To:         Health Protection Manager, Vancouver Coastal Health Authority – Richmond

From:     Gary Tam, Environmental Health Officer

Date: October 7, 2016

Subject: Proposal for Assessment of Potential Suction & Entrapment Hazards in Swimming Pools & Whirlpools in Richmond

**Introduction**

If a pool is poorly constructed or maintained, bathers can get into serious injuries or death. When patrons’ hair, body parts or limbs come into close contact with a main drain, the force generated by the pressurized recirculation system can create a vacuum and pull them under the water against the drain. Bathers are often trapped with this strong force, which could lead to disembowelment, loss of limbs, or death due to drowning (Alhajj, Nelson, & Mckenzie, 2009).

In June 2002, a seven-year-old girl named Virginia Graeme Baker, who was the granddaughter of the former Secretary of State James Baker III, got trapped from the main drain of a whirlpool and died. After this incident, an Act on pool and spa safety named after Virginia came to force across the United States (Pressherald, 2012).

In B.C., a new Pool Regulation came into effect in 2010. A guidance document supporting the regulation called B.C. Guidelines for Pool Design was developed to outline general pool construction and design standards for pool designers and engineers. In the document, it contains specific main drain construction requirements to prevent pool suction and entrapment hazards (Health Protection Branch, 2014). Several key requirements are:

* A minimum of two main drains should be constructed with a spacing of at least 36 inches apart.
* Water velocity through the main drain must not exceed 1.5 feet per second.
* Virginia Graeme Baker (VGB) compliant main drain covers (i.e. specially-designed covers that prevent entrapment hazard) are strongly recommended to be installed.

**Statement of Problem**

In Vancouver Coastal Health Authority (VCH), many swimming pools and whirlpools were built before the new B.C. Pool Regulation was introduced. Therefore, they may have only one main drain or may not have properly installed VGB-complaint main drain covers. In addition, many pools do not have monitoring systems installed to allow pool caretakers to oversee the water velocity through the main drains. As a result, many pools may have potential suction and entrapment hazards.

**Proposed Solution**

To effectively assess the potential suction and entrapment hazards in all swimming pools and whirlpools, a set of criteria will be established to categorize pools with different risk levels. Then, a survey will be designed to collect information for the identification of the high-risk pools. After the pools are categorized, local Environmental Health Officers will be educated on the actions needed to eliminate the hazards in these high-risk pools. Recommendations can also be provided to those caretakers and owners who take care of them.

**Scope**

It is essential to understand the scope of these potential hazards in pools within VCH, I plan to pursue these following inquiries:

1. How many swimming pools and whirlpools have one main drain?
2. How many swimming pools and whirlpools are equipped with functional flow meters (i.e. a device to measure the water flow through a water treatment and recirculation system) to monitor the water velocity going through the main drain in their pools?
3. Have the pool caretakers or owners done anything to address the potential hazards at their pools, such as the installation of multiple main drains or VGB-compliant main drain covers?

**Methods**

Due to the time constraints, I propose conducting a pilot study on the VCH-permitted swimming pools and whirlpools located within the city of Richmond. To assess the potential hazards of the pools, I plan to do the following:

1. Identify all the permitted pools in the city of Richmond.

2. Gather specific data in each pool, such as the number of main drains and skimmers, the type of main drain covers, and the presence of flow meters installed on the recirculation systems.

3. Sort the pools by the risk levels based on the data collected.

4. Develop a course of actions and recommendations to address these pools.

**My Qualifications**

I have been working as a field Environmental Health Officer in VCH for over ten years.  During these years, I have fostered great working relationships with the in-house public health engineer and Senior Environmental Health Officers in VCH.  These individuals have been actively partaking in the provincial pool safety committees and working groups.  The public health engineer reviews numerous construction designs of the new pool construction proposals; he works with commercial pool engineers and pool designers during the pool construction phase to assess and prevent any potential suction and entrapment hazards. Their valuable experience will definitely help me to conduct and complete this pilot study.

**Conclusion**

Suction and entrapment hazards in pools can be fatal. Pool caretakers or owners need to put this issue as their top priority if their pools are found to pose a high risk to their bathers. In addition, compliance with the Pool Regulation and standards is essential to prevent health hazards. Only with your approval, I can conduct this pilot study and establish the necessary steps to eliminate these critical hazards.

**Work Cited**

Alhajj, Maya et al. “Hot Tub, Whirlpool, and Spa-Related Injuries in the U.S., 1990–2007.” *American Journal of Preventive Medicine*, vol. 37, no. 6, 2009, pp. 531–536. doi:10.1016/j.amepre.2009.08.024.

Health Protection Branch. *B.C. Guidelines for Pool Design*. Ministry of Health, 2014, http://www2.gov.bc.ca/assets/gov/environment/air-land-water/pool\_design\_guidelines\_jan\_2014\_final.pdf. Accessed October 2016.

@Pressherald. “Improved Pool Safety Eases a Mom's Grief - The Portland Press Herald / Maine Sunday Telegram.” *The Portland Press Herald Maine Sunday Telegram Improved Pool Safety Eases a Moms Grief Comments*, 2012, http://www.pressherald.com/2012/06/30/improved-pool-safety-eases-a-moms-grief\_2012-06-30/. Accessed October 2016.