UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

Memorandum

DATE: February 23, 2010

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Gib Mullan, Assistant Executive Director
Office of Compliance and Field Operations
Mary Toro, Director
Regulatory Enforcement

FROM: Troy Whitfield, Mechanical Team Lead
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SUBJECT: Response to Commissioner Thomas H. Moore on the Virginia Graeme Baker Pool and Spa Safety Act Briefing Package

This memorandum is in response to questions raised about the Virginia Graeme Baker Pool and Spa Safety Act Briefing Package provided to the Commission prior to the February 16th, 2010 public hearing. This memo specifically addresses questions regarding the issue of unblockable drains. The questions will be repeated and the staff's response will follow.

1. On pages 12-13 of the staff briefing package, the staff's proposed definition of "unblockable drain" is given. On page 46 of the briefing package the staff's proposed definition is restated, but it is different than the earlier one. The longer version on page 46 makes it clear that there are different testing requirements for factory manufactured covers and for field fabricated covers. Does the shorter version retain that same distinction? It seems to get lost.

Response: The definition provided on page 46 of the package was suggested and provided by Industry during the November public hearing and considered by staff. While the 'longer' version clarifies sections of the standard that each type cover (manufactured or field fabricated) should meet for flow rate verification, there are other criteria within the standard to which all covers are subject. Staff did not want to imply that simply meeting section 2.3.1.2 for field fabricated covers or testing for flow was sufficient to be classified as an 'unblockable drain" – all covers must meet all requirements of the standard. Further, staff did not want to suggest that existing, large, outlet covers were exempt from replacement by being judged 'unblockable' without being certified to the requirements of the ASME/ANSI A112.19.8 – 2007 version of the standard.

2. What are the revised dimensional requirements language for the drain covers?

Response: There are no revised dimensional requirements for unblockable drain covers. In staff's original guidance (June 16th 2009) staff "further defined a minimum diagonal measurement of 29" to describe different outlet cover aspect ratios that would be difficult to seal. Based on these dimensions, outlet cover measurements in excess of 18" x 23" (or a diagonal measurement greater than 29") would provide a means to render the outlet 'unblockable' and subsequently, the sumps below (drains) would be inaccessible and unblockable providing the outlet cover remains in place." Comments received stated that the 29" diagonal had not been vetted through the voluntary standards community and that it may be unnecessarily restrictive. Staff accepted those comments, removed the 29" diagonal but maintained the 18" x 23" dimension found in the standard that represents the torso measurement of the 99th percentile male as a reasonable reference to provide along with the stipulation that the remaining open area of the cover, once shadowed by the 18" x 23" body element, had to flow water sufficiently to prevent entrapment.

3. Why would a back-up system that is designed to address body suction entrapment not also address evisceration? (See the statement in the briefing package on page 12 near the end of "Layers of Protection" staff response that says it would not.)

Response: An evisceration injury is considered to occur "instantaneously" and is the result of a small change in pressure (2.2 lb/in^2) applied directly to the rectum which may lead to transanal intestinal evisceration.[1] The fact that back-up system devices require the incident to occur before they respond and have an associated response time greater than 'instantaneously' leads staff to believe that the severity of an incident could be mitigated, but not prevented. Additionally, staff is not aware of any back-up system manufacturers that claim to address/prevent evisceration injuries.

4. If the unblockable drain cover was missing (the worst case scenario), there would be no hair or mechanical entrapment issues, so for each of the secondary systems, explain which of the other hazards they would be unlikely to prevent and why.

Response: This question would be impossible to answer decisively as there are a myriad of construction possibilities that could exist in which a secondary system could be effective against other hazards, and just as many other construction possibilities where the secondary system may not be effectual. For instance, if the outlet cover is missing over an 8"- round sump or a 12"x12" square sump, the potential for any of the five identified entrapment scenarios conceivably exists, though less likely for hair. Once the cover is missing, the outlet sump and effluent pipe (outgoing from the pool) are exposed. A body entrapment scenario would most likely be addressed by all secondary systems that recognize the hazard has occurred. None of the secondary systems available claim to prevent evisceration; a system would have to sense an impending entrapment and respond prior to someone actually sitting on the exposed sump. Finally, a limb entrapment could start as a suction entrapment in the exposed effluent pipe and, while a secondary device will most likely respond at some point, the velocity of the water (and subsequent

[1] Staff memo from Roy W. Deppa P.E. and Suad Nakamura PhD. to Ronald L. Medford. Assessment of Pool Pump Cutoff Device Presented by David Stingl, March 12, 1996

momentum) in the pipe may mechanically entrap the arm within the pipe after the device has responded.

Another example would be a large (unblockable) outlet cover, or a combination of covers joined in a frame to create a large cover, attached over an equally large sump that may be anywhere from 12-to-24 inches deep. With the cover missing, entrapment over the sump itself may not exist due to the sump size, but depending on the size of the exit pipe(s) a body could be fully pulled into the piping and a mechanical entrapment of the body or a limb (in smaller piping) could occur; I am aware of at least two cases where a child fit into the sump and was subsequently pulled through large piping.

5. Are there any technical differences in the way the unblockable drain cover must be attached to the pool from the other ASME/ANSI compliant covers?

Response: No, covers that would meet the definition of an unblockable drain cover must be attached in conformance with the ASME/ANSI requirements and may be attached to existing sump hardware, or may require the installation of new sump hardware. There may also be configurations where the covers are directly bolted into the floor of the pool over an existing sump.

6. What testing have we done of the unblockable drain covers?

Response: The laboratory tested the removal force for one model and verified the manufacturer's installation procedure and the integrity of the installation. The cover passed the pull load test requirement of the ASME/ANSI A112.19.8 – 2007 standard.

7. Does the ASME/ANSI standard define "drain"? If so, what is the definition [?]

Response: The ASME/ANSI A112.19.8 standard does not define the term drain. "Drain" is used in association with 'multiple drain use' and 'single drain use' in the definition section with respect to the application of suction outlet covers.

> *Multiple drain use only*: indicating that the referenced suction outlet may not be used as the single sole source for water to a pump suction system.
>
> *Single drain use*: indicating that the referenced suction outlet may be used as the single sole source for water to a pump suction system.

Question/Comment on the Model Legislation

On page 39 of the briefing package it states that a pool with more than one single main drain would violate the requirement for no single main drain. Yet on page 32 in the definitional section it states that a pool may have more than one single main drain if it has multiple suction outlets that are each connected to a dedicated pump. Should it be made clearer on page 39 what is acceptable with regard to multiple main drains?

Response: The definition on page 32 is intended to convey what a "single main drain" means, not what is permissible under the law. Thus, the sentence, "A pool may have more than one single main drain..." was intended to convey that it is a possible construction scenario for a pool to have more than one single main drain (numerous single outlets each connected to a dedicated pump), and was not intended to convey anything about the permissibility of such a construction under the law. A more appropriate way to convey this message is to change the sentence on page 32 to read as follows: "It is possible for a pool to have more than one single main drain if it has multiple suction outlets that are each connected to a dedicated pump." Staff will amend the sentence accordingly.

Question/Comment on the Technical Guidance Document

Most of the requirements are technical in nature, however, on page 25 of the briefing package under the last section dealing with dwelling walls it states that the lockable safety cover shall be in use whenever the pool, spa or hot tub is not in use. This sounds like a requirement on the behavior of the pool owner rather than a requirement of the locking pool cover. Are there covers that automatically close and lock when a pool hasn't been used for a period of time or would the States somehow have to police this behavior?

Response: The CPSC staff is not aware of any pool safety covers that automatically close and lock when a pool has not been used for a period of time. After review, the CPSC staff agrees that the *use of a power safety cover or a manual lockable safety cover whenever the pool, non-portable spa, or non-portable hot tub is not in use* deals with the behavior of the owner or operator and should be a strong *recommendation* only. It should not be a requirement for a State's minimum eligibility to apply for a grant. CPSC staff will delete this sentence from Section 1.3.1.2 of the Technical Guidance. Thus, the amended Section 1.3.1.2 will read as follows:

1.3.1.2 A power safety cover for swimming pools or a manual lockable safety cover for non-portable spas and non-portable hot tubs that meets the requirements of ASTM F1346 *Performance Specification for Safety Covers and Labeling Requirements for all Covers for Swimming Pools, Spas, and Hot Tubs.*