that theoretically all of the water in the pool will be recycled through the drain system every 6 or 8 hours. Some older pools were built to handle an 8 hour turn-over and later health regulations required the pools to increase the flow to handle a 6 hour turn-over. This increases the volume of water that is re-circulating through the drain and results in an increase in the suction at the surface. In some cases this has been the reason for suction entrapment.

Flow rate for the pool in most cases can be found on original plans that have been kept by health departments. When changes in regulations have dictated changes in flow rates these should have been available to the inspector and the operator. Many pool operators were unable to obtain records, but did calculate the pool volume and subsequently calculated the flow rate for their pool.

One of the difficulties for inspectors being able to tell if the new compliant cover is adequate, has been the lack of uniformity and sometimes complete lack of original pool plans. While the flow rate may meet the calculation made for the pool volume, the system may not have been built to handle this flow.

Generally speaking, a large size pool will need a high volume drain cover. With the change in interpretation of Unblockable Drains, many large pools cannot find single drain covers that are capable of handling the flow. The recall of over a million drain covers indicates that there were many covers made for low volume pools, but inadequate testing resulted in pools installing inadequate covers. Many smaller pools affected by the recall have to resort to costly remodeling or the closing of their pools.

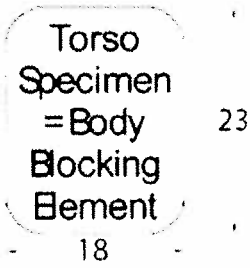


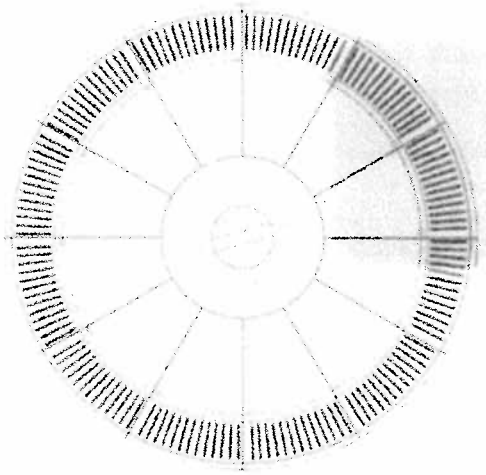
V. Designing of the BeeSafe System.

Simply a Better Answer to Suction Entrapment!

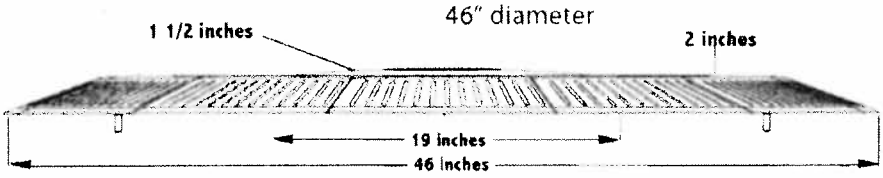
If a cover could be made that could not be blocked by a body then entrapment could not happen. This was and is the goal of all VGB compliant products. Most have not made a larger product but have used various methods to raise the grate to utilize laminar flow or flow of water from the sides rather than the top to reduce the amount of suction force. The body testing form is of a hard foam material but skin is flexible and can mold over the slightly raised covers. If the drain can be completely covered or blocked by a bather's body then suction entrapment will happen.

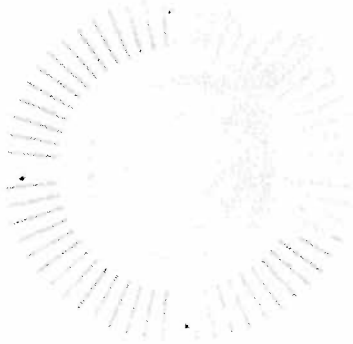
The BeeSafe System is a much better solution for body entrapment than any of the smaller covers that have been developed. In fact it is better than any other large unblockable product



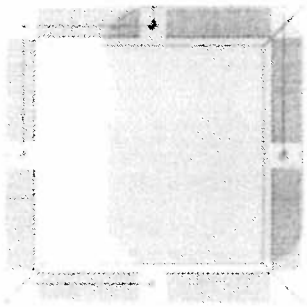


BeeSafe System Model 1
46" diameter



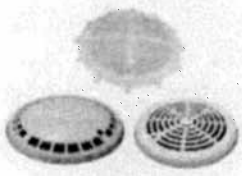


BeeSafe System Model 2
34" diameter



AEGIS
Anti-Entrapment Shield
30x30"

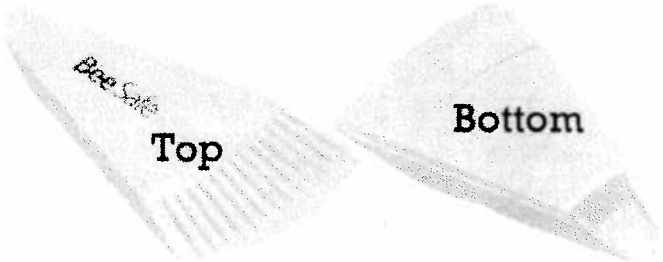
Channel Drain
3x31"



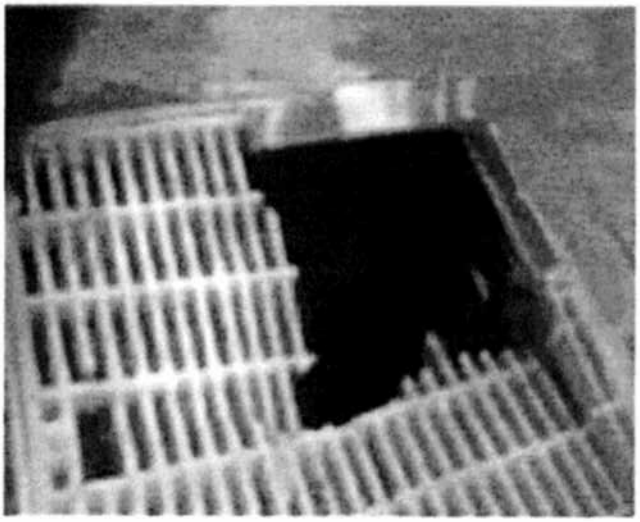
Small Drains
6 - 9"

We wanted not only to resolve the problem of body entrapment but also looked at all of the other entrapment hazards. We envisioned that a long straw would function to allow the water to flow at the rate necessary, but would not allow hair to entangle. A series of similar straw-like tubes of a length long enough to eliminate the possibility of hair entanglement would resolve this problem. The 2006 guideline suggested that hair lengths of up to 12 inches would be used to test the avoidance of hair entrapment so our goal was to eliminate entanglement of any hair up to 12 inches long. There are very few children even up to early teens that have hair lengths longer than 12 inches. Testing is now done using 18" long hair but only older people have hair long enough to reach beyond the end of the tubes in our system. The BeeSafe System is the best answer to hair entrapment.

12 inch long tubular channels prevent hair from entangling

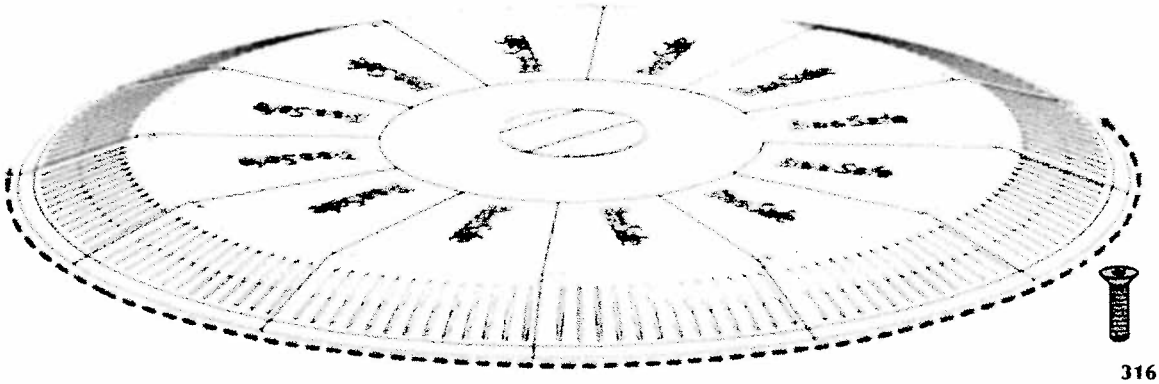


The standard for compliant covers today requires the materials to be much stronger, the attachment hardware to be of higher quality and the products are tested to be sure they will remain intact throughout the lifetime of the product. The educational materials now used to train pool operators all warn that a pool must be closed if a cover is damaged or missing.

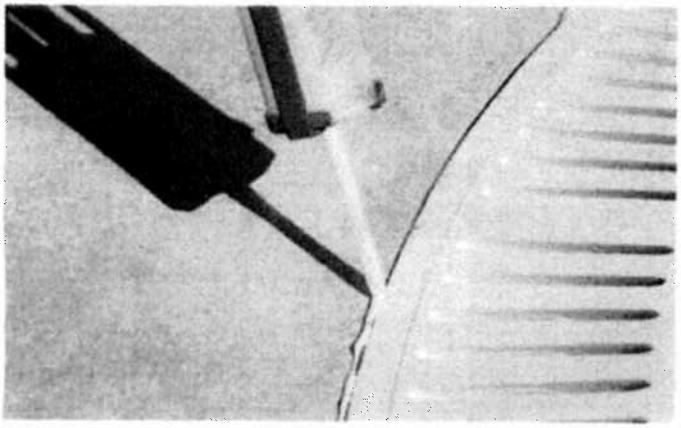


Conditions like the one illustrated above are not likely to happen with the stronger materials and design criteria required for compliant products on today's market. We designed the BeeSafe System not to just meet the requirements but to exceed the standard to make this the safest possible solution for all types of pools large enough to accommodate the size of our system. The BeeSafe system is made of Gerogia Gulf 7140 PVC which is one of the strongest materials available that also offers the best chemical resistance to avoid damage from prolonged use in a swimming pool environment (offering great strength as well as durability).

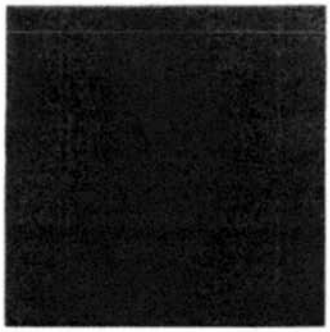
------ **Underwater industrial adhesive applied around the base of the system**

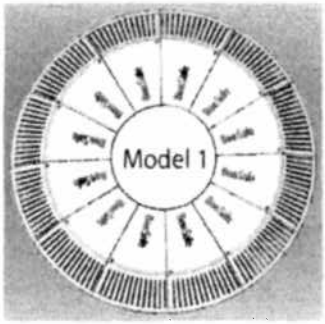


316 stainless steal screws treated with lock tite



Not only is the BeeSafe System attached with the standard #316 Stainless steel hardware, but additionally the use of Mr. Stickys strong industrial adhesive as the final step in installation assures that the edge of the BeeSafe System will be smooth to avoid scratches or the stubbing of toes as well as to make the installation permanent. In order to remove the system a special tool will need to cut the cover from the pool floor. The smaller lid of the BeeSafe System can be removed, so to make this part of our system exceed the standard, we use lock tite treated screws to avoid any vibrations that would cause the lid screws to become loose. The screws require a specialty screw driver and cannot be removed with a straight screwdriver or knife. All of these additional features make the BeeSafe System the best solution for suction entrapment avoidance.



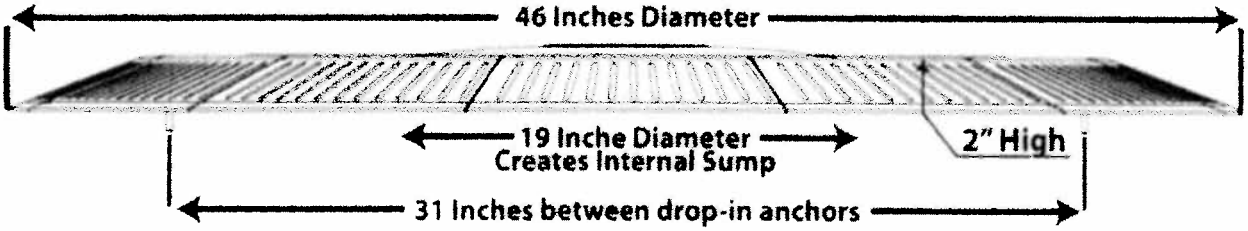


VI. BeeSafe is the safest solution.

A. Tubes Unique Action Releases as Fast or Faster than SVRS

BeeSafe Systems was designed to be the safest alternative. We envisioned that the place it would be best used would be in small kiddie / wading pools that are actually low volume. Even though the sump beneath the cover would be small, the large number of tubes that circulate the pool's water through the drain system would individually have little detectible suction. Even if there were a group of children sitting on the cover there would be more of the openings not covered than there would be openings blocked. The one feature that makes the BeeSafe System equal to or better than a back-up breaker is the emptying of the tubes if they become blocked. Water still will be flowing through all that are not blocked. Any that become blocked will simply empty into the internal sump and any suction at the surface will be released. This action can be compared to a hydraulic switch. The action is as fast as or faster than any of the breaker secondary systems currently on the market. Because of this benefit of the BeeSafe System there would be no advantage gained by the addition of an SVRS device.

B. Internal Sump



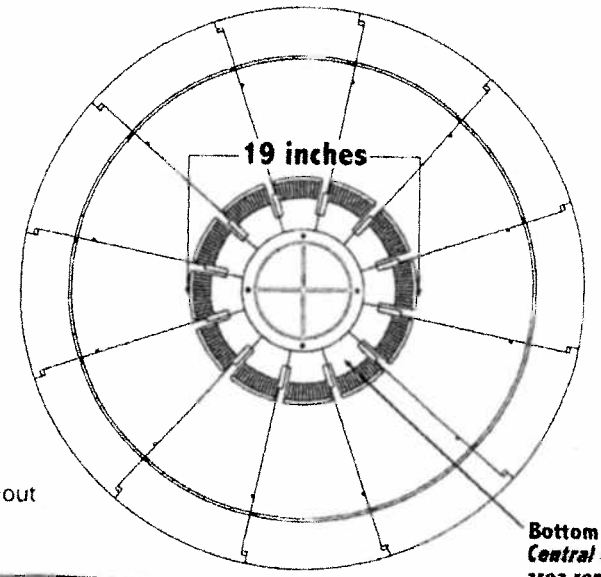
Most pools that have installed the BeeSafe System have made this choice based on large volume and high turnover rates. Some have decided on our product because their pool was built without a sump. Our product does not undermine the need for a sump but rather has incorporated an adequate sump internally. The opening at the center of the system was mathematically calculated by an engineer to handle drain systems with up to 4 inch pipe size. But testing was done with 8 inch pipe and found to be adequate to the ASME A112.19.8b-2009 Standard. Other products have chosen to have testing done to see if they pass without a sump, but these products do not incorporate a sump into their product.

The internal sump, the patented tubular system, the large number of tubes that provide an unblockable condition, and the mechanism for emptying the tubes that are blocked, all add up to this being a complete drain system rather than just a drain cover.

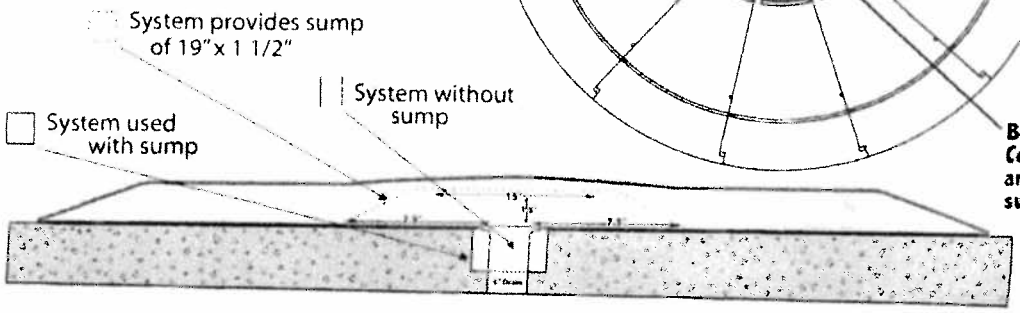
The best solution should have always been based on safety, but reality is that price and big company marketing have steered the industry to less adequate solutions. CPSC needs to look at the available products and see that classifying the BeeSafe System as equal to or better than either dual drains or a single drain with a secondary back-up system is a correct decision. This would allow the use of the BeeSafe System with all sizes of drains and with either single or dual drains.

BeeSafe Systems should be the best solution for all sizes and volumes of pools. CPSC can help to make this a better option for all pools by determining that BeeSafe Systems be listed as an Other System that is equally as effective as, or better than, the systems described in subclauses (I) through (V) of the Virginia Graeme Baker Pool and Spa Safety Act.

The system doesn't require a sump for outlet piping up to 8 inches in diameter, as the open area of the system becomes a sump.

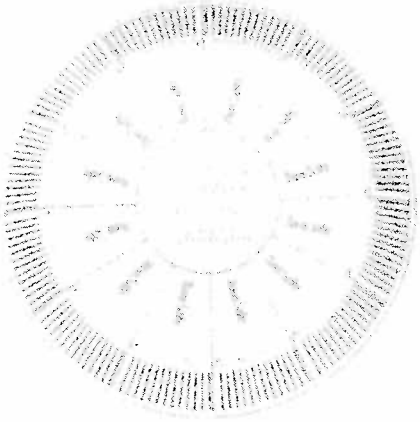


Space makes a sump and can be used with any size drain line up to 8 inches

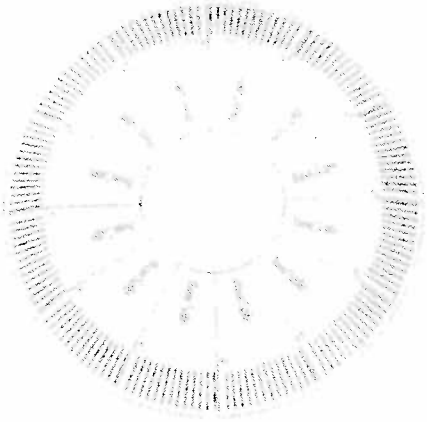


Bottom view. *Central open* area replaces sump.

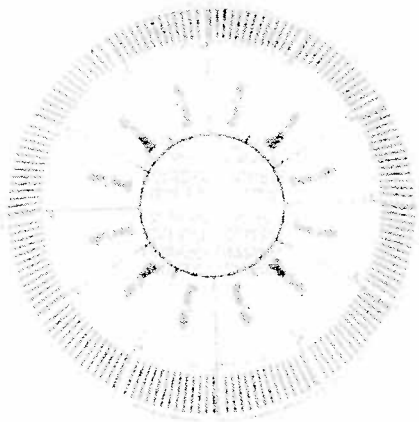
C. The BeeSafe System should be used with any size or shape or existing openings up to 24x36 inches



12 inch square opening



9 inch round opening

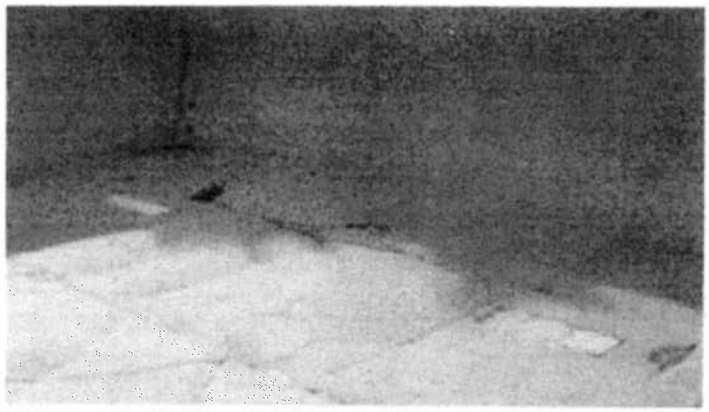


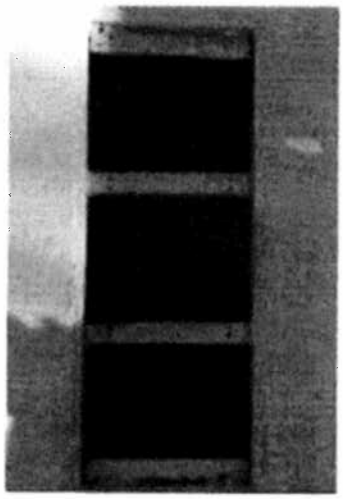
18 inch square opening

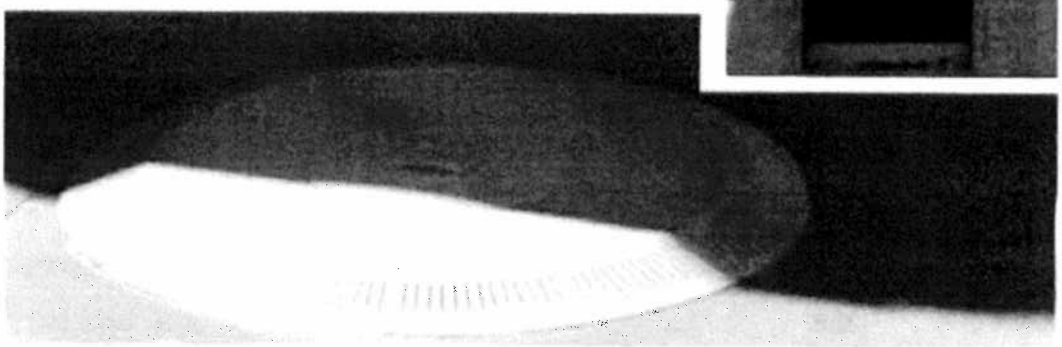
The illustrations above show how the BeeSafe System can be used over several sizes of existing drains. The old cover would be removed and BeeSafe installed over the open sump. BeeSafe can be used with larger than 18" drain openings as the existing sump would only add to the BeeSafe internal sump. If the opeing can fit under the BeeSafe System and still allow for attachment of at least one of the stainless steel mounting screws, the underwater industrial adhesive will provide a compliant and permanent installation. In some cases BeeSafe is adaptable for many larger sizes of drains, sometimes with modification to the drain opening.

D. Good Answer for Aluminum Pools.

These pictures show the installation into an aluminum pool that could not utilize other options to come into compliance. This pool did not have many options for compliance because of the large volume, oversized sump and drain opening, and material used to construct the pool. BeeSafe



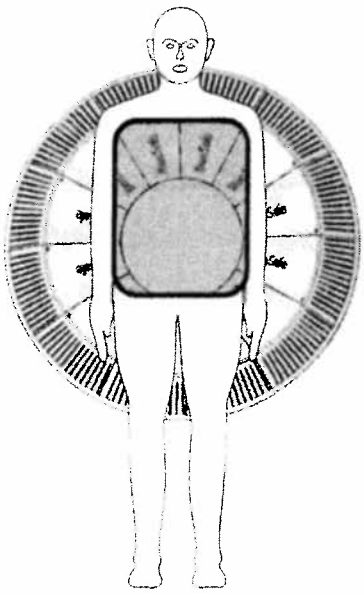




E. So what if a cover goes missing

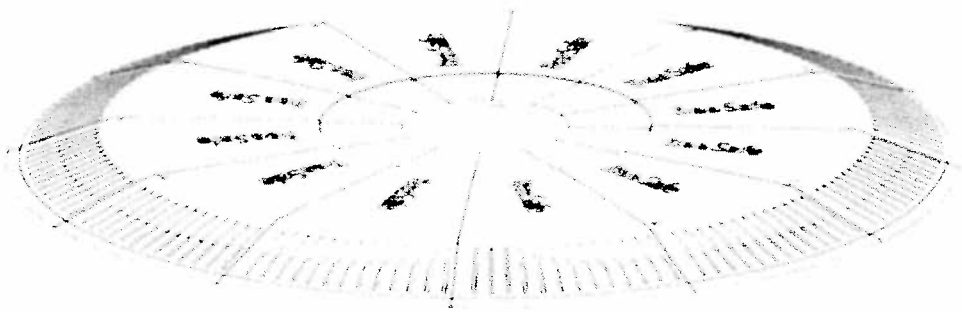
Previous discussion of the permanent attachment of the BeeSafe System to the pool floor explained how we have eliminated the possibility of the entire cover ever going missing. But what would happen if the winterizing lid were to go missing? The answer is simple: most likely, nothing. There would be no body entrapment because the tubes would still be functioning and there would be no possibility of blocking them to create a suction entrapment. The lid opening is small enough and the rise of the BeeSafe System off the floor of the pool high enough that even if the cover were gone there would not be a risk of an evisceration. As there is no grate, if the winterizing cover were damaged or missing there would be no risk of a hair or mechanical entrapment with the BeeSafe System. Addition of an SVRS or turn-off switch would not add to the protection that is already built into the BeeSafe System.

This product and all compliant products are required to use stronger materials than were previously used for drain covers. The possibility of a broken cover is much less than with non-compliant products. We use one of the most durable PVC's available to reduce the risk of cover damage. One of the testing agents made the comment that while compliance requires structural tests he could probably drive a tank over the BeeSafe System and not do it any damage. We take pride in knowing that we have made a structurally sound product.

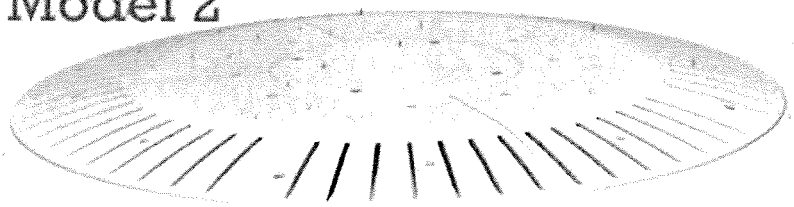


With any missing drain cover there could be a possibility for an arm or leg to get stuck in the drain line. There is no back-up or layer of protection that could completely eliminate this risk. The best solution of course is to act upon the most emphasized precaution that is stated in the CPSC Pool Safely program, recommended by APSC, given as required in all installation manuals for compliant covers, as well as taught in all pool training courses: There is no back-up for a damaged or missing drain cover. The pool and especially the drain cover should be inspected every day that the pool is open. We state that the cover must be inspected on this daily basis and that If the cover is damaged or not intact (including any screws missing) then the pool must be closed. To avoid any possibility of entrapment while the cover is being replaced, it should be recommended that the pump be turned off. While this would allow for bacterial growth and could endanger the health of a trespasser into the pool, this would be less of a risk than the possibility of entrapment.

BeeSafe Systems offers the best available option to avoid suction entrapment at the pool outlet even if the winterizing cover were to go missing.



VII. BeeSafe Systems Model 2



Right at the time that CPSC announced that they were reversing the decision on Unblockable Drains, we had a second product at IAPMO for testing. We invested all that was available to our company in development of this smaller model of the BeeSafe System but it has not yet been produced. Because we could not see any market for a product that would cost much more than the smaller products that gain some advantage when coupled with an SVRS device, we decided to not go ahead with production of this product at the time.

Basically Model 2 is a smaller version of the original BeeSafe System. Because it is smaller (the diameter is reduced by 12 inches) the tubes are shorter and the sump size is slightly reduced. These differences make the application be for use only in smaller pools with less volume and lower flow rates. It does not provide as complete of protection from hair entrapment, so we designed it with an additional benefit. If a swimmer goes near the drain cover their hair will most likely only mat at the surface because there is a much wider space of solid PVC material between the openings of the long tubes. Use of this model on a small pool will be safer than use of any other cover rated for a low volume pool.

Independent testing has shown that even if the cover were missing, BeeSafe Model 2 would not subject a body to entrapment. As with the original BeeSafe System, the tubes would continue to function and the suction would not be blocked. As the installation also would be the same as with the original BeeSafe System, the risk of the entire cover being damaged or missing is not a concern.

We emphasize that the original BeeSafe System is the only product that we currently have in production. We currently are unable to cover the cost of first production of Model 2 as the reversal of decision on unblockable drains has had a drastic impact on our sales. Our current prospects include sale of either or both products to another company and even the possibility of sale of our patent to cover our investment liabilities. We have not paid for the compliance certificate for Model 2 but have completed and passed all of the required testing on this product. Model 2 could be a valuable addition to the drain covers in the world-wide pool market if we are ever able to produce it.

We developed Model 2 during 2010 and 2011 to be more competitive with the other unblockable covers that were then on the market. There has been some interest in the prototype from manufacturers of some SVRS devices to endorse this product as a companion to their products. While either of our products with or without a backup system would be great for the making a pool safer, neither would be enhanced with an SVRS or breaker. The SVRS or breaker would have fewer false triggers and probable only activate if there were problems with the flow dropping on the pump side of the system.

Entrapment hazards are greatly reduced with either model of the BeeSafe System. Water would continue to flow through the tubes even if some of them were blocked. We have included pictures of model 2 in this presentation, but emphasize that it has not been produced. We will only go ahead with making this product with the determination of CPSC that it is equal to or better than the other options and that it is considered as the "Other Option" under the VGB Act.

While this paper has been written for consideration of the original BeeSafe System, we would like to also have a decision on model 2 as meeting the classification of "Other Options" covered in the VGB Act before we decide to manufacture or sell it. We prefer not to be forced to sell this product to some other company. We have included Model 1 and a Model 2 prototype with this petition so CPSC can view and verify all of our claims. We are confident you will see that we have developed two products that should be considered as equally effective or better than the other options described in the VGB Act at eliminating the risk of suction entrapment.

Introducting BeeSafe Model 2

1-888-306-0121 www.beesafesystems.com

BeeSafe Systems.

Designed to Address All 5 Forms of Entrapment!

The smaller lighter weight BeeSafe Systems Model 2 is a Safety Drain System designed to retrofit over existing pool drains.

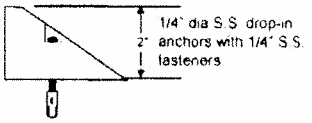
-Body Entrapment-

-18 x 23 Body Blocking Element-

Used in ASME Testing. Only 20% of the BeeSafe System is Blocked.

-Hair, Body & Evisceration Entrapment-

56 Individual 5 inch Tubular Channels make up the System. They Function like Self Regulating Hydraulic Switches. Hair will follow a pattern of laminar flow and not tangle.



-Finger, Mechanical & Evisceration Entrapment-

Outside Opening of the Tubes have a small 1/4 inch diameter preventing fingers or Jewelry (dog tags) from becoming entrapped.

The body of the BeeSafe System is permanently installed, so that a body or limbs cannot reach the suction piping. This also prevents missing or broken drain covers.

(Only the lid & its fasteners need to be replaced every 7 years)

-Limb Entrapment & Evisceration-

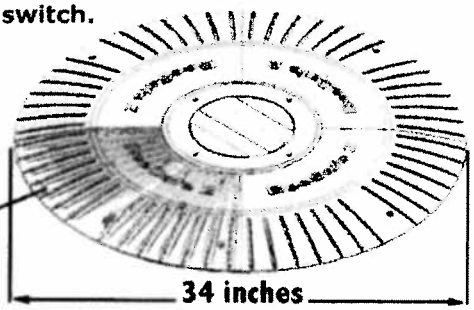
Proper fasteners assure the system will remain attached to prevent limb entrapment or evisceration.

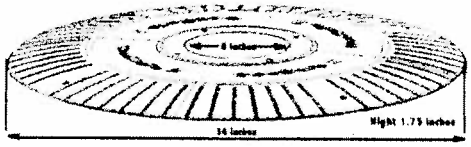
VGB SAFETY compliant

The unique feature of the BeeSafe System is the patented tubular design.
The channels/tubes run a full 6 inches into the system, resolving entrapment.
The action of each tube is similar to a self-regulating hydraulic switch.
This virtually eliminates body entrapment.

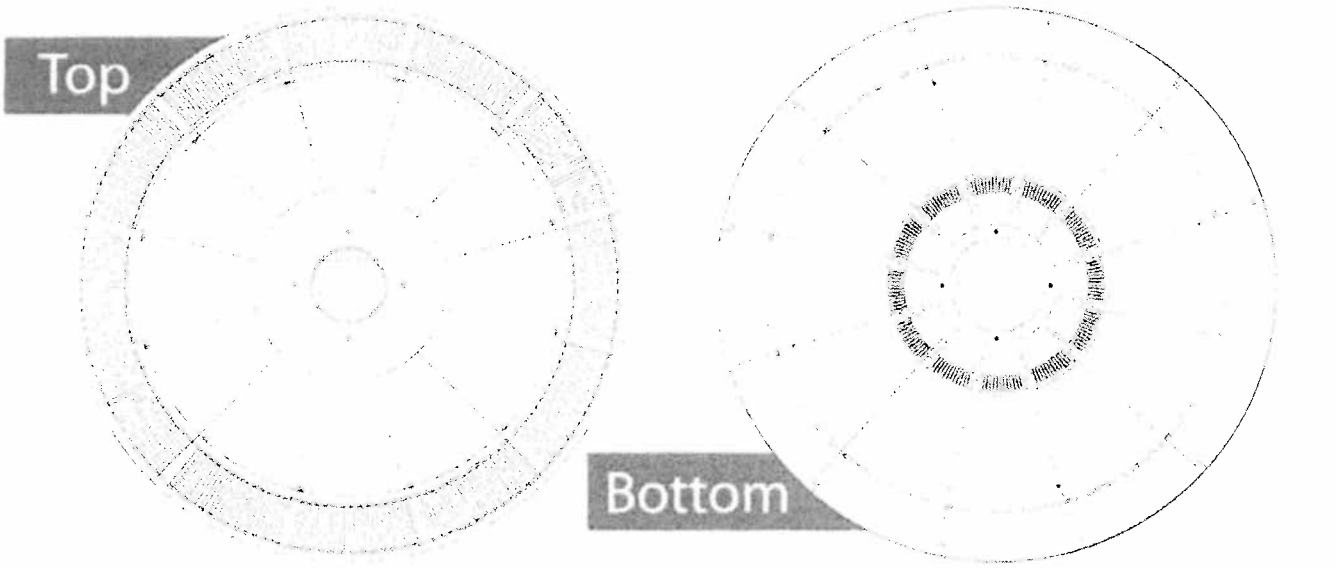
- Prevents bather entrapment
- ASME A112.19.8-2007 b-2009
- VGB compliant
- IAPMO Certified
- Easily installed over Main Drains
- Includes stainless steel hardware
- Covers up to 24" x 24" main drain
- Life: 7 years – submerged outlet
- Certified to cover up to 12" drain pipe
- Easily installed over existing main drains
- Georga Gulf Plastic with slip resistant surface

Cutout Showing Individual Tubular Channels





Simply a Better Answer to Suction Entrapment!!



VIII. Some of the reasons why BeeSafe is a better choice for all sizes of pools.

1. Isolation of the actual drain line reduces the hazard.

2. Without major modifications older pools can become compliant.

3. Large Drains require high volume outlet covers – BeeSafe is a good solution for large pools. Body entrapment testing at 6,000+ GPM. Certified at 1,220 GMP flow rating.

4. Small low volume pools will have such low flow through the BeeSafe System that hair will not flow into the drain and body entrapment will be eliminated.

5. Problems associated with Secondary Back-up systems are resolved by using the BeeSafe System.

6. Even if the cover goes missing, the BeeSafe Cover will still protect from entrapment.

IX. Summary & Conclusion

A. VGB Product Comparisons

BeeSafe Systems vs Dual Main Drains		BeeSafe	Dual Drains
BODY	**Avoids Body Entrapment**	**Best**	Some*
	Avoids a single body entrapment	**YES**	Yes*
	Avoids potential for 2 simultaneous drowning	**YES**	NO
	System remains in balance	**YES**	NO
	Avoids potential fill with wind blown sand/debris	**YES**	NO
HAIR	**Avoids Hair Entrapment**	**Best**	Some*
	Provides tubes - swimmers are aware of hair entry before entrapment can happen	**YES**	NO
	Hair more likely to mat at surface than enter the drain	**YES**	NO*
FINGER & LIMB	**Avoids Finger & Limb Entrapment**	**Best**	Some*
	Least likely to be damaged or missing	**YES**	NO
MECHANICAL & EVISCERATION	**Avoids Mechanical Entrapment**	**Best**	Some*
	Avoids dog tags or jewelry entrapment	**YES**	NO
	Avoids necklace, chain entrapment	**YES**	NO
	Avoids Evisceration Entrapment	**Best**	Some*
	Permanent Install	**YES**	NO
	Material Strength - Not likely to be damaged	**YES**	NO
	Provides thread lock coated screws	**YES**	NO
	Easy Install	**Best**	NO
	Underwater Install	**YES**	NO
OTHER	Doesn't require additional sump	**YES**	NO
	Can be installed where there is no sump	**YES**	NO*
	Provides an internal sump	**YES**	NO
	Avoids damage to pool floor intregity & future crack lines	**YES**	NO

* Dependant on choice of compliant cover. Some are good to avoid 1 or 2 but not all 5 types of entrapment


BeeSafe Systems vs Compliant Cover & Secondary Device		BeeSafe	Compliant Cover & Secondary Device
BODY	**Avoids Body Entrapment**	**Best**	Some*
	Quick response to body entrapment	**YES**	NO
	Avoids false trigger activation	**YES**	NO
HAIR	**Avoids Hair Entrapment**	**Best**	Some*
	Provides tubes - swimmers are aware of hair entry before entrapment can happen	**YES**	NO
	Hair more likely to mat at surface than enter the drain	**YES**	NO*
FINGER & LIMB	**Avoids Finger & Limb Entrapment**	**Best**	NO
	Least likely to be damaged or missing	**YES**	NO
MECHANICAL & EVISCERATION	**Avoids Mechanical Entrapment**	**Best**	Some*
	Avoids dog tags or jewelry entrapment	**YES**	NO
	Avoids necklace, chain entrapment	**YES**	NO
	Avoids EVISCERATION Entrapment	**Best**	Some*
	Permanently installed	**YES**	NO
	Provides thread lock coated screws	**YES**	NO
	Easy to maintain - avoids need to be reset	**YES**	NO
	Always Functioning	**YES**	NO
	Avoids chemical unbalance from being turned off	**YES**	NO
OTHER	Does not require daily function disablement	**YES**	NO
	Does not require any piping changes	**YES**	NO
	Easy Install & Underwater Install	**Best**	NO*
	Doesn't require additional sump - Provides an internal sump	**YES**	NO
	Can be installed where there is no sump	**YES**	NO*
	Lifetime of product	15 years Lid Only	3-5 Years Whole Product

* Dependant on choice of compliant cover. Some are good to avoid 1 or 2 but not all 5 types of entrapment

BeeSafe Systems vs other so called Unblockables

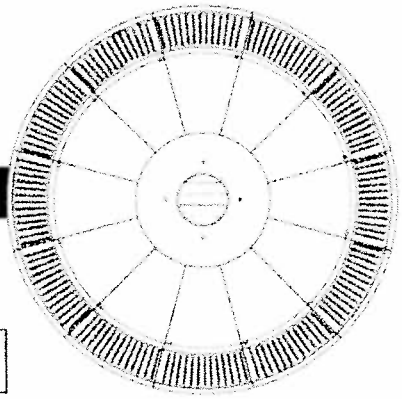
		BeeSafe	Other Unblockable
BODY	**Avoids Body Entrapment**	**Best**	Some*
	Avoids potential for 2 or more simultaneous drownings	**YES**	NO*
	Provides tubes with action to quickly release blockage	**YES**	NO
	Avoids potential fill with wind blown sand/debris	**YES**	NO
HAIR	**Avoids Hair Entrapment**	**Best**	Some*
	Provides tubes - swimmers are aware of hair entry before entrapment can happen	**YES**	NO
	Hair more likely to mat at surface than enter the drain	**YES**	NO
FINGER & LIMB	**Avoids Finger & Limb Entrapment**	**Best**	Some*
	Least likely to be damaged or missing	**YES**	NO*
MECHANICAL & EVISCERATION	**Avoids Mechanical Entrapment**	**Best**	Some*
	Avoids dog tags or jewelry entrapment	**YES**	NO
	Avoids necklace, chain entrapment	**YES**	NO
	Avoids EVISCERATION Entrapment	**Best**	Some*
	Permanently installed	**YES**	NO
	Provides thread lock coated screws	**YES**	NO
	Lifetime of whole product or lid only	Lid Only	Whole Product
OTHER	Product Shown at Consumer Product Safety Commission	**YES**	NO
	Hearing on Unblockable Drains		
	Considered by CPSC for permanent installation of body of product	**YES**	NO
	Considered as the safest solution for all types of entrapment byCPSC in unblockable hearing decision webcast 3-2010	**YES**	NO
	Easy Install & Underwater Install	**YES**	NO*
	Doesn't require additional sump - Provides an internal sump	**YES**	NO*
	Can be installed where there is no sump	**YES**	NO*

* Dependant on choice of compliant cover. Some are good to avoid 1 or 2 but not all 5 types of entrapment

B. Information Ads

BeeSafe SYSTEMS, LLP

1-888-306-0121
www.beesafesystems.com



Unique Safety features of the BeeSafe System.

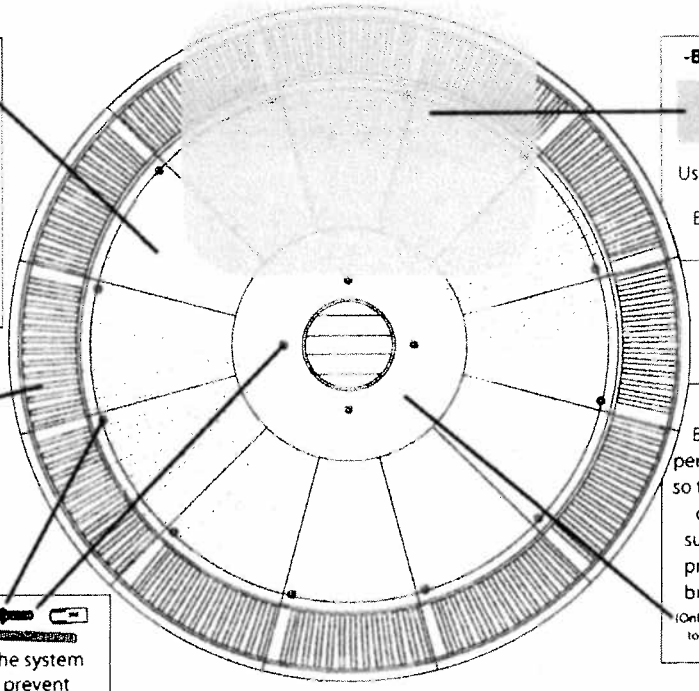
The BeeSafe Systems Model 1 is a Large Unblockable High Flow Safety Drain System to retrofit over existing pool drains.

Overall Size	Weight	Flow Rate	Sump	VGB	ASME
46 inch diameter	90 pounds	792 GPM	Internal Sump	Approved	Certified

BeeSafe is a large unblockable system, not just a little drain cover!

Its BIG. Its heavy. It does it all as a stand alone product to solve all problems of entrapment.

Makes your single or multiple main drains unblockable! No need for a second level of protection! Can be used with or without a sump.



-Hair, Body & Evisceration Entrapment-

156 Individual 12 inch Tubular Channels make up the System. They Function like Self Regulating Hydraulic Switches. Hair will follow a pattern of laminar flow and not tangle.

-Finger, Mechanical & Evisceration Entrapment-

Outside Opening of the Tubes have a small 1/4 inch diameter preventing fingers or Jewelry from becoming entraped.

-Limb Entrapment & Evisceration-

Proper fasteners assure the system will remain attached to prevent limb entrapment or evisceration.

-Body Entrapment-

-18 x 23 Body Blocking Element-

Used in ASME Testing. Only 20% of the BeeSafe System is Blocked.

The body of the BeeSafe System is permanently installed, so that a body or limbs can not reach the suction piping. Also prevents missing or broken drain covers.

(Only the lid & its fasteners need to be replaced every 7 years)

Designed to Address All 5 Forms of Entrapment!

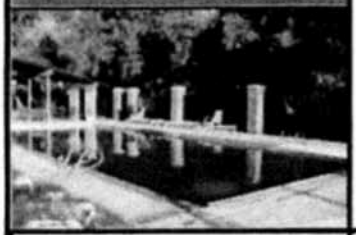
- **Body Entrapment** - The size of the system, and the self regulating hydraulic switch mechanism of the tubes makes body entrapment nearly impossible. Flow Testing for body entrapment exceeded 6,000 gallons per minute, so even several bodies on the surface at the same time would not likely become entrapped. The outer 6 inches that encompasses the openings is sloped so bodies will likely slide off.
- **Hair Entrapment** - Flow Testing found that hair will most likely mat at the surface. If hair does enter the tubes it will follow a pattern of laminar flow until exiting into the sump or drain line. The tubes are a full 12 inches long to prevent hair entanglement. Even hair longer than the tubes will not likely entangle because of the laminar flow.
- **Finger & Limb Entrapment** - The tubes are small in diameter to prevent fingers and toes from entering. The lid of the System is securely fastened with 316 stainless steel screws and inserts preventing limbs from reaching the suction piping.
- **Mechanical Entrapment** - The small size diameter and long length of the tubes combine to avoid mechanical entrapment, such as clothing a chain or other jewelry items.
- **Evisceration** - Securely fastened 316 stainless steel anchors & screws in the bottom of the pool prevents damage or missing covers . The unique design acts to prevents suction when a body sits on the surface.

Simply a Better Answer to Suction Entrapment!!

BeeSafe Systems.

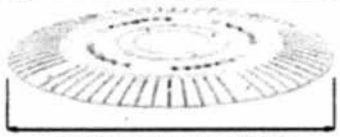
www.beesafesystems.com

Unblockable protection now with 2 models to choose from.



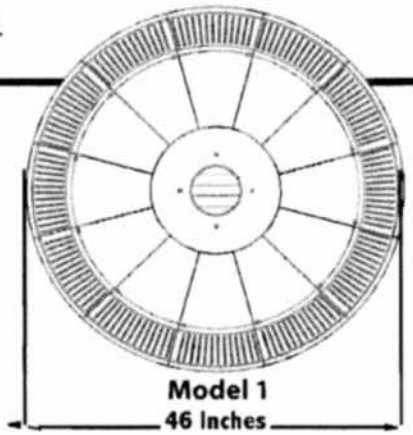
Model 2 Coming Soon

34 inches



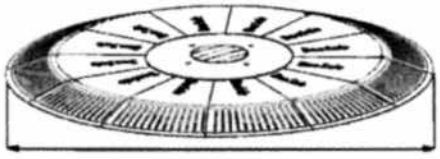
34" diameter x 1.75" high

GPM 224



Model 1

46 Inches



46" diameter x 2" high

GPM 1100

VGB Approved Main Drains

ASME/ANSI APPROVED & IAPMO CERTIFIED

The unique patented tubular system design protects pools & Swimmers from all entrapment hazards associated with the main drain in swimming pools & spas.

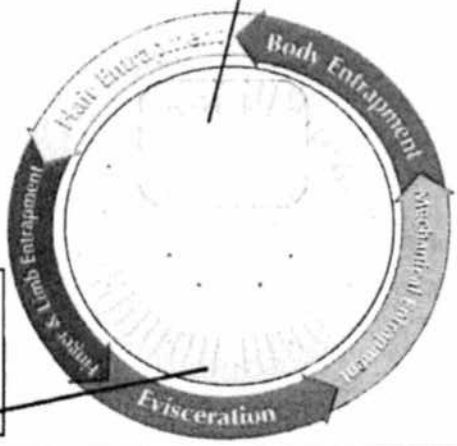
- Prevents bather entrapment
- VGB Certified - IAPMO Certified
- Easily installed over Main Drains
- Strong chemically resistant PVC
- Slip resistant surface - No trip hazard
- Easily installed over existing main drains
- Includes stainless steel hardware
- For use with up to 12" drain pipe
- Can be used with or without a sump.

-Body Entrapment-

-18 x 23 Body Blocking Element-

Used in ASME Testing.

Numerous tubular channels make up the system. If hair enters the system it will follow a laminar flow pattern & cannot tangle. The outside opening of the tubes/channels have a small openings preventing fingers or Jewelry (dog tags) from becoming entrapped.

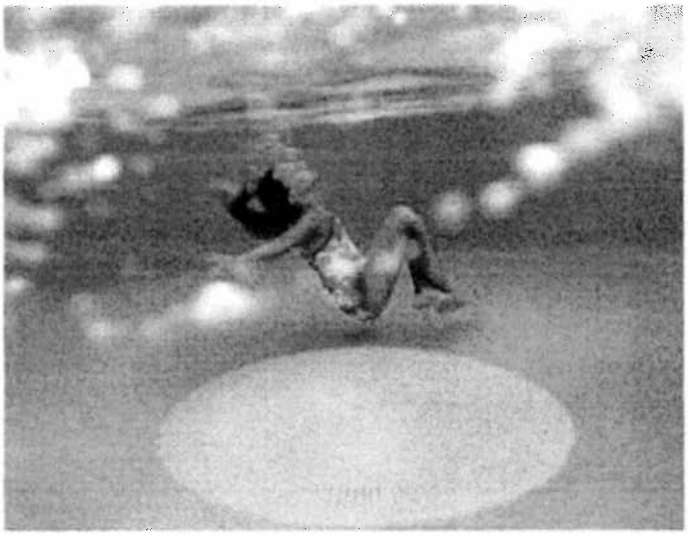


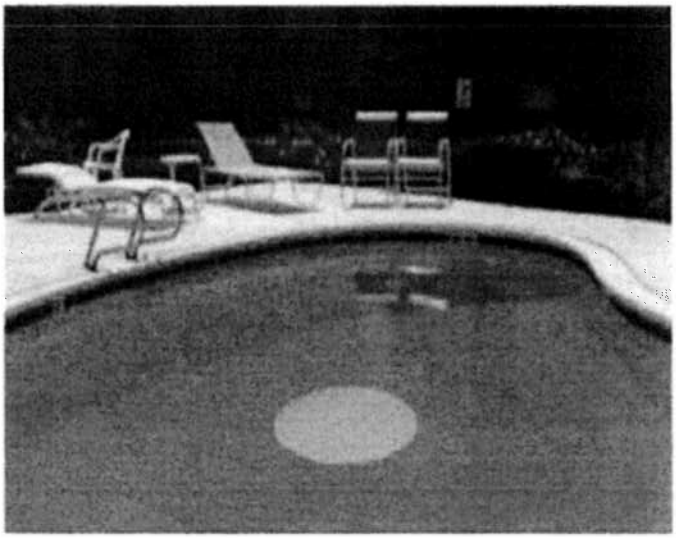
1-888-306-0121

www.beesafesystems@gmail.com

Layers of potection built into the system Designed to Address All 5 Forms of Entrapment!

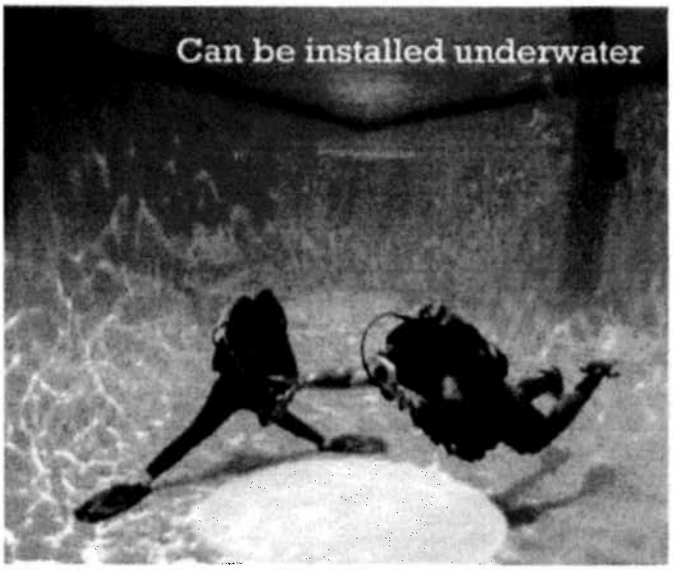
Simply a Better Answer to Suction Entrapment!!





C. Conclusion

BeeSafe Systems is the best solution for all sizes and volumes of pools. CPSC can help to make this a possible better option for all pools. Do this by determining that BeeSafe Systems original Model One, and in the future when actually produced that BeeSafe Systems Model Two, be listed as an "Other System" that is equally as effective as, or better than, the systems described in subclauses (I) through (V) of the Virginia Graeme Baker Pool and Spa Safety Act



TAB C: Directorates for Epidemiology and Health Sciences Joint Memorandum for Petition CP12-1.

TAB C

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: October 9, 2012

TO: Perry Sharpless, B.S.M.E., Project Manager
Laboratory Sciences Management, Division of Mechanical Engineering

THROUGH: Mary Ann Danello, Ph.D., Associate Executive Director
Directorate for Health Sciences

Kathleen Stralka, M.S., PMP®, Associate Executive Director
Directorate for Epidemiology

Jacqueline Ferrante, Ph.D., Director
Division of Pharmacology and Physiology Assessment

Stephen Hanway, M.S., Director
Division of Hazard Analysis

FROM: Kevin Gipson, M.S., Mathematical Statistician
Division of Hazard Analysis

Stefanie Marques, Ph.D., Physiologist
Division of Pharmacology and Physiology Assessment

SUBJECT: Directorates for Epidemiology and Health Sciences Joint Memorandum for Petition CP12-1

The purpose of this memorandum is to address Petition CP12-1, which requests that the U.S. Consumer Product Safety Commission (CPSC) initiate rulemaking to determine whether the "BeeSafe" system is "equally effective as, or better than, the systems designed to prevent entrapment listed in the Virginia Graeme Baker Pool and Spa Safety Act." The BeeSafe product is a large surface-mounted suction outlet fitting assembly that is permanently attached to the pool floor using screws and glue. Water is collected via slots and tubes along the perimeter of the product and fed into a central cavity that is above the circulation system suction outlet. This product is equipped with a removable winterizing cover that is approximately 12 inches in diameter and is located directly above the central cavity and suction outlet. The petitioner requests that its product be considered an "other system," as described in the Act. Therefore, pools using this product would not be required to implement a back-up system such as a safety vacuum

release system, suction limiting vent system, gravity drainage system, automatic pump shut-off system, or drain disablement system.

The Division of Hazard Analysis searched CPSC databases for pool and spa entrapments and determined that there were 28 reports (29 victims) of incidents involving circulation entrapments[1] with pools and spas[2] that were reported to CPSC staff for the period January 1, 2008 through August 31, 2012. Of the 28 reports, one report involved two victims. There were 2 fatalities, 24 injuries, and 3 no apparent injury incidents. Seventeen victims were in pools (59 percent) and 12 were in spas (41 percent). The majority of the victims were children younger than 18 years old (26 victims, 90 percent) with the remainder adults (3 victims, 10 percent). Twenty-one victims were female (72 percent) and 8 were male (28 percent). Based upon examination of the reports, it was determined that most of the incidents (20 victims, 69 percent) occurred at public places. Eight victims (28 percent) were at a residential location, and for the remaining 1 victim (3 percent) the incident location was not specified. Table 1 gives the yearly frequency of reported victims based on severity (fatality, injury, and no apparent injury).

Table 1.
Circulation Entrapments Associated with Pools and Spas by Year of Incident
January 1, 2008−August 31, 2012[3]

Year	Fatality	Injury	No Apparent Injury	Yearly Total
2012 (Jan 1-Aug 31)	0	5	0	5
2011	0	5	2	7
2010	0	2	0	2
2009	0	6	0	6
2008	2	6	1	9
Column Total	2	24	3	29

Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII and INDP are updated on an ongoing basis.

The mechanisms of injury in these cases are disembowelment (evisceration[4]) and body, limb, hair, and mechanical entrapments. Table 2 summarizes the types of entrapments and entrapment scenarios that resulted in injuries and fatalities. Any type of entrapment or entrapment scenario that can cause a person to be held underwater poses a serious risk of injury and/or drowning.

[1] A "circulation entrapment" is defined as an entrapment involving the water circulation system of a product. A multidisciplinary team of CPSC staff collaboratively developed this definition and the types of products of interest regarding circulation entrapments.
[2] The term "spa" is used to refer to spas and hot tubs.
[3] Reporting is ongoing for this time period.
[4] Evisceration is the removal of some or all of the organs of the gastrointestinal tract through the rectum.

Table 2.
Types of Entrapments and Entrapment Scenarios that Resulted in Injuries and (Deaths) Associated with Pools and Spas
January 1, 2008−August 31, 2012[5]

Entrapment Type	Entrapment Scenario				Row Total
	Outlet Cover Missing or Removed/Disengaged	Trapped by Suction	Caught on Outlet Cover	Unknown	
Evisceration	1 (1)	1	0	0	2 (1)
Body	2	6	0	0	8
Limb	6 (1)	1	0	1	8 (1)
Hair	0	0	3	0	3
Mechanical	1	0	1	1	3
Column Total	10 (2)	8	4	2	24 (2)

Source: U.S. Consumer Product Safety Commission: National Electronic Injury Surveillance System (NEISS), IPII (Injury and Potential Injury Incidents), and INDP (In-Depth Investigations). IPII and INDP are updated on an ongoing basis.

Evisceration or disembowelment involves suction applied directly to the rectum with injuries ranging from prolapse of the rectum[6] to small intestine removal. These types of injuries usually involve children sitting on uncovered drains and creating a circumferential seal with the anus at the center. The negative pressure formed can cause a rectal prolapse or rectal tear, which can result in avulsion of the small intestines and their removal from the anus (Juern *et al*., 2010). Due to a child's small size and the mobility of the small intestine, a change in pressure as little as 2.2 lb/in^2 may result in tears in mesentery, severe prolapse, and evisceration almost instantaneously (Deppa and Wanna-Nakamura, 1996). The long-term effects of this type of injury depend on the amount of small bowel removed; children with little small bowel remaining must undergo a transplant or spend the rest of their lives receiving nutrition through a catheter (Juern et al., 2010). Even in less severe cases, the effects of this type of injury can be devastating on a child's health, development, and overall quality of life.

During the time period reviewed, there was one incident that involved an evisceration and resulted in the death of a 6-year-old girl. The victim sat on the main drain in an outdoor wading pool at a golf club; the drain was missing its cover, and the pool did not have any type of safety vacuum release system installed. The victim was hospitalized for several months and underwent transplant surgery, but ultimately died 9 months after the incident due to complications resulting from the initial injury.

There were two other cases where victims reportedly had prolapsed rectums. The first involved a 3-year-old girl who was sitting on the main drain of an outdoor wading pool at a private health club. The drain cover was missing, and the safety vacuum release system

[5] Reporting is ongoing for this time period.
[6] A rectal prolapse is tissue lining the rectum protruding through the anus.

did not turn on. Emergency personnel who first arrived at the scene observed that the victim had a 2 to 3 centimeter rectal prolapse. By the time that the victim arrived at the hospital, the rectal prolapse had spontaneously retracted, but her rectum remained swollen and bruised. The girl was held overnight at the hospital for observation. The second incident involved a 3-year-old girl who was diagnosed with a rectal prolapse as the result of being trapped by suction in a spa. The investigation of this incident has not been completed, and there is no further information on the severity of the injury sustained in this incident.

Body entrapments involve areas of the torso, including the back, stomach, chest, and groin. During the time period reviewed, there were eight body entrapment incidents. Six of the body entrapments were caused by the suction of the pump holding the body against the drain, and two were due to missing or removed/disengaged outlet covers. All of the body entrapment incidents resulted in minor injuries such as lacerations, contusions, and abrasions.

Limb entrapments involve arms, hands, legs, and feet. During the time period reviewed there were nine limb entrapment incident scenarios. The entrapment scenario of one limb entrapment incident is unknown. One limb entrapment was due to suction of the pump and seven of the limb entrapments were due to missing or removed/disengaged outlet covers; two of these incidents involved children (ages 4 and 5) who were completely submerged when their arms became entrapped in uncovered outlets. In both incidents, the children were removed from the water not breathing and were revived at the scene. One limb entrapment incident resulted in the death of a 14-year-old girl. The victim's arm became entrapped in the main drain at the bottom of the pool, which was missing its cover. She was submerged at the bottom of the pool for nearly 20 minutes before being rescued by the first responders who made multiple attempts to free her arm from the drain. The girl ultimately died 5 days later of anoxic encephalopathy[7] due to near drowning. The pool did not have any type of safety vacuum release system installed.

Hair entrapments involve incidents in which the victim's hair becomes caught on the outlet cover. During the time period reviewed, there were three hair entrapment incidents that occurred in spas. In one incident, the 11-year-old victim was found by her mother unresponsive with her face submerged. She was hospitalized for 3 days, but sustained no long-lasting effects from the entrapment. In the remaining two incidents, there is not enough information in the report (one investigation is ongoing, one was terminated) to determine the severity of the injuries sustained.

Mechanical entrapments involve articles of clothing, jewelry, or appendages (*i.e.*, fingers or toes) caught in an outlet cover. During the time period reviewed there were three mechanical entrapment incidents. Two mechanical entrapment incidents resulted in fractured toes. In one of these incidents a 35-year-old woman was caught on an outlet cover. The other case involved a 9-year-old girl, but the scenario could not be

[7] Anoxic encephalopathy is a degenerative brain disease caused by insufficient oxygen as the result of decreased blood flow or decreased oxygen in the blood.

determined due to limited information. One mechanical entrapment incident involved a 14-year-old boy who was wearing a t-shirt that became entrapped in a drain at a private pool. When the boy was freed from the outlet cover and removed from the pool he was unresponsive; he was revived at the scene and immediately transported to the hospital where he was treated and released. After the incident, the pool was inspected, and it was determined that the pool did not comply with the Act; it did not have compliant outlet covers or an anti-entrapment system in place. However, because it was a private pool, no unblockable drain cover or anti-entrapment device was required.

Overall, out of the 26 pool and spa incidents that resulted in a fatality or injury, 12 incidents (46 percent) involved entrapments due to missing or removed/disengaged outlet covers, and 8 incidents (31 percent) involved suction type entrapments. In the absence of a secondary anti-entrapment system, these incidents resulted in severe and even fatal outcomes. Both of the fatalities involved entrapments due to missing outlet covers in pools that did not have a safety vacuum release system or other backup system installed. It is the opinion of CPSC staff that a suction outlet that has a cover that can be removed or improperly installed resulting in an exposed hole that can be blocked by a person's head, torso, limb, bathing suit, or other articles of clothing, in the absence of compliant back-up system, presents a significant and immediate hazard to the consumer.

References:

Memorandum from Roy Deppa and Suad Wanna-Nakamura, Ph.D. to Ronald Medford, AED, "Assessment of the Pool Pump Cut-off Device Presented by David Stingl," March 12, 1996.

Juern J. Schmeling D, Feltis B "Transanal Wading Pool Suction-drain Injury Resulting in Complete Evisceration of the Small Intestine: Case Report and Review of the Literature," Journal of Pediatric Surgery. 2010; 45, E1−E3

TAB D: Pool and Spa Safety Act – Standards

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

DATE: October 4, 2012

TO: Perry Sharpless, BeeSafe Petition Project Manager

THROUGH: Marc Schoem, Acting Director, Office of Compliance and Field Operations
Mary Toro, Director, Division of Regulatory Enforcement

FROM: Troy Whitfield, Mechanical Team Lead
Division of Regulatory Enforcement

SUBJECT: Pool and Spa Safety Act – Standards

Background:

On December 19, 2007, the President signed into law the Virginia Graeme Baker Pool and Spa Safety Act (the Act), named after the daughter of Nancy Baker and the granddaughter of former Secretary of State James Baker. Virginia Graeme Baker died in a tragic incident in June 2002, after the suction from a spa drain entrapped her under the water.

This Act was first introduced by Rep. Debbie Wasserman-Schultz (FL) and was supported by the Baker family and Safe Kids Worldwide. There is an annual average of 390 pool- or spa-related drowning deaths (2007−2009) and 5,200 emergency room-treated submersion injuries (2009-2011) involving children younger than 15 in pools and spas. Seventy-five percent of the reported fatalities and 79 percent of the emergency room - treated injuries involved children under the age of 5 years.[1] In addition, from 1999 to 2011,[2] there were 106 reported incidents associated with suction entrapment, including 12 deaths and 89 injuries.[3] The Act is intended to reduce these deaths and injuries by making pools safer, securing the environment around them, and educating consumers and industry on pool safety.

The Act specifies that on or after December 19, 2008, swimming pool and spa drain covers available for purchase in the United States must meet specific performance requirements. The new covers, meeting the standard required by the law, are required to be installed on all public swimming pools, wading pools, spas, and hot tubs.

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[1] Gipson, K., Pool or Spa Submersion: Estimated Injuries and Reported Fatalities, 2012 Report. May 2012. U.S. Consumer Product Safety Commission (http://www.cpsc.gov/library/foia/foia12/os/poolsub2012.pdf).
[2] Italics are used to denote periods for which reporting is ongoing (*2008, 2009, 2010,* and *2011).*
[3] Gipson, K., 1999−2001 Reported Circulation/Suction Entrapment Associated with Pool, Spas, and Whirlpool Bathtubs, 2012 Report. May 2012. U.S. Consumer Product Safety Commission (http://www.cpsc.gov/library/foia/foia12/os/entrap12.pdf).

Additionally, public pools and spas with a single suction outlet must have additional devices or systems installed that are designed to prevent suction entrapment.

Standards:

The Act requires that public pools and spas in the United States with single blockable drains be equipped with anti-entrapment devices or systems that comply with the ASME/ANSI A112.19.8 performance standard, or any successor standard. This standard addresses the drain cover installed as part of the suction outlet system. In August 2011, the CPSC adopted the ANSI/APSP-16 2009 (Association of Pool and Spa Professionals) standard as the successor to the ASME standard with an effective date of September 6, 2011. The APSP standard is substantively identical to the ASME standard with its addenda.[4] The basic requirements of the standard are:

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

The Act requires that each public pool and spa in the United States with a single main drain, other than an unblockable drain, be equipped, at a minimum, with one or more of the following devices or systems designed to prevent entrapment:

(I) SAFETY VACUUM RELEASE SYSTEM[5] - A safety vacuum release system that ceases operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected, which has been tested by an independent third party and found to conform to ASME/ANSI A112.19.17-02 standard or ASTM F2387-04 (2012) standard.

(II) SUCTION-LIMITING VENT SYSTEM[6] - A suction-limiting vent system with a tamper-resistant atmospheric opening. The current voluntary standard for suction-limiting vent systems is ASTM F2707-10, *Standard Safety Performance Specification for Safe Design and Installation of Field Fabricated Suction-Limiting Vent Systems for Suction Entrapment Prevention in Swimming Pools, Spas, Hot Tubs, and Wading Pools.*

(III) GRAVITY DRAINAGE SYSTEM - A gravity drainage system that utilizes a collector tank. Staff is not aware of any standards for gravity drainage systems or collector tank specifications; however, the ASTM subcommittee F15.51 has a working draft for the safe design and installation of suction-limiting gravity systems for Suction Entrapment Prevention in Swimming Pools, Spas, Hot Tubs, and Wading Pools.

[4] http://www.cpsc.gov/businfo/frnotices/fr11/vgb-pssa-successor-standard.pdf.
[5] 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.
[6] Also called an atmospheric vent.

(IV) AUTOMATIC PUMP SHUT-OFF SYSTEM - 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.

(V) DRAIN DISABLEMENT - A device or system that disables the drain.
In the past, companies have developed products that sealed the suction outlet or shut off the pump when a cover is removed. Staff is not aware of a product currently on the market that meets this description. 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). Staff is not aware of any current 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 (I) through (V) above at preventing or eliminating the risk of injury or death associated with pool circulation systems. This category will allow the development of future products, devices, or systems, but to staff's knowledge, there are no standards for other such systems.

The Act requires that single main drains other than unblockable drains must be equipped with one or more of the above-mentioned secondary anti-entrapment systems or devices. The Commission recently revoked its previous interpretative rule, which allowed for a large, unblockable drain cover to be installed over a smaller, blockable outlet. With this revocation, the definition of an unblockable drain reverts back to what was stated in the Act: a drain of any size and shape that a human body cannot sufficiently block to create a suction entrapment hazard. As a result, any facility relying on the initial interpretative rule and installing a large unblockable drain cover over a smaller outlet must now install a secondary anti-entrapment device or system by May 23, 2013 to be compliant with the requirements of the Act.

Conclusion:

The Act requires swimming pool and spa suction outlet covers to meet the performance requirements of the ANSI/APSP-16 2011 standard (the successor standard to the referenced standard in the Act - ASME/ANSI A112.19.8-2007, [with addenda 8a-2008 and 8b-2009]). Additional standards referenced in the Act are associated with secondary anti-entrapment devices or systems; namely, Suction Vacuum Release Systems (SVRS) and suction-limiting vent systems. The standards are ASME/ANSI A112.19.17 and ASTM F2387 for SVRS and ASTM F2707 for suction-limiting vent systems, which were approved after the issuance of the Act.

TAB E: Summary of Suction Outlet Fitting Assembly (SOFA) Laboratory Testing

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: October 4, 2012

TO: Perry Sharpless, BeeSafe Petition Project Manager
Directorate for Laboratory Sciences
Division of Mechanical Engineering

THROUGH: Andrew G. Stadnik, P.E., Associate Executive Director
Directorate for Laboratory Sciences

FROM: Mark Eilbert, Mechanical Engineer
Directorate for Laboratory Sciences
Division of Mechanical Engineering

SUBJECT: BeeSafe Petition: Summary of Suction Outlet Fitting Assembly (SOFA) Testing

Summary

The BeeSafe Petition requests that the U.S. Consumer Product Safety Commission (CPSC, the Commission) consider BeeSafe Models 1 and 2 to be acceptable "other systems," under the Virginia Graeme Baker Pool and Spa Safety Act (the Act) and therefore, be in compliance with the secondary device or system requirement of the Act, as well as with ANSI/APSP-16 requirements for single suction outlets. CPSC Laboratory Sciences (LS) staff tested both BeeSafe models to relevant parts of APSP-16, and also tested the SOFAs without the removable winterizing covers installed.

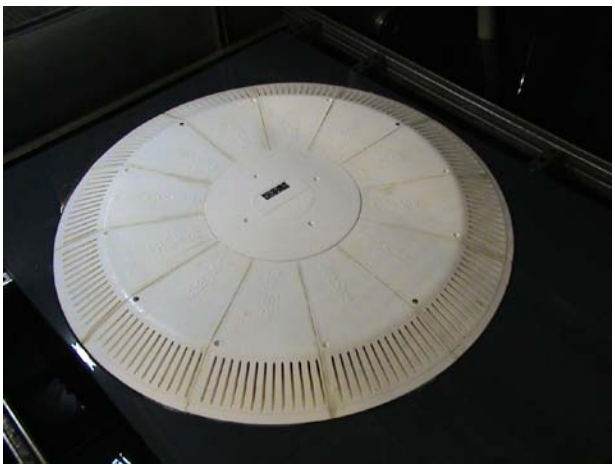
The LS results were as follows:

LS staff found that the flow ratings determined according to APSP-16 2011 testing procedures for both BeeSafe Models 1 and 2 agreed with the marked flow ratings on the products. The entrapment forces measured with the winterizing covers removed were higher than the forces measured with the products assembled according to the manufacturer instructions, and exceeded the pull-off forces allowed under ANSI/APSP-16 2011.

Background

LS staff tested two models of SOFAs that were provided by BeeSafe to the entrapment-related portions of ANSI/APSP-16 2011, "Standard Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs," to confirm the marked flow ratings. Additionally, staff determined suction forces with the winterizing cover removed.

The BeeSafe Model 1 has a flow rating of 1,100 gallons per minute (gpm). Water flows through 156 slots near the periphery. The Model 1 is 46 inches in diameter and intended for installation over sumps and pipes mounted flush with pool floors. For these tests, the Model 1 was concentrically mounted over an 8-inch pipe, a pipe size appropriate for the marked flow rate. A removable winterizing cover exposes an 8-inch access hole on the upper surface of the SOFA that widens to 19 inches at the base. The winterizing cover is held to the body by four type-316 stainless steel screws. The Model 1 is attached to the pool floor with adhesive and stainless steel screws. A top view of the Model 1 is shown in Photograph 1. Photograph 2 shows a close-up of the product with the winterizing cover removed.

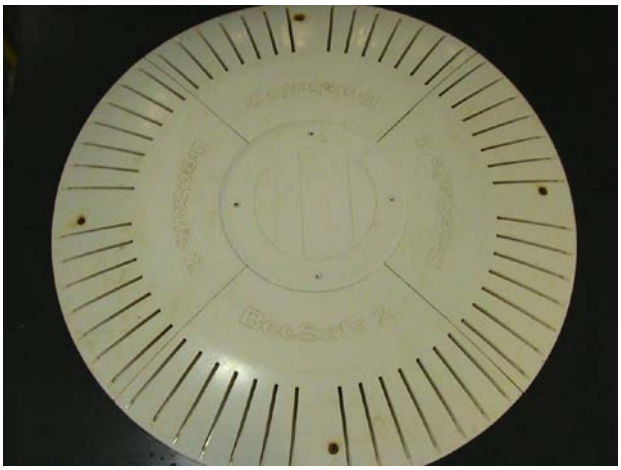


Photograph 1. BeeSafe Model 1.

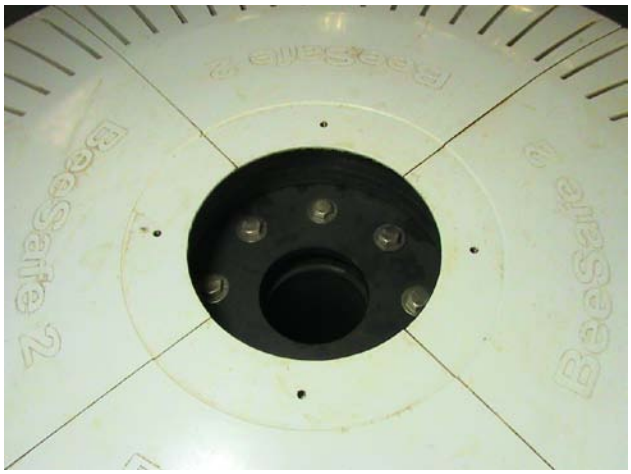
Photograph 2. BeeSafe Model 1 with the winterizing cover removed.

The BeeSafe Model 2 has a flow rating of 224 GPM. Water flows through 56 slots near the periphery to the central sump. The Model 2 is 34 inches in diameter and is intended for installation over sumps and pipes that are terminated flush with pool floors. For these tests, the Model 2 was concentrically-mounted over a 4-inch pipe, a pipe size appropriate for the marked flow rate. A removable winterizing cover exposes an 8-inch access hole on the upper surface of the SOFA that widens to 11 inches at the base. The winterizing cover is held to the body by four type-316 stainless steel screws. The Model 2 is attached to the pool floor with adhesive and stainless steel screws. A top view of the Model 2 is

shown in Photograph 3. Photograph 4 shows a close-up of the product with the winterizing cover removed.



Photograph 3 BeeSafe Model 2.



Photograph 4 BeeSafe Model 2 with the winterizing cover removed.

Staff tested the BeeSafe Models 1 and 2 for conformance to ANSI/APSP-16 2011 Section 4 Hair Entrapment, and Section 5 Body Entrapment. The hair and body entrapment tests involve the measurement of pull forces on human hair or body-block fixtures away from the SOFA. There are three entrapment tests: a full-head wig test, a ponytail hair test, and the body entrapment test. The highest flow rate achieved for each entrapment test determines the flow rating for that test. The final flow rating is determined as the lesser of three test ratings.

For evaluation of both BeeSafe models with the winterizing cover removed, hair and body fixture pull forces were measured over the center opening with water flowing at the marked flow ratings.

Summary of Test Results

LS staff conducted flow ratings tests on BeeSafe Model 1 and Model 2 SOFAs. The tests were conducted over the water intake slots on the periphery of Model 1 and Model 2. The results of the ANSI/APSP-16 2011 tests that are used to determine flow ratings are in Table 1. The measured flow ratings were no more than 2 percent less than the marked flow ratings, which are within the tolerance allowed by the ANSI/APSP-16 2011 standard. Results indicate agreement with the marked flow ratings on the BeeSafe products.

Table 1 - Summary of Flow Ratings Tests
Agreement of Testing[1] to Marked Ratings.

Model	Full Head, gpm, (lbf^2)	Ponytail, gpm, (lbf^2)	Body Block, gpm, (lbf^2)	Final[3] Tested Rating, gpm	Marked Rating, gpm	Agreement, (Tested/ Marked)
#1 (1100 gpm)	1080 (4.5)	1080 (4.7)	1100 (28)	1080	1100	98%
#2 (224 gpm)	224 (4.0)	224 (4.0)	224 (15)	224	224	100%

[1]All tests were conducted near the periphery, over the intake slots.
[2]Hair test 1 and Hair test 2 pull forces must be less than 5 lbf at rated flow. The Body Block test has a maximum 120 lbf pull force at rated flow.
[3]The final rating is the lesser of the three entrapment tests.

With the winterizing cover removed, staff conducted tests with the hair and body block fixtures to measure the entrapment forces when exposed to flow entering the exposed 8-inch diameter access hole. Because the hair fixtures could pass through the central hole and be carried to the exposed pipe, the laboratory tests were conducted with the hair fixture restrained over the hole. One exception was made when the pipe below was smaller than the fixture: the full-head test with the Model 2. For that test, the head was allowed to enter the hole freely. Test results are shown in Table 2.

Table 2 - Summary of Tests Over the Central Lid Hole
Winterizing Cover Removed
Pull Force[1] (lbf) at Rated Flow.

Model	Full Head, Free	Full Head, lbf	Ponytail, lbf	Body Block, lbf
#1 (1100 gpm)	Not Done	25	7	115
#2 (224 gpm)	150[2]	20[3]	5	61

[1]For hair tests, the pull force was measured while the fixture was restrained at the level of the 8-inch center hole, unless noted otherwise.
[2]The full head fixture was not restrained and the flow pulled it into the 8-inch center hole, stopping on the 4-inch pipe below.
[3]The data were taken at 280 gpm.

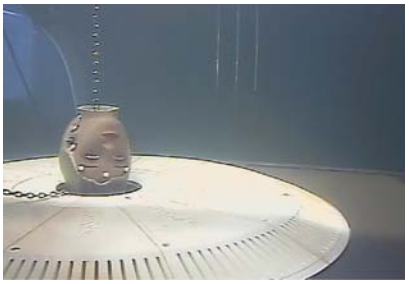
Representative Images of BeeSafe Flow Rating Tests
BeeSafe Model 1 (1a-1f); BeeSafe Model 2 (2a-2c)

1a Body Block Test over edge of BeeSafe 1(BeeSafe 2 similar).

1b Full Head Test over edge of BeeSafe 1(BeeSafe 2 similar).

1c Ponytail Test over edge of BeeSafe 1(BeeSafe 2 similar).

1d Body Block Test over opened center of BeeSafe 1.



1e Full Head Test over opened center of BeeSafe 1.

1f Ponytail Test over opened center of BeeSafe 1.

2a Body Block Test over opened center of BeeSafe 2.

2b Full Head Test over opened center of BeeSafe 2.

2c Ponytail Test over opened center of BeeSafe 2.

TAB F: Public Comments Received in Response to BeeSafe Petition

Comments
Petition for Classification of "BeeSafe System" as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act ("VGB Act")
CPSC Docket No. CPSC-2012-0020
Comments Due: June 4, 2012

PUBLIC SUBMISSION

As of: August 22, 2012
Received: June 01, 2012
Status: Posted
Posted: June 04, 2012
Category: Consumer Advocacy Organization
Tracking No. 81025ca2
Comments Due: June 04, 2012
Submission Type: Web

Docket: CPSC-2012-0020
Petition for Classification of ''BeeSafe System'' as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act (''VGB Act'')

Comment On: CPSC-2012-0020-0001
Petitions for Classification: BeeSafe System as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act

Document: CPSC-2012-0020-0002
Comment from Paul Pennington

Submitter Information

Name: Paul Pennington
Address:
336 West College Ave
Santa Rosa, CA, 95401
Email: paul@poolsafetycouncil.org
Phone: 877-222-4289
Fax: 707-576-8286
Submitter's Representative: Paul Pennington
Organization: Pool Safety Council

General Comment

See attached file(s)

Attachments

BeeSafe Comment

Pool Safety Council

June1, 2012

Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East West Highway
Suite 502
Bethesda, MD 20814-4408

Docket No. 2012-8005

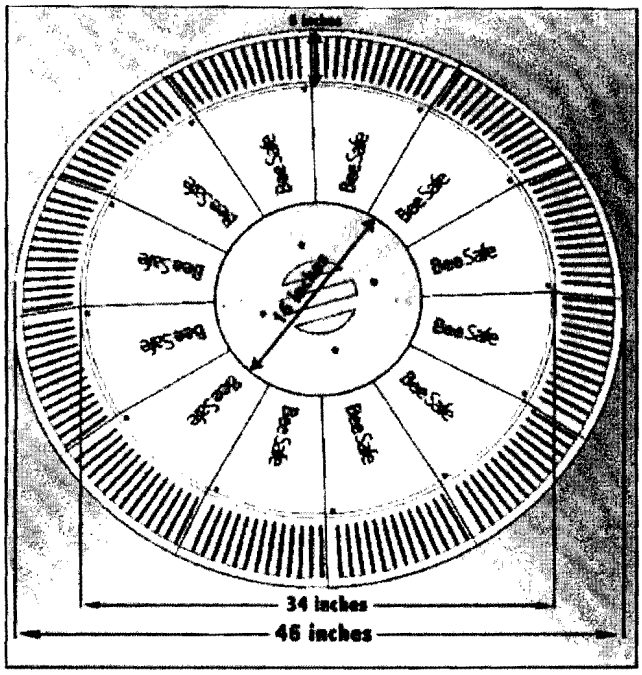
Dear CPSC Secretary:

The Pool Safety Council (PSC) is pleased to have the opportunity to offer comments on the Petition for Classification of "BeeSafe System" as an Anti-Entrapment system under the Virginia Graeme Baker Pool and Spa Safety act ("VGB Act"). As one of the main forces behind enactment of the Virginia Graeme Baker Pool and Spa Safety Act ("VGB"), our supporters believe it is critical to ensure that as many pools as possible have the ***"layers of entrapment protection"*** in order to enhance pool safety and reduce the incidents of entrapment drownings across America. With this in mind, our comments on the BeeSafe System petition are as follows:

While we recognize Bonnie Snow as a very sincere and safety conscious person, we must strongly urge the Consumer Product Safety Commission (CPSC) to **deny this petition.** The BeeSafe system certainly protects against body and hair entrapment however, **it does not protect against limb entrapment**. The BeeSafe system is designed with an easily removable 16" suction outlet cover directly above the sump or suction outlet fitting assembly. (please see BeeSafe drawing below). This cover plate is removed for easy access during the winterization process and appears to even have a handle to aid in its removal. We understand the 4 fasteners (screws) are ¼ inch in length. History has shown that screws are often lost when the same or different swimming pool professional opens the pool after the winter weather. Suction outlet covers have been known to be replaced without any screws or replaced with non compliant screws that rust and corrode within a short time. Many children and primarily teenagers have been known to pull these unsecured covers off and stick their hands, arms and even feet in the suction outlet piping becoming entrapped. Without a Safety Vacuum Release System (SVRS) backup or other VGB approved system, these children and teenagers have drowned when they could not be freed. BeeSafe Systems also has a 36 inch diameter

336 West College Ave · Santa Rosa, CA 95401 · (877) 222-4289

unblockable suction outlet cover with a 10 inch diameter suction outlet cover/plate over the suction outlet itself and held on with four ¼ inch screws. This also brings up the question as to whether this 16 inch or 10 inch cover over the suction outlet itself is approved under APSP-16. With the addition of a backup layer of protection PSC would highly recommend the BeeSafe System be installed in public swimming pools and spas.



Pool Safety Council is extremely appreciative of the CPSC's work to enforce the VGB Act and educate the public about its requirements. We hope that the full Commission will deny this petition and maintain the ***"layers of protection"***. The VGB Act was carefully crafted so as to best protect swimmers, especially children, from suction entrapment. The Act should be implemented and the marketplace policed in a manner consistent with that goal.

Sincerely,

Paul E. Pennington
Chairman and Founder

336 West College Ave · Santa Rosa, CA 95401 · (877) 222-4289

PUBLIC SUBMISSION

As of: August 22, 2012
Received: June 05, 2012
Status: Posted
Posted: June 13, 2012
Category: Trade Association
Tracking No. 8104743a
Comments Due: June 04, 2012
Submission Type: E-mail

Docket: CPSC-2012-0020
Petition for Classification of ''BeeSafe System'' as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act (''VGB Act'')

Comment On: CPSC-2012-0020-0001
Petitions for Classification: BeeSafe System as an Anti-Entrapment System Under the Virginia Graeme Baker Pool and Spa Safety Act

Document: CPSC-2012-0020-0003
Comment from Walt A. Sanders

Submitter Information

Name: Walt Sanders
Address: United States,
Submitter's Representative: Walt A. Sanders
Organization: Van Fleet Associates, Inc.

General Comment

See Attached

Attachments

Comment from Walt A. Sanders

VAN FLEET ASSOCIATES, INC.

1800 DIAGONAL ROAD SUITE 600 ALEXANDRIA, VA 22314
TEL (703) 647-7504 FAX (703) 647-7531

June 5, 2012

Mr. Todd Stevenson, Director
Office of the Secretary
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

Re: Docket No. CPSC-2012-0020 -- Comments Submitted to the U.S. Consumer Product Safety Commission on Bee Safe Petition and to further Designate Certain Pool Drain Covers as "Other Systems" under Section 404(c)(1)(A)(ii)(VI), of the Virginia Graeme Baker Pool and Spa Safety Act.

Dear Mr. Stevenson:

We are submitting for the record the attached comments in support of the Bee Safe Petition (Docket No. CPSC-2012-0020) and to further expand the scope of the Bee Safe Petition by designating certain other covers as "Other Systems" under Section 1404(c)(1)(A)(ii)(VI) of the Virginia Graeme Baker Pool and Spa Safety Act.

We look forward to your response to these comments

Sincerely,

Walt A. Sanders | Vice President Law & Government Affairs | Van Fleet Associates, Inc. | 1800 Diagonal Road, Suite 600, Alexandria, VA 22003 | 703.647-7522

On behalf of the following parties who associate themselves with these comments:

Harry W. Newhard | President | Worldwide Sports LLC |
2 Pebble Creek Road | St. Louis, MO 63124 | 314-692-8001

Kevin L. Maher | Senior Vice President for Governmental Affairs | American Hotel & Lodging | Association | 1201 New York Avenue, NW, Suite 600 |Washington DC 20005 | 202-289-3147

Carvin DiGiovanni | Association of Pool & Spa Professionals |
2111 Eisenhower Ave, Alexandria, VA 22314 | (703) 838-0083, ext. 149

Thomas M. Lachocki | CEO | National Swimming Pool Foundation |
4775 Granby Circle | Colorado Springs, CO 80919| (719) 540-9119

Comments Submitted to the U.S. Consumer Product Safety Commission to the Bee Safe Petition (Docket No. CPSC-2012-0020) and to Expand the Scope of Petition to Further Designate Certain Pool Drain Covers as "Other Systems" under Section 1404(c)(1)(A)(ii)(VI), of the Virginia Graeme Baker Pool and Spa Safety Act.

We submit the following comments to the U.S. Consumer Product Safety Commission on the Bee Safe Petition and pursuant to Section 1404(c) (1) (A) (ii) (VI) of the Pool and Spa Safety Act (15 U.S.C. 8003(c)(1)(A)(ii)(VI)), to further designate certain devices identified below as "other systems" which are equally effective or better than the devices or systems listed in the prior portions of this subsection.

1. Background Legal Authority for Expending the Scope of the Bee Safe Petition

Subsection (c) (1) (A) (i) and (ii) of the Act requires public pools and spas to install features to prevent entrapment in pool drains.

(c) (i) provides:

> "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"

(c) (ii) provides:

> "FEDERAL SWIMMING POOL AND SPA DRAIN COVER STANDARD."
>
> (ii) 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 by pool or spa drains that meet the requirements of subparagraph (B):
>
> (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.
>
> (III) GRAVITY DRAINAGE SYSTEM.—A gravity drainage system that utilizes a collector tank.

> (IV) AUTOMATIC PUMP SHUT-OFF SYSTEM.—An automatic pump shut-off system.
>
> (V) DRAIN DISABLEMENT.—A device or system that disables the drain.
>
> (VI) OTHER SYSTEMS.—Any other system determined by the Commission to be equally effective as, or better than, the systems described in sub clauses (I) through (V) of this clause at preventing or eliminating the risk of injury or death associated with pool drainage systems.

The undersigned support and applaud the overall efforts by the Commission to consider and evaluate various products and technologies and methods as potential "Other systems" as referred to in Section 1404 (c)(i)(VI) of the VGB Act, and specifically to address conditions under which a single product may be able to perform the function of suction outlet fitting assembly (drain cover) as required in Section 1404(c)(i) and, through other added means, also qualify as an "other system" which is equally effective or better than the devices referred to in 1404 (c)(ii)(I-IV).

We strongly urge the Commission to use its discretion here and expand the scope of its review beyond the individual BeeSafe product by establishing well defined performance criteria under which a product may qualify as an "other system," rather than address the issue on a product by product or "first come" basis. This will conserve resources, promote overall efficiency and ensure an objective standard or set of criteria by which all manufacturers can assess their specific models and technologies. Toward that end, we respectfully submit the following proposed criteria. The criteria we have identified below are not intended to be exclusive and other means or technologies may be presented during this process or in the future which warrant expansion or revision.

The Commission's Staff Interpretation of these public pool requirements dated June 18, 2008 specifically acknowledges that subparagraph (VI) is specifically intended to "allow for the development of future products." We request that, in addition to approving the Bee Safe Product as meeting the requirements of the VGBA, that Commission authorize the technical staff to develop performance requirements to allow the Commission to approve certain suction outlet fitting assemblies (drain cover and assembly) that include additional vacuum-limiting technologies as "other systems."

The three other systems described below address body suction entrapment avoidance using technology or a combination of technologies that are not identified within subparagraphs (I-V) . Generally, the three unique technologies are summarized below:

1 A suction outlet fitting assembly with suction-limit technology incorporated within the fitting or partially within the fitting. There are three good examples. First is an interlock or presence sensing switch designed to turn off the pump or not allow it to start should the suction outlet fitting cover/grate become loose or removed. Second a suction outlet fitting assembly with a suction-limiting vent opening within the fitting and an accompanying vent to atmosphere, offered as an integrated system. Third is a sensor in the pool or spa that turns off or slows down the pump to a safe vacuum level as a swimmer approaches the installed SOFA. In each case the SOFA can, and must be certified to APSP-16, however the suction-limiting/releasing features do not stand-alone and therefore can't be certified as specific devices under ASME A112.19.7, or ASTM F 2387 SVRS standards.

They can, however, be tested under the applicable sections therein. This proposal provides a means to test these examples and any other combination of SOFA/SVRS using the same performance requirements to certify stand-alone systems. In all cases, to test the secondary suction-limiting or suction-releasing technology, the certifying test lab will evaluate SVRS performance with and without all detachable SOFA components.

2 Formalizing the pool renovation concept of converting a blockable sump to an unblockable sump without altering the pool structure. While this concept has been certified completely within the performance requirements of APSP-16, and a facility that installed one of these systems would still be properly classified as having a single unblockable drain, we are seeking formal recognition by the Commission of the concept at the system level, to remove potential confusion regarding this meeting the CPSC definition of an unblockable drain (sump). A key concept is that the renovated sump be made a permanent part of the pool surface, meaning it must be destroyed in the process of removal, much as concrete must be destroyed when altering a concrete sump. The permanent portion of the assembly would have a manufacturer specified life expectancy of at least ten years. This is intended to harmonize the life expectancy of the sump component with a typical restoration cycle for the surface of the public pool, which typically ranges from 10-15 years.

3 Formalizing the concept of "permanent" as it applies to a suction outlet fitting assembly, allowing the model of permanent disablement, where the cover/grate, and any other component, cannot be removed without destroying it and the manufacturer specifies a life expectancy of at least 10 years. This addresses all possible fastener failure modes as well as winterizing and servicing errors, where the cover/grate is not maintained properly. This is again intended to harmonize the life

expectancy of the assembly, including the cover/grate, with a typical restoration cycle for the surface of the public pool, which typically ranges from 10-15 years.

The products which are the subject of these comments are defined as suction outlet fittings (previously referred to as drain covers) where the suction outlet fitting assembly with integrated suction-limiting, suction-releasing or other defined technology is certified in compliance with ANSI/APSP 16-2011, or its predecessor ANSI/ASME A112.19.8 – 2007, and meets one of the following criteria:

1. The suction outlet fitting assembly also functions as a vacuum limiting or vacuum release system and

a. passes the ANSI/APSP-16 Standard at the listed flow rate, and

b. passes the performance test specified in either the ANSI/ASME A112.19.17 3.1 and 3.2.1.1., or ASTM F 2367-2004, sections 5.1, 5.1.3, 5.1.4, 5.1.5, 5.1.7 – 5.1.9, and 5.2.4., with and without the detachable SOFA components installed.

2. The suction outlet fitting assembly contains a frame or sump which is permanently affixed to the floor of the pool and that is of such dimension and configuration such that cannot be shadowed by the area of the 18" x 23" Body Blocking Element of ASME/ANSI A112.19.8-2007 or ANSI/APSP-16 and that the rated flow through the remaining open area (beyond the shadowed portion) cannot create a suction force in excess of the removal force values in Table 1 of that Standard with the cover/grate removed. Permanently affixed means the a) the unblockable sump cannot be removed without destroying the product in the process and b) the unblockable sump has a manufactured life expectancy of ten years or more. .

3. The suction outlet fitting assembly including the cover/grate is permanently affixed to the floor of the pool. Permanently affixed means a) the suction outlet fitting assembly including the cover/grate cannot be removed without destroying the product in the process and b) the suction outlet fitting assembly including the cover/grate has a manufactured life expectancy of ten years or more.

4. The suction outlet fitting assembly contains an interlock or presence sensing switch which will disable the pump so as to prevent it from operating should the suction outlet fitting cover/grate become loose or removed.

For this reason, and as explained in more detail below, we believe that these suction fittings should be recognized and accepted by the Commission as "other systems" permitted under section 1404.

2. The affected suction fittings provide equal or greater protection that each of the devices or systems referenced 1404(c)(1)(A)(ii).

Three of the devices referred to above each also serve to effectively prevent body entrapment in the event that the cover/grate portion of the fitting assembly is removed for any reason, either by virtue of the remaining configuration and geometry, or pump shut off or vacuum release technology. The forth is a permanent assembly which cannot be removed without its destruction. Therefore each of the options cited in the above criteria are equal or better than the devices and systems identified in Section 1404(c)(ii)(I-IV). [1]

Submitted on June 5, 2012

Walt A. Sanders | Vice President Law & Government Affairs | Van Fleet Associates, Inc. |
1800 Diagonal Road, Suite 600, Alexandria, VA 22003 | 703.647-7522

On behalf of the following parties who associate themselves with these comments:

Harry W. Newhard | President | Worldwide Sports LLC |
2 Pebble Creek Road | St. Louis, MO 63124 | 314-692-8001

Kevin L. Maher | Senior Vice President for Governmental Affairs | American Hotel & Lodging |
Association | 1201 New York Avenue, NW, Suite 600 |Washington DC 20005 | 202-289-3147

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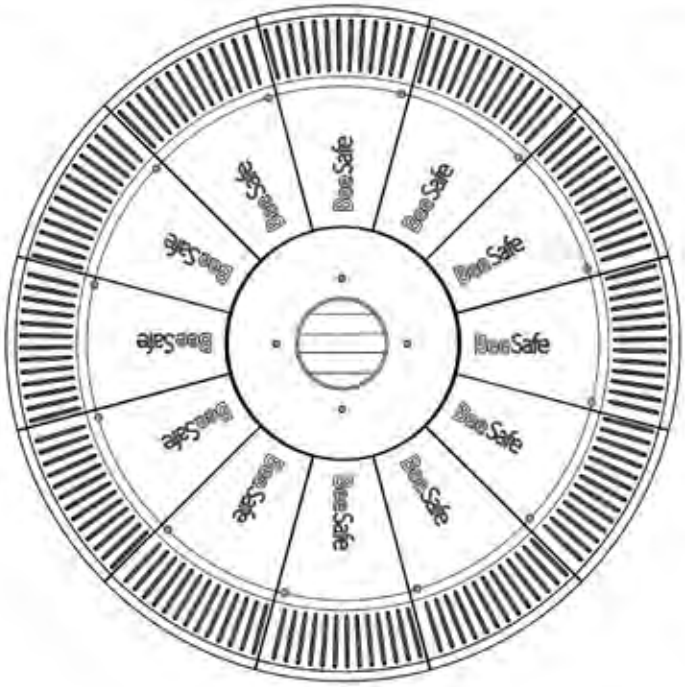
2111 Eisenhower Ave, Alexandria, VA 22314 | (703) 838-0083, ext. 149

Thomas M. Lachocki | CEO | National Swimming Pool Foundation |
4775 Granby Circle | Colorado Springs, CO 80919| (719) 540-9119

[1] 1404(c)(ii)(V) refers to Drain Disablement. As the Commission has stated, disabling all submerged suction outlets and the construction of new pools and spas without these outlets (drains) is the only way to completely eliminate all risk of entrapment. Unfortunately, virtually every state Department of Health or Public Pool Code REQUIRES such drains, therefore making this option ineffectual in practice.

TAB G: BeeSafe Model 1 Installation Instructions

Simply A Better Answer to Suction Entrapment!



BeeSafe
SYSTEMS MODEL 1
Large Unblockable Drain Cover

Installation Manual

BeeSafe Systems Model 1 - Large Unblockable High Flow Safety Drain Cover

USPC®

Tested Compliant to APSP 16-2017
Safety Compliant According to the
Virginia Graeme Baker Pool
And Spa Safety Act

For use in concrete pools.

Use in pools with or without a sump
1100 GPM Submerged Suction Outlet
For Single or Multiple Drain Use
Floor Use Only

WARNING: The BeeSafe System Model 1 must be installed in accordance with the BeeSafe Systems instruction manual, and in conformity with applicable Federal, State, Local and Swimming pool industry building and safety codes.

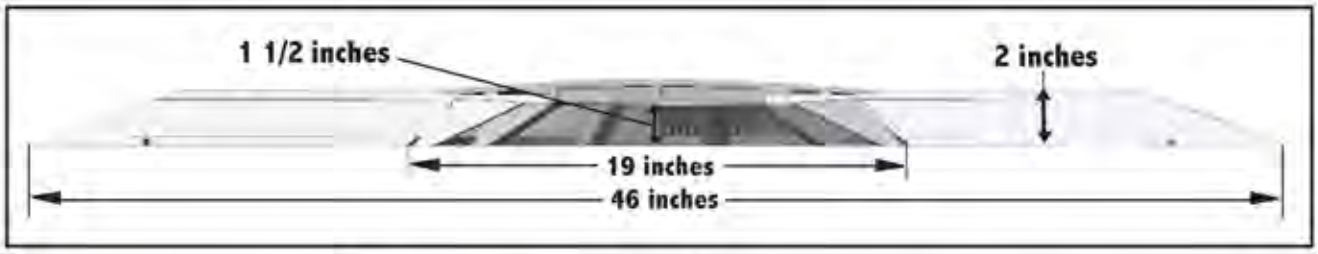
795 West Center Street #2 • Provo, Utah 84601
Toll Free: 1-888-306-0121 • Phone: 801-375-6881 • Fax 801-691-5781
www.beesafesystems.com

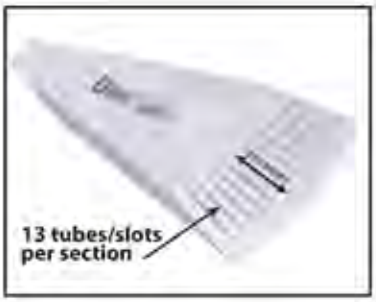
BeeSafe SYSTEMS LLC

BeeSafe Systems - A Better Answer To Suction Entrapment

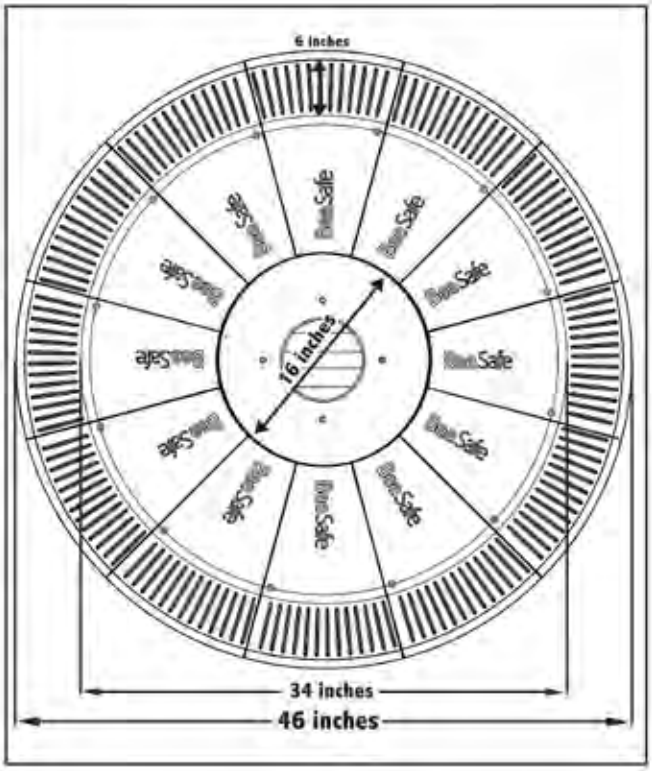
The BeeSafe Systems Model 1 is an under water drain cover system that will replace any drain cover up to 36 x 32 inches in diameter. The maximum flow rate for the BeeSafe System Model 1 is 1100 gallons per minute (gpm) or 4,163 liters per minute (lpm) floor only installation. If your state requires 1.5 fps maximum the BeeSafe System flow rate is limited to 684 gpm.

The BeeSafe System is a Large Unblockable High Flow Safety Drain Cover System. Model 1 is made up of twelve sections. Each section has 13 tubular openings that extend from the outer edge for a full twelve inches into the center. The diameter of the system is 46 inches. Height above pool bottom is 2 inches. The lid is sixteen inches in diameter. Open space at the center of the system, beneath the lid is 19 inches by 1 ½ inches. This open area provides an adequate sump for up to an 8 inch pipe.





With openings only on the outer 6 inches of the circular system, the open area cannot be blocked by a body. Across the unit the openings are separated by 34 inches and the circumference is larger than 12 feet. Even several children sitting on the outer rim at the same time could not block the flow and become entrapped on the system.



BeeSafe Systems - A Better Answer To Suction Entrapment

The patented design of the BeeSafe System specifically addresses all entrapment hazards. Each of the 156 tubes act as a self regulating hydraulic switch. The System is installed permanently into the pool.

- **Body Entrapment -** The size of the system, and the self regulating hydraulic switch mechanism of the tubes makes body entrapment nearly impossible. Flow Testing for body entrapment exceeded 6,000 gallons per minute, so even several bodies on the surface at the same time would not likely become entrapped. The outer 6 inches that encompasses the openings is sloped so bodies will likely slide off.

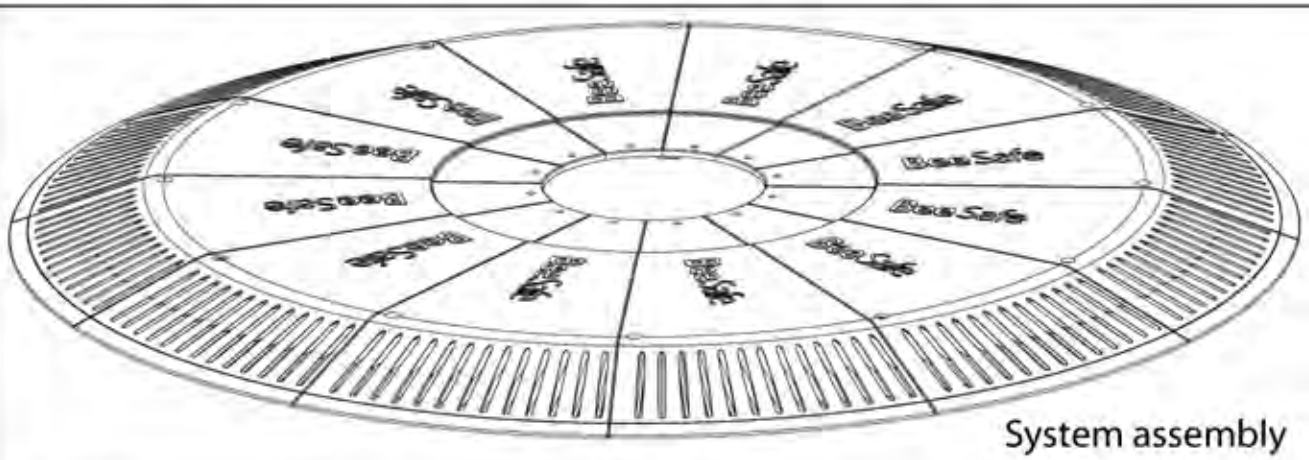
- **Hair Entrapment -** Flow Testing found that hair will most likely mat at the surface. If hair does enter the tubes it will follow a pattern of laminar flow until exiting into the sump or drain line. The tubes are a full 12 inches long to prevent hair entanglement. Even hair longer than the tubes will not likely entangle because of the laminar flow.

- **Finger & Limb Entrapment -** The tubes are small in diameter to prevent fingers and toes from entering. The lid of the System is attached with screws treated with thread lock to prevent limbs from reaching the suction piping.

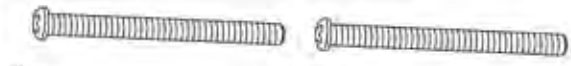
- **Mechanical Entrapment -** The small size diameter and long length of the tubes combine to avoid mechanical entrapment, such as clothing a chain or other jewelry items.

- **Evisceration** - The unique design acts to prevent suction when a body sits on the surface.

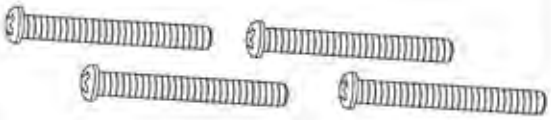
Danger - There is no backup for a missing or damaged suction outlet cover! If any part of the system is found to be damaged or missing the pool or spa shall be immediately closed to bathers.



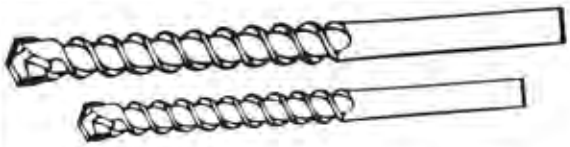
System assembly



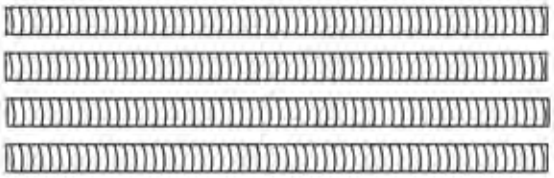
(4) 316 stainless steel Phillips Pan Head
1/4-20 x 3 inch machine screws



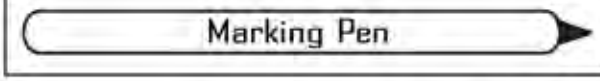
(4) 316 stainless steel Phillips Pan Head
1/4-20 x 2 1/2 inch machine screws

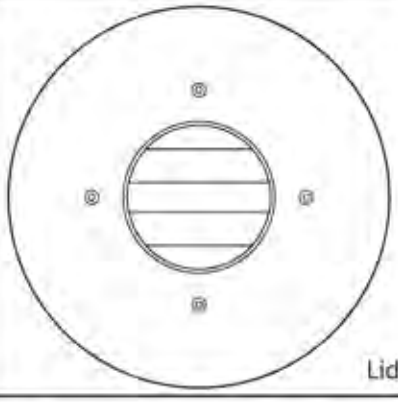


Two (2) masonry drill bits (1/4 inch and 3/8 inch)



Four (4) threaded rods

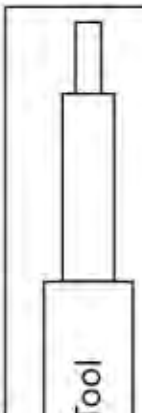




Lid

Four (4) drop-in anchors

Four (4) 316 stainless steel machine screws with Threadlocker



Eight (8) plastic plugs

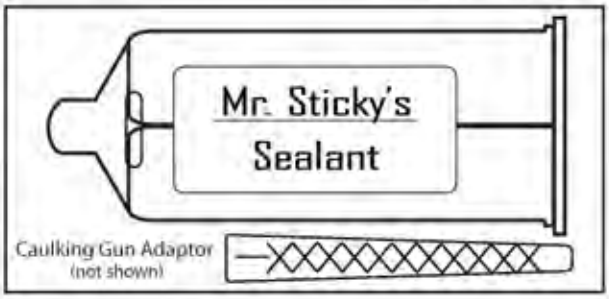


Figure 2 Contents of box

BeeSafe System Installation Instructions

1. It is recommended for all, and required for lay person installation, that the pool be drained. These instructions assume the pool is drained. A certified diver with pool drain experience may modify the instructions to install under water. This requires the use of an underwater drill ect. If you plan on an underwater install please contact us for more information.

2. Remove the existing drain cover and use cardboard to cover the drain opening. This may be cut from the box the system came in. Use duct tape to secure the cardboard over the drain to avoid having anything fall into the drain while you are working. Mark the center of the drain with an X onto the cardboard. See fig. 1 page 2.

3. Remove the lid and center the BeeSafe System over the existing floor drain using the X you placed on the cardboard as a reference. See fig. 1 page 2.

4. If the system is installed over a drain pipe without a sump, the entire pipe must be centered within the 19 inch open space at the center of the system. See cross-section diagram on the inside cover page.

5. With the marking pen provided or a pencil, draw a line on the pool floor around the BeeSafe System. Make a mark to indicate each segment line. This is used as a guide in positioning as well as a guide for the sealant. See fig. 1 page 2.

6. Set the BeeSafe System over the drain to check the contour of the pool floor with the bottom of the BeeSafe System. It is necessary to create a fairly flat surface. If there is more than a 1/4 inch gap in any areas you will need to use a sander or grinder to remove raised areas, or use an approved pool patching material to build up gapped areas. Make the pool bottom fit to within 1/4 inch in all areas around the circumference of the BeeSafe System. Use an approved sealant and/or paint to assure that all prepared areas will be water resistant. Installation on other than a flat surface may nullify warranty.

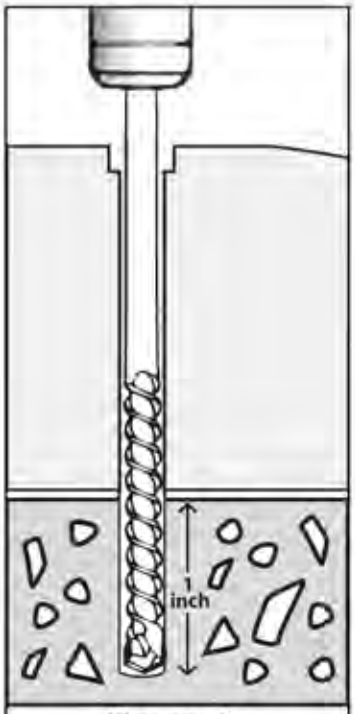


Figure 3

7. Again center the BeeSafe System over the existing drain and re-mark the guide if necessary.

8. Put the ¼ inch drill bit into a Hammer drill and place the bit through one of the mounting holes (see fig 4) in the BeeSafe System. Drill a ¼ inch hole to the depth of about 1 inch (see fig 3). Remove the drill and place a threaded rod (see fig 4) through the system and into the hole just drilled. (This will keep the system from moving while you drill the next hole). Go to the opposite side of the system and drill a second hole in the same manner and put a rod into the second hole. Proceed to drill the other two holes in the same manner, preferably in an x pattern. If you encounter an obstacle such as rebar in the drilling process, you can use the hole to one section right or left. You don't have to have them exactly opposite each other to hold the system in place. If not possible to install four the minimum number of attachment screws is two. See Fig. 4

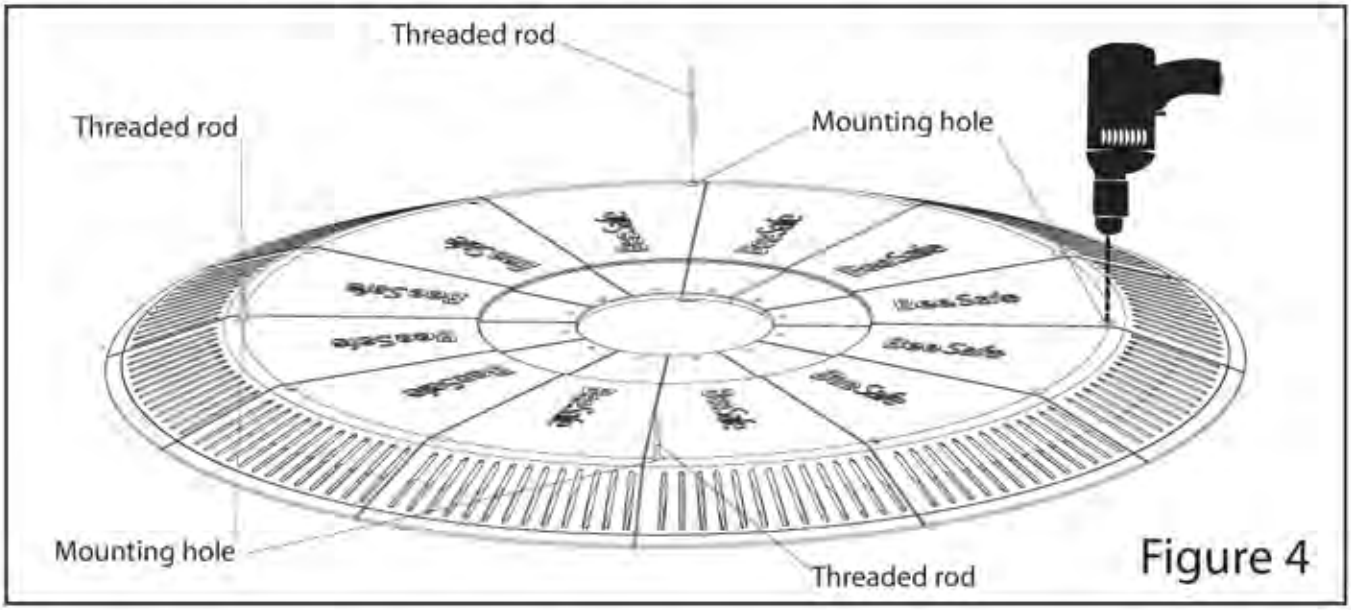


Figure 4

9. Use the piece of tape wrapped around the bits to mark a 1 inch depth on both of the drill bits. Remove the rods and remove the system. Start with the 1/4 inch drill bit and re-drill all four holes to a 1 inch depth, being careful to keep the drill bit straight at the same angle as the previously drilled holes.

10. Change the drill bit to the 3/8 inch bit and re-drill each hole again to the same 1 inch depth as marked on the drill bit, being sure to keep the bit straight at the same angle as the previously drilled 1/4 inch holes. Blow out any debris from the holes.

11. Place the drop-in anchors into the holes. They should fit flush or just barely below the surface of the pool floor. If they are above the surface, re-drill the holes a little deeper. Using the setting tool, expand the anchor by inserting the setting tool into the anchor and set it with several solid hammer blows. The anchor is set properly when the shoulder of the setting tool is flush with the top of anchor. See fig. 5

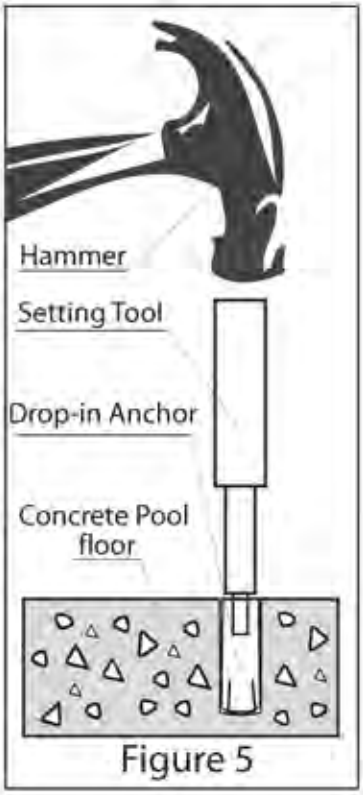


Figure 5

12. Place the BeeSafe System over the drain and insert the Phillips Pan Head machine screw into the holes and check to be sure that they all screw into place with the top of the screw recessed into the ½ inch space provided for the Phillips Pan Head in each section of the system. The 2 1/2 inch screws should be used if the pool floor is flat from the outside of the system to the anchors. If there is any variation from the outside of the system to the Phillips Pan Head machine screw, you might need to use the 3 inch screws. If the 3 inch screws are too long, they will stop at the bottom of the anchor and the head of the screw will extend above the ½ inch recess provided for the Phillips Pan Head. If the screws extend above the rim of the recess, remove them and use a hacksaw to cut the threaded end of the screw off in the amount that it extended above the surface, so all of the Phillips Pan Heads will be recessed into the system. All four (4) machine screws must provide a minimum of 3 threads of engagement into the anchor. See fig. 6-A & B.
Because of possible length differences don't mix up the cut Phillips Pan Head machine screws, keep each one by the proper hole. If for some reason the 3 inch screws are not long enough we have 4 inch screws available, just contact us.

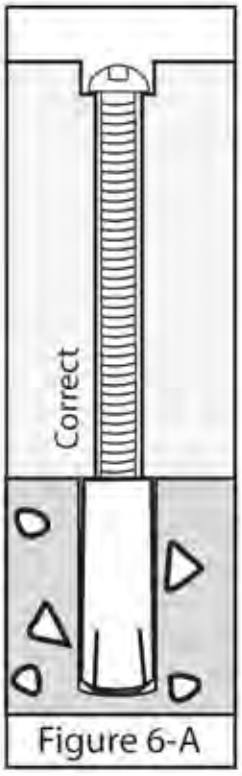


Figure 6-A

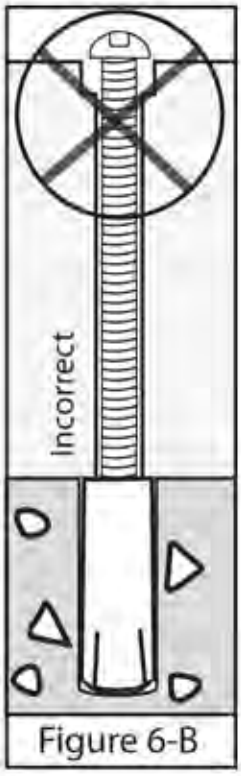


Figure 6-B

WARNING! 316 stainless steel screws must be hand tightened only! Do not use a power drill because of the possibility of galling between the stainless steel parts.

13. Remove the system again and also remove the cardboard covering that was over the drain. Remove the existing cover grate only, leaving any existing sump and framework intact . Clean the surface of the pool floor where the system will be installed in preparation for applying the sealant. (Avoid removing the marking of the diameter of the system, as you will need it as a guide).

14. Screw the 1/4 inch threaded rods into the anchors. If there is need to seal around the anchors apply the Mr. Sticky's sealant around the edge of the Drop-in Anchors to seal the anchor to the floor (avoid getting any sealant into the threaded section of the anchors). Wipe excess sealant off flush with the surface of the pool. Follow the directions on the Mr. Sticky's sealant package & keep in mind the time limit on the sealant once mixed - do next steps quickly.

15. Replace the system (This will require at least two people to guide the system into place with the screw holes positioned over the threaded rod). Slowly lower the system into place. Remove the threaded rods one by one and replace each with a Phillips Pan Head screw until all four screws are screwed securely into the drop in anchors.

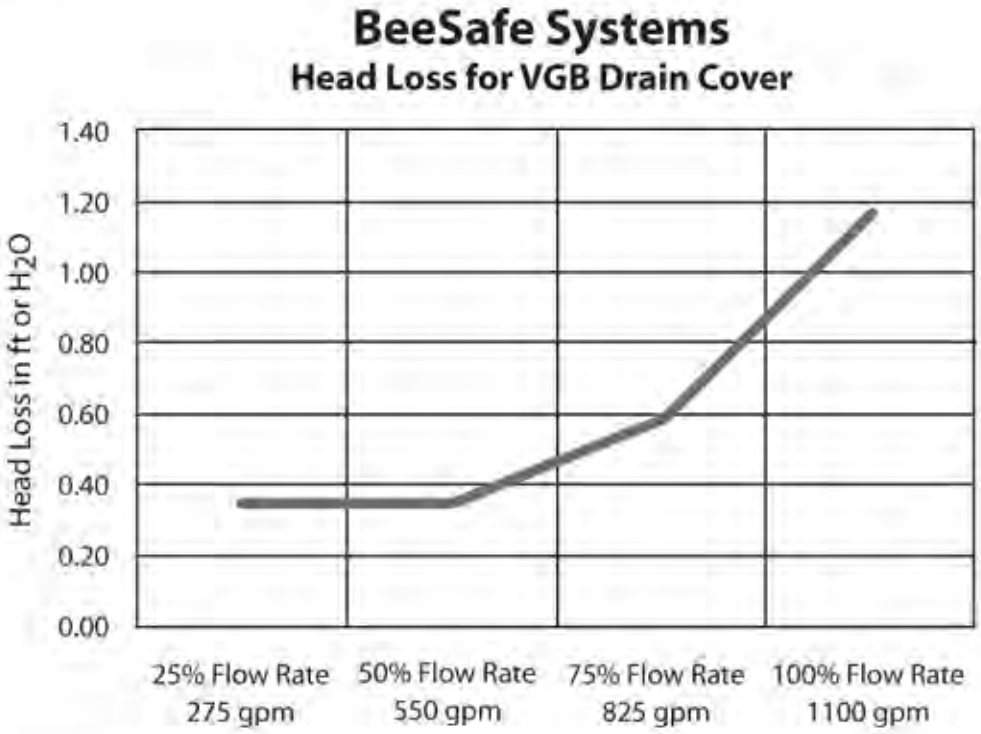
16. Make sure that the entire outer perimeter of the system is sealed by running a smooth bead of sealant around and slightly under the outside edge of the BeeSafe System. This application of Mr Sticky along with the 316 Stainless Steel Hardware make the installation permanent. As part of installation or later when the pool needs to be resurfaced, finishing plaster can go over the edge of the system to seal the edge and provide a more gradual slope.

17. Permanently secure the lid to the system with the four 316 Stainless Steel Phillips head Screws that have been treated with Threadlocker. If there is need to remove the lid, the bond can be broken with a firm steady even twist.

18. Place plastic plugs into all of the holes that were not used to anchor the system to the pool floor. Secure the plugs in place by tapping them lightly with a hammer, dimple side up, flatside down.

19. Let sealant cure for at least 8 hours before refilling pool.

20. Never replace screws with anything other than 316 Stainless Steel parts. Replacement screws, and drop-in anchors can be ordered from BeeSafe Systems, 795 W. Center St. Provo, UT 84601, or by calling (888) 306-0121.



Disclaimer:
BeeSafe Systems accepts no responsibility for injury resulting from improper installation or injury to the installer during the installation of this product.

This product carries a limited warranty to be free from manufacturing defects for a period of 15 years.

The BeeSafe System meets the qualifications of an Unblockable drain when used as a retrofit to a single main drain. We recommend that the consumer consider additional layers of protection to make the pool environment as safe as possible.

Labeling requirements for compliance with ASME A112.19.8-2007-a2008 (Revised April 6, 2010)

A. Information on Installation and Service
   1. The BeeSafe System is designed for use in pools as an unblockable drain cover. The floor of the pool must have an area of 46 inch diameter over the existing drain opening and this area must be able to be built up or ground down to a somewhat level surface before the system is installed. The type of fitting of the BeeSafe System is a submerged suction fitting. It is designed to make a single drain unblockable, but can be used equally as well as an added layer of protection with an SVRS device or dual drains. As long as there is enough space between the drains to accommodate two BeeSafe Covers, two systems can work side by side.
   2. The BeeSafe System is designed for use in pools with adequate floor space to accommodate the cover. Do not install where the suction outlets will be on or near seating areas or on the backrests for such seating areas.
   3. When two or more suction fittings are used on a common suction line they must be separated by a minimum of 3 ft. (91.44cm). BeeSafe System can only be used on dual systems that are floor only drains. Do not use on wall mount drains.
   4. In the case of dual drains, where one suction outlet becomes blocked, the remaining suction outlet serving that system shall have a flow rating capable of the full flow of the pump(s) for the specific system. The BeeSafe System has been tested to carry 1100 gpm safely.
   5. Maximum flow rating (1100 GPM) with head loss curve (see page 8).
   6. Bee Safe System can be used with connecting pipe sizes up to 8 inch diameter.
   7. The BeeSafe System is only approved for floor drains.
   8. Parts numbers and model number are indicated on pages 2-3 of these Installation Instructions. The model number is also on the compliance label on the lid of the system.
   9. As the body of the BeeSafe System Model 1 is attached permanently to the pool floor, only the lid and corresponding hardware must be replaced within 15 years of installation. Regular inspection of the system and attachment parts must be completed and damaged, loose or missing parts are reasons to close the pool until the system or attachment parts are repaired or replaced. Always replace with the same grade stainless steel and identical parts. Replacement parts can be obtained from the BeeSafe Systems Company.
   10. The tools necessary for installation and maintenance are listed and shown in the installation Instructions.
   11. For safety reasons the BeeSafe System should remain in place when servicing and winterizing the pool.

B. Never exceed the maximum allowable flow rate stated on the suction fitting. The BeeSafe Systems maximum allowable flow rate is 1100 GPM or 684 GPM at 1.5 fps.
C. The BeeSafe System including fasteners should be observed for damage or tampering before each use of the facility.
D. Missing, broken, or cracked suction fittings or parts shall be replaced before using the facility where the BeeSafe System is installed.
E. If the BeeSafe System is loose, the fitting shall be reattached or replaced before using the facility.
F. Read, then keep these instructions for future reference.
G. Never increase flow by increasing pump size. The BeeSafe System should only be used at the flow rate the pool system is designed to carry and never at more than 1100 GPM.

Important Safety Precautions - Please Read

ATTENTION INSTALLERS:
Read and follow these instructions. This manual contains important information about the installation, operation and safe use of this product. Give these instructions to the facility owner to keep for future reference. Follow all codes and regulations that apply to the design, installation and use of the suction outlet fittings.

⚠ **WARNING - RISK OF ENTRAPMENT IF INSTRUCTIONS ARE NOT FOLLOWED**. Before installing this product, read and follow all instructions and warning notices which are included. Failure to follow instructions and safety warnings can result in severe injury, death, or property damage.

⚠ **WARNING - DO NOT EXCEED MAXIMUM FLOW RATE.** Do not use the BeeSafe System with a pumping system rated for more than 1100 gpm. USE OF ANY SUCTION OUTLETS IN POOL OR SPA SYSTEMS WITH FLOW RATES GREATER THAN APPROVED GPM CAN RESULT IN HAIR OR BODY ENTRAPMENT, WHICH CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. If in doubt about the maximum flow rating of your system, consult a qualified pool or spa professional.

Notice to owner:
Read, follow, and keep these safety instructions for future reference.

While suction injuries are extremely rare, drowning and diving injuries are far too common and there is little your certified builder can do to eliminate these hazards. You must educate yourself and your guests. Below are some important safety issues every swimmer must know and recognize.

- Prevent Drowning: Watch children at all times, no swimming alone.
- No Diving in shallow water: You can be permanently injured.
- Prevent Suction Entrapment: Inspect suction cover before swimming, keep swimmers away from suction fittings, protect long hair, don't swim with loose clothing or large and dangling jewelry.

⚠ **WARNING - Known Drowning Hazards.**

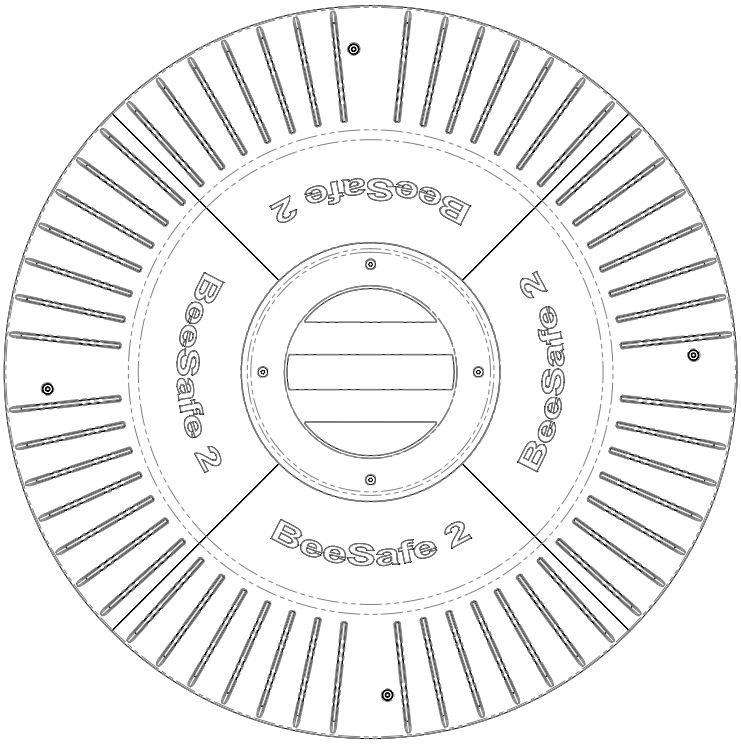
Do not go near the suction fitting or drains of your pool or spa. Your hair or body may become trapped causing permanent injury or drowning.

Do not enter the pool or spa if suction fitting or drain covers are loose, broken, or missing. Inspect suction fitting including fasteners for damage or tampering before each use of the facility.

Risk of severe injury or drowning if suction systems are not installed properly!

TAB H: BeeSafe Model 2 Installation Instructions

Simply A Better Answer to Suction Entrapment!



BeeSafe
SYSTEMS MODEL 2
Drain Cover

BeeSafe2 Installation Manual

USPC®

Tested Compliant to APSP 16-20011
Safety Compliant According to the
Virginia Graeme Baker Pool
And Spa Safety Act

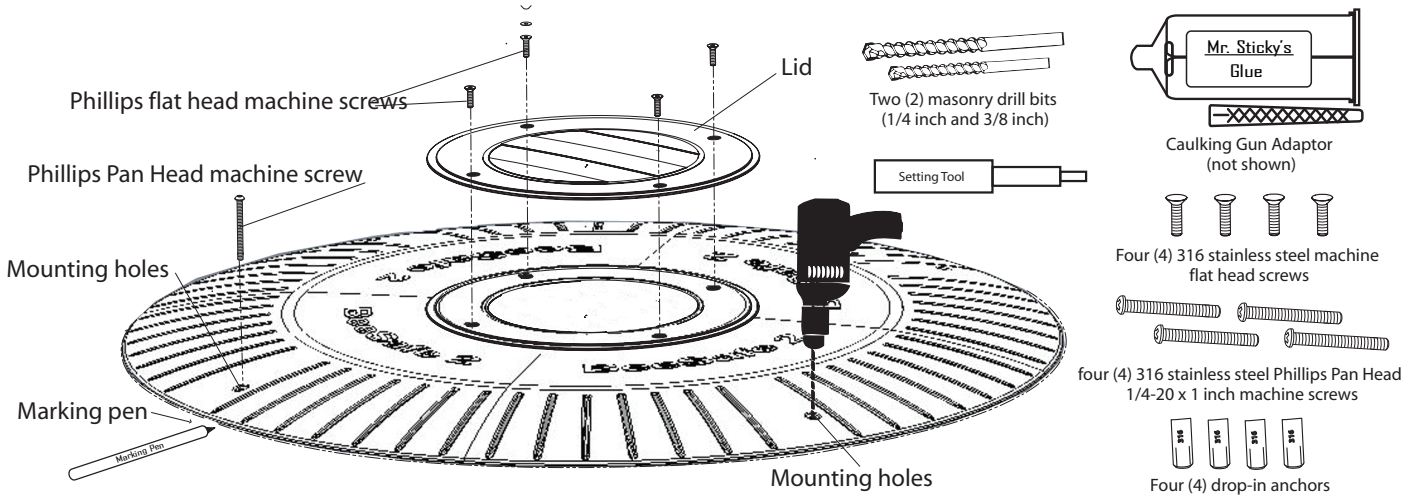
For use in concrete pools.
Use in pools with or without a sump
GPM 224 Submerged Suction Outlet
For Single or Multiple Drain Use
Floor Use Only

WARNING:
The BeeSafe System Model 2 must be installed in accordance with the BeeSafe Systems instruction manual and in conformity with The Virginia Graeme Baker Pool and Spa Safety Act and applicable with Federal, State, Local and Swimming pool industry building and safety codes.

BeeSafe SYSTEMS, LLP

Toll Free: 1-888-306-0121 • Phone: 801-375-6881 • Fax 801-691-5761
www.beesafesystems.com

BeeSafe Systems Model 2 - Safety Drain Cover -



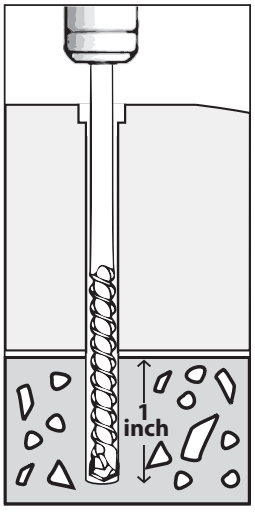
Contents of box should include the system assembly with lid, four (4) 316 stainless steel flat head machine screws, two (2) masonry drill bits (1/4 inch and 3/8 inch), four (4) drop-in anchors and a setting tool for the anchors, (4) 316 stainless steel Phillips Pan Head 1/4-20 x 1 inch machine screws, marking pen, Mr. Sticky's Sealant and caulking gun adaptor.

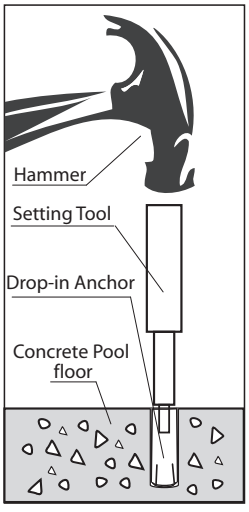
Tools that are not provided that will be needed for installation are a hammer drill, hammer, duct tape, tape measure, caulking gun, # 3 Phillips screwdriver, and a pair of pliers.

As all pools do not have the same contour around a drain, you may also need a sander and coarse sand paper, or a masonry grinder and/or approved patching material for swimming pools to make an even surface of the pool floor. You will need an approved concrete sealant if you sand down or build up the surface.

BeeSafe2 Installation Instructions

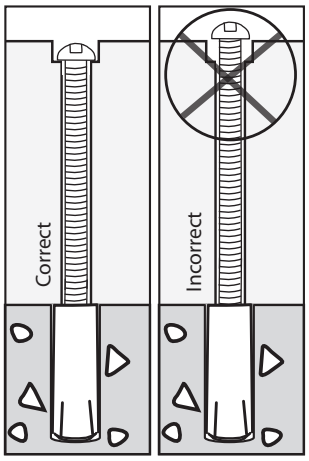
1. Remove the existing drain cover.
2. Remove the lid from the BeeSafe Systems Model 2 and center the system over the existing drain.
3. If installed over a drain pipe without a sump, the entire pipe must be centered within the 11 inch open space at the center of the system.
4. Check the contour of the pool with the system centered over the drain. If there are gaps, you will need to grind down, build up, or fill the gap with Mr. Sticky Glue.
5. Use the ¼ inch drill bit to mark position through the system in place. You may use a pan head screw to keep in position.
6. Remove the system and drill first with the ¼ inch bit and then with the 3/8 inch bit to a depth of 1 inch. Blow out any debris from the holes.





7. Place the drop in anchors into the holes. Use the setting tool set into each anchor. Strike several solid hammer blows. The anchor is set properly when the shoulder of setting tool is flush with the top of the anchor.

BeeSafe2 Installation Instructions



8. Move the system away and clean the surface of the pool floor. Leave any existing sump and framework intact.
9. If there is need to seal around the anchors, follow the instructions on the Mr. Sticky package. Keep in mind that once mixed there is a limited time for use of the adhesive.
10. Insert each 1 inch Pan Head screws through the mounting hole and secure into the drop-in anchors.
11. Make sure that the entire outer perimeter is sealed by running a smooth bead of Mr. Sticky Glue around and slightly under the outside edge of the BeeSafe System.
12. Secure the lid with the four ½ inch flat head screws.
13. Let the sealant cure for at least 8 hours before refilling pool. Underwater installation requires at least 10 hours before turning on the circulation pump.
14. Never replace screws with anything other than 316 Stainless Steel parts.

Labeling requirements for compliance with APSP 16-2011

A. Information on Installation and Service

1. The BeeSafe System is designed for use in public & private pools. The floor of the pool must have an area of 34 inch diameter over the existing drain opening. The type of fitting of the BeeSafe System is a submerged suction fitting. It is designed to make a single drain unblockable, but for compliance with VGB can be used as an added layer of protection with an SVRS device or dual drains. As long as there is enough space between the drains to accommodate two BeeSafe Covers, two systems can work side by side.
2. The BeeSafe Systems Model 2 is designed for use in pools with adequate floor space to accommodate the cover. Do not install where the suction outlets will be on or near seating areas or on the backrests for such seating areas.
3. When two or more suction fittings are used on a common suction line they must be separated by a minimum of 3 ft.
4. In the case of dual drains, where one suction outlet becomes blocked, the remaining suction outlet serving that system shall have a flow rating capable of the full flow of the pump(s) for the specific system. The BeeSafe System Model 2 has been tested to carry 224 gpm safely.
5. Maximum flow rating 224 with head loss curve.
6. BeeSafe Systems Model 2 can be used with connecting pipe sizes from 2 inch up to 8 inch diameter.
7. BeeSafe Systems Model 2 is approved for floor drains.
8. Part numbers and model number are indicated in these instructions. The model number is shown on the product and also on the compliance label that is marked into the lid of the system.
9. The lifetime of the BeeSafe Systems Model 2 is 7 years. Regular inspections of the system and attachment parts must be completed and damaged, loose or missing parts are reasons to close the pool until the system or attachment parts are repaired or replaced. Always replace with the same grade stainless steel and identical parts.
10. The tools necessary for installation and maintenance are listed and shown in the installation instruction.
11. For safety reasons the BeeSafe Systems Model 2 should remain in place when servicing and winterizing the pool.

B. Never exceed the maximum allowable flow rate stated on the suction fitting. The BeeSafe Systems Model 2's allowable flow rate is 224 gpm.

C. The BeeSafe Systems Model 2 including fasteners should be observed for damage or tampering before each use of the facility.

D. Missing, broken, or cracked suction fittings or parts shall be replaced before using the facility where the BeeSafe Systems Model 2 is installed.

E. If the BeeSafe Systems Model 2 is loose, the fitting shall be reattached or replaced before using the facility.

F. Read, then keep these instructions for future reference.

G. Never increase flow by increasing pump size. The BeeSafe Systems Model 2 should only be used at the flow rate the pool system is designed to carry and never at more than 224 gpm.

Important Safety Precautions - Please Read

ATTENTION INSTALLERS:
Read and follow these instructions. This manual contains important information about the installation, operation and safe use of this product. Give these instructions to the facility owner to keep for future reference. Follow all codes and regulations that apply to the design, installation and use of the suction outlet fittings.

⚠ **WARNING - RISK OF ENTRAPMENT IF INSTRUCTIONS ARE NOT FOLLOWED**. Before installing this product, read and follow all instructions and warning notices which are included. Failure to follow instructions and safety warnings can result in severe injury, death, or property damage.

⚠ **WARNING - DO NOT EXCEED MAXIMUM FLOW RATE.** Do not use the BeeSafe System with a pumping system rated for more than 224 gpm. USE OF ANY SUCTION OUTLETS IN POOL OR SPA SYSTEMS WITH FLOW RATES GREATER THAN APPROVED GPM CAN RESULT IN HAIR OR BODY ENTRAPMENT, WHICH CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. If in doubt about the maximum flow rating of your system, consult a qualified pool or spa professional.

Notice to owner:
Read, follow, and keep these safety instructions for future reference.

While suction injuries are extremely rare, drowning and diving injuries are far too common and there is little your certified builder can do to eliminate these hazards. You must educate yourself and your guests. Below are some important safety issues every swimmer must know and recognize.

- Prevent Drowning: Watch children at all times, no swimming alone.
- No Diving in shallow water: You can be permanently injured.
- Prevent Suction Entrapment: Inspect suction cover before swimming, keep swimmers away from suction fittings, protect long hair, don't swim with loose clothing or large and dangling jewelry.

⚠ **WARNING - Known Drowning Hazards.**

Do not go near the suction fitting or drains of your pool or spa. Your hair or body may become trapped causing permanent injury or drowning.

Do not enter the pool or spa if suction fitting or drain covers are loose, broken, or missing. Inspect suction fitting including fasteners for damage or tampering before each use of the facility.

Risk of severe injury or drowning if suction systems are not installed properly!