Recommended Guidelines

Water Conservation and Management of Swimming Pool & Spa Water Usage during Drought Conditions [G-0716]

Pool & Hot Tub Council of Canada

August 2016

These guidelines are issued by the Pool & Hot Tub Council of Canada as reference documents for pool, hot tub and spa owners and companies that service swimming pools, hot tubs, spas, manmade ponds and water features. The guidelines also serve to provide direction to municipalities that are seeking to establish programs that effectually manage water usage, particularly under the circumstances of facing drought conditions and/or the threat of potential water shortages.

The Pool & Hot Tub Council of Canada is a voluntary, not-for-profit association representing the interests of the aquatic leisure industry. As such, it is not considered a harmonized organization, and therefore does not qualify as an accredited national standards-writing body. Notwithstanding the above, following the directives outlined in this document will serve to minimize the environmental impact of operating pools, spas and hot tubs. These guidelines are endorsed in principle by the Pool & Hot Tub Council of Canada, and the Council recommends their widespread implementation.

Recommended Guidelines (G-0716) do not circumvent nor supersede existing requirements enshrined under federal, provincial or municipal law. Government codes take precedence over industry guidelines.

Note: For the purpose of these guidelines the terms "spa" and "hot tub" are used interchangeably.

Introduction

Historically, certain regions of Canada have had to contend with diminishing freshwater supply brought about by extended periods of low precipitation. Severe and prolonged periods of hot weather during the dry season can reduce the groundwater table and compound the problem. Facing concerns over potential water shortages, municipal authorities have typically taken steps to restrict water consumption, and under extreme conditions have invoked prohibitions on domestic and industrial water use.

Changing weather patterns over time appear to be expanding the range of geographic areas affected by drought around the globe. Consequently, regions that at some point may have to cope with potential water shortages should take appropriate steps to:

I. assess and establish the scope of the problem;

II. determine the possible severity of the impact;

III. develop a fundamental understanding of known water conservation measures and the effectiveness of each; and

IV. prepare and prioritize policies covering water use reduction, the elimination of wasteful practices, and the utilization of environmentally favourable strategies.

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National Drought Monitoring

Agriculture and Agri-Food Canada actively tracks drought across the country by monitoring environmental conditions and key indicators. The Canadian Drought Monitor (CDM) uses a variety of federal, provincial, and regional data sources to establish a single drought rating based on a five category system. This classification scheme defines the severity, spatial extent, and impacts of drought. Drought classes in the CDM range from D0 to D4, with D0 indicating abnormally dry conditions, and D1 to D4 indicating moderate to extreme drought. Each category is based on the percentile chance of those conditions occurring. Ratings are shared through monthly maps that show the extent and intensity of drought across Canada.

- D0 (Abnormally Dry) – represents an event that occurs once every 3-5 years;
- D1 (Moderate Drought) – represents an event that occurs every 5-10 years;
- D2 (Severe Drought) – represents an event that occurs every 10-20 years;
- D3 (Extreme Drought) – represents an event that occurs every 20-25 years; and
- D4 (Exceptional Drought) – represents an event that occurs every 50 years.

Stages of Application of Water Restrictions

A community facing drought situations or impending water shortages may impose restrictions on water use. Generally, municipalities apply such restrictions in a series of stages based on the severity of conditions. Rules often vary depending on residential, commercial or public end-uses, and limits may be placed on the watering of soft landscaping, the washing of cars, the hosing of impermeable surfaces, etc. Operators of swimming pools, spas and water features are responsible for knowing and following mandates imposed in their jurisdictions.

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Information on Water Use in Swimming Pools and Spas

As a stakeholder, the Pool & Hot Tub Council of Canada is in a position to advance the level of awareness and understanding of water resource management through education. While some parts of Canada are more susceptible to drought than others, all citizens and authorities should be cognizant of the importance of water conservation and of eliminating wasteful practices related to water supply and management. The following facts serve to dispel misperceptions related to water consumption and the upkeep of residential swimming pools and hot tubs/spas:

- ***Water Use –*** Due to the built-in circulation system, water in a swimming pool when filled will last decades. It is rare that a swimming pool is ever drained, and such an action should only be carried out by a trained professional.
- ***Water Level –*** Excessive water is not to be unnecessarily drained from a swimming pool when winterizing. Recognizing variations in pool design and construction, an appropriate water level should be set in consultation with the pool installer.
- ***Water Replenishment –*** The water from a properly maintained residential spa needs to be replaced only two or three times per year. To place this in perspective, a typical spa will use approximately 1 500 litres of water over a four-month period, while the filling and draining of a normal bathtub only two times a week over the same four months will use 10 000 litres of water.
- ***Water Reuse –*** The water from a spa when drained can be reused for landscape watering provided the water has been properly balanced within appropriate chemical parameters before dispersal.
- ***Water Consumption –*** A properly maintained swimming pool or spa uses significantly less water in a season than watering a lawn of comparable surface area. (*Reference1*)
- ***Water as Emergency Supply*** - Drought conditions can result in increased fire hazard. A swimming pool can be a source of water when a fire occurs, either stand alone, or to augment existing hydrants.

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Industry Recommended Best Practices

The Pool & Hot Tub Council of Canada issues the following directives on how to effectively manage, maintain and operate aquatic recreational products (*Reference 2*):

- ***Use Swimming Pool and Spa Covers (Physical or Chemical)*** – A properly maintained spa or pool cover can reduce evaporation and water wastage by as much as 95%. For pools, a safety cover or a solar cover has the added benefit of helping to heat the pool and maintain water temperature. A floating cover under the spa cover will prevent additional evaporation and retain heat. For maximum effectiveness, replace spa covers every three years.

- ***Maintain a Clean Spa*** – Clean filters regularly. Conducting recurrent maintenance on a spa as directed by the manufacturer will help to sustain clean water and increase the time between draining and refilling.

- ***Maintain a Clean Swimming Pool*** – Use an automatic pool cleaner with independent filtration to reduce the frequency of backwashing. In addition, establish an overall maintenance schedule with the service company to ensure that the water circulation system is operating under optimal conditions.

- ***Maintain the Filtration System*** – Ideally, an aging sand or DE filtering system should be replaced by a higher efficiency cartridge filtering system that does not require backwashing, and thereby conserves water. (Note: In swimming pools that require fresh water dilution, as is the case with many commercial and semi-commercial pools, cartridge filters may not be ideal. Consult a pool professional for advice.)

- ***Disable Auto-fill Systems*** – During times of water shortage, shut off auto-fill mechanisms to save water.

- ***Detect and Repair Leaks*** – The swimming pool is to be monitored on a regular basis to determine if there is water loss beyond evaporation. Refer to Appendix A for the Bucket Test method. (Note: Any autofill mechanism must be disabled prior to testing.) If a swimming pool or hot tub is losing an excessive volume of water on an ongoing basis, a leak may be the cause. In order to avoid wasting water seek out a specialist in leak detection and have the leak repaired. Under the guidance of an expert set a maximum allowable water loss level beyond which leaks will be corrected.

- ***Remove Debris*** – Leaves, twigs and other foreign matter from surrounding terrain that find their way into swimming pools and spas must be removed. Simple tools for this purpose are commercially available from retailers.

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- ***Refrain from Using Soaps and Detergents –*** Rinse bathing suits out with tap water only rather than washing with surfactants. Residue from soaps and detergents significantly reduces water quality in swimming pools and spas.

- ***Drain only when necessary –*** Swimming pools need not be drained unless repairs are required. Water only needs to be changed in a spa every four to six months when properly maintained and when modern water cleaning technologies are in use.

- ***Store water on a temporary basis –*** When a swimming pool or spa is undergoing repairs and requires draining, it may be possible to temporarily contain the water in a vessel for re-use.

- ***Make Secondary Use of Spa Water –*** Once neutralized, water drained from a spa can be used for watering plants. A pool/spa professional can provide advice on ways to neutralize spa water.

- ***Capture rainfall –*** Rainwater is a natural source of fresh water that can be used to replace losses from evaporation in spas and swimming pools.

- ***Upgrade Equipment –*** Due to technological advancements in filtering systems, a modern spa will maintain clean water for longer periods of time before requiring a refill. Some older spas can be retrofitted with new equipment that will promote water conservation. Seek out the advice of a pool/spa professional to ascertain whether or not it will be possible to upgrade a spa of older design.

- ***Water Feature Usage –*** Due to evaporation loss, the use of water features such as deck jets and waterfalls, should be restricted during periods of drought.

- ***Temperature Differential –*** During drought conditions it is preferable to minimize excessive heating of water, where applicable (i.e., Use the swimming pool or spa at lower temperatures to limit evaporation losses).

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Appendix A: Bucket Test Procedure (*Reference 3*)

1) Fill the pool to its normal level.
2) Fill a bucket with water to 3/4 level.
3) Place the bucket in the pool (on stairs if possible or tie to a ladder).
4) Mark the level in the pool and the bucket.
5) 24 hours later, check the level in the pool and the bucket. If they have both gone down at the same rate there is no water loss. If the pool water level has dropped more than in the bucket, there is water loss.

References, Related Standards and Publications

1) *Explore Planet Earth* (Spring 2015), Rachel Hartigan Shea, Senior Writer with National Geographic
2) *Water Conservation Tips for Pool and Spa Users*, The Association of Pool & Spa Professionals (APSP)
3) *Bucket Test*, Total Tech Pools and Leisure

Sources of Expertise

A list of qualified swimming pool, spa and water feature service companies can be obtained directly from the Pool & Hot Tub Council of Canada.

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Informative Web-links

- Association of Pool & Spa Professionals: http://apsp.org/
- Canadian Drought Monitor: http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/drought-watch/canadian-drought-monitor/about-the-canadian-drought-monitor/?id=1463576995558
- Drought Watch: http://www.agr.gc.ca/eng/programs-and-services/list-of-programs-and-services/drought-watch/?id=1461263317515
- Pool & Hot Tub Council of Canada: http://www.poolcouncil.ca/

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