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April 6, 2016

Mr. Paul C. McKain
Chief Executive Officer
PSD Industries, LLC
21010 Southbank Street
Sterling, VA 20165

Dear Mr. McKain:

On June 23, 2015, you submitted a petition requesting that the Commission classify vacuum diffusion technology ("VDT") as an anti-entrapment device or system under the Virginia Graeme Baker Pool and Spa Safety Act, 15 U.S.C. § 8001 et seq. ("VGB Act"). For the reasons set forth below, the Commission has denied your petition.

The VGB Act is designed to prevent drain entrapments and eviscerations in pools and spas. The law became effective on December 19, 2008. The VGB Act requires that public pools and spas have drain covers that meet the ASME/ANSI A112.19.8-2007 standard, or any successor standard, on every drain/grate. Section 1404(c)(1)(A)(i) of the VGB Act. (In August 2011, the Commission incorporated ANSI/APSP-16 2011 as the successor standard to ANSI/ASME A112.19.8.) In addition to compliant drain covers, if the public pool or spa has a single main drain (other than an unblockable drain), the pool/spa must be equipped, at a minimum, with one or more of the following devices or systems:

- Safety vacuum release system;
- Suction-limiting vent system;
- Gravity drainage system;
- Automatic pump shut-off system;
- Drain disablement; or
- Other systems.

Section 1404(c)(1)(A)(ii) of the VGB Act.

The VGB Act defines "other systems" as "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." *Id.* Therefore, the determination that a product or system constitutes an "other system" requires that the product or system be determined to be equally effective as, or better than, the systems described in the VGB Act.

The petition offers information to support the claim that VDT is equally effective as, or better than, the systems designed to prevent entrapment listed in the VGB Act. The petition defines VDT as: "a system that removes the intense vacuum draw from the intake point of a pumping system by occluding the intake orifice from swimmers and diffusing the vacuum from a potential blockage immediately in multiple directions from the blockage." The petition provides that, "covering 50% of the Vacuum Diffusion Technology intake should not raise the normal vacuum draw by more than .4" Hg." The petition states that VDT can help prevent the risks of entrapment as a back-up layer of protection.

Staff prepared a briefing package discussing the petition, which was presented to the Commission on March 16, 2016 (http://www.cpsc.gov//Global/Newsroom/FOIA/CommissionBriefingPackages/2016/VacuumDiffusionTechnologyPetitionVGBA151.pdf). The staff briefing package examined the effectiveness of each of the five codified anti-entrapment systems in the VGB Act at protecting against the five recognized types of hazards associated with drain covers: (1) hair entrapment, (2) body entrapment, (3) limb entrapment, (4) mechanical entrapment, and (5) evisceration. Staff used the definition of VDT provided in the petition, and the example of the ProteKtor as a VDT device, to assess the performance of VDT with regard to each of the five recognized types of drain cover-related hazards.

Each of the five codified entrapment protection devices or systems in the VGB Act protects against body entrapment. In addition, as noted in the staff briefing package, the VGB Act itself reflects an emphasis on preventing body entrapment. In contrast, as the petition acknowledges, because the Protektor sits down inside the sump, the device offers no protection against body entrapment.

Regarding limb entrapment, if the drain cover is broken, it is possible for a limb to become entrapped in the damaged area of the cover regardless of whether a VDT device is installed. If the cover is missing, a person could suffer limb entrapment in a suction outlet. CPSC staff found that, due to the broad definition of VDT proposed in the petition, as well as the lack of any standard governing the design, installation, or operation of vacuum-diffusion based products, it cannot be said with certainty that vacuum diffusion technology would prevent limb entrapment. Furthermore, because VDT introduces new geometry within the sump, VDT could introduce new opportunities for potential limb entrapment.

CPSC staff found that to ensure that no hair entrapment is possible with the installation of a VDT, each combination of VDT device and drain cover must be tested together as a system. Testing as a system would be required to detect whether a VDT device introduces a new hazard pattern when installed under drain covers. In addition,

CPSC staff found that the ProteKtor, a device that is effectively a second drain cover that is placed within the suction outlet fitting assembly, adds an additional opportunity for mechanical entrapment if the actual drain cover is missing. Because VDT does not protect against body entrapment, which occurs when a person's body effectively seals the perimeter of the sump, VDT is unlikely to prevent evisceration for any reasonably foreseeable scenario.

Because VDT, unlike the other systems listed in the VGB Act, offers no protection against body entrapment and could potentially introduce new opportunities for hair, mechanical, and limb entrapment, the Commission has determined that VDT is not as effective as the anti-entrapment systems listed in the VGB Act at preventing suction entrapment and does not, therefore, qualify as an "other system" under the VGB Act. Accordingly, the Commission denied your petition.

Sincerely,

Todd A. Stevenson