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The Lifeguarding Experts
Les experts en surveillance aquatique

Lifesaving Society Canada
2420 Bank Street, M012, Ottawa, Ontario K1V 8S1
Telephone: 613-746-5694
E-mail: experts@lifesaving.ca Web: www.lifesaving.ca

Safety Standards
for Canadian Swimming Pools and Waterfronts
Aquatic Facility Standard

Extreme Weather Standard

Standard

Every supervised outdoor swimming pool and waterfront should develop and implement an Extreme Weather Emergency Action Plan.

Definitions

Extreme Weather: Dangerous meteorological or hydro-meteorological phenomenon, of varying duration, with risk of causing major damage, serious social disruption and loss of human life, requiring measures for minimizing loss, mitigation and avoidance, and requiring detailed information about the phenomenon (location, area or region affected, time, duration, intensity and evolution) to be distributed as soon as possible to the public and responsible authorities. (Source: World Meteorological Organization)

Emergency Action Plan: An integrated set of policies and procedures that allows you to prepare for, respond to, and recover from emergency incidents. (Source: Canadian Centre for Occupational Health and Safety)

Rationale

Each year, extreme weather kills and injures many people across Canada. By preparing and implementing an Extreme Weather Emergency Action Plan, injuries and loss of life will be reduced. As a result of climate change, the number and intensity of extreme weather events will continue to increase.

Implementation

Develop an Extreme Weather Emergency Action Plan that should include but not limited to:

- Monitoring daily weather forecasts and warnings about extreme weather.
- Monitoring weather warnings and watches.

- Identification of the closest safe locations before the beginning of the season, and the development of a communications plan to advise the public about these safe locations that provide protection from extreme weather.
- Development of the protocols based on the type of threat level, including:
    - How patrons will be notified
    - Whether to evacuate facilities or just issue warnings and advice on safe shelter
    - How staff will protect themselves
    - When and how to notify staff and patrons that the threat has subsided and when normal activities can resume

Environment and Natural Resources Canada has identified and provides information on local extreme weather events. These should be identified in your Emergency Action Plan. This information can be found at Weather Information - Environment Canada.

Common weather hazards to prepare for include:

- **Lightning**: Each year lightning kills approximately 10 Canadians and injures approximately 100 to 150 others.
- **Rain**: Routinely monitor the Environment and Climate Change Canada weather forecasts for watches and warnings of potential heavy rains or severe thunderstorms with local heavy downpours. Know potential risks for flooding in your area and plan an escape route to higher ground.
- **Floods**: Most flooding occurs when the volume of water in a river or stream exceeds the capacity of the channel. Flooding also takes place along lake and coastal shorelines, when higher than normal water levels inundate low-lying areas.
- **Storm surges**: A storm surge is an abnormal rise in water level where a high and forceful dome of wind-driven ocean water sweeps towards the coastline. This happens near where the eye of a tropical or non-tropical storm makes landfall or passes close to the coast. Often accompanied by high waves, storm surges can cross the normal high-water mark defined by the tide, and cause damage to infrastructure along coastal areas.
- **Wind**: Strong wind does not only occur on a large scale from tropical storms or low-pressure systems and fronts. It can also occur on a small scale from thunderstorms, Chinooks or the local geography.
- **Tornado**: A tornado is a violently rotating column of air extending between a cloud base and the surface. When over water, a tornado is called a waterspout. Tornados kill an average of 2 Canadians per year and injure another 30 annually.
- **Hail**: Hail forms when updrafts in thunderclouds carry raindrops upward into extremely cold areas of the atmosphere, where they freeze and merge into lumps of ice. When the lumps become too heavy for the updraft to support, they fall to the ground at speeds of up to 100 km/h or more.

- **Heat and humidity**: It is important to stay safe during such extreme temperatures. Avoid working or exercising intensely if it is very hot or humid outside, and head for cooler conditions if your body becomes overheated. Heat related deaths have been trending upwards recently. A 2021 “heat dome” over B.C. caused the death of 595 people.
- **Ultraviolet Light Index**: Ultraviolet (UV) rays are the sun’s rays that can cause sunburn. Long-term exposure to UV rays is associated with skin aging, eye cataracts, weakening of the immune system, and skin cancer. Reduce your time in the sun, particularly between 11:00 a.m. and 4:00 p.m., from April to September, and seek shade when outdoors. Cover up by wearing a broad-brimmed hat, a long sleeve shirt with equivalent SPF 50, and wrap-around sunglasses. Use "broad spectrum" sunscreen with both UVA and UVB protection, with a sun protection factor (SPF) of 15 or higher.
- **Air Quality Health Index**: The Air Quality Health Index measures the air quality in relation to your health on a scale from 1 to 10. The higher the number, the greater the health risk associated with the air quality. When the amount of air pollution is very high, the number measures as 10+. It provides local air quality forecasts for today and tomorrow with associated health advice.
- **Fog**: Fog consists of tiny water droplets suspended in the air that reduce visibility to less than one kilometre. It is different from cloud only because fog touches the earth’s surface.

References

- Canadian Centre for Occupational Health and Safety (CCOHS), “Emergency Response Plan.” *Emergency Response Planning Guide*. CCOHS, 2020. Web. November 2022 https://www.ccohs.ca/products/publications/pdf/emergResponse.pdf
- Environment Canada. (2019). *Seasonal Weather Hazards*. https://www.canada.ca/en/environment-climate-change/services/seasonal-weather-hazards.html
- World Meteorological Organization. (2022). *A Definition of Severe Weather; Establish guidelines for implementation of a demonstration project of severe weather forecasting*. https://web.archive.org/web/20170103094209/https://www.wmo.int/pages/prog/www/DPS/Meetings/Wshop-SEEF_Toulouse2004/Doc3-1%281%29.doc

Approval

- Approved by the Lifesaving Society Canada Board of Directors XXX

Disclaimer

Lifesaving Society Canada’s National Safety Standards are developed using Coroners’ recommendations, the latest evidence-based research, and reflect the aquatics industry’s best practices at the time the publication was approved.

The purpose of these standards is to encourage swimming pool, waterpark and waterfront owners, managers, operators and regulators to adopt them, in order to prevent injuries and drownings in aquatic environments.

Lifesaving Society Canada's National Safety Standards do not replace or supersede local, provincial/territorial or federal legislation or regulations, but they are considered the standard to which aquatic facility operators should work towards, in order to enhance safety within their operations and to prevent drowning.

APPENDIX 1
Extreme Weather Action Plan Links

- Brief Action Plan - Parks Manitoba
  https://www.gov.mb.ca/asset_library/en/severe_weather_brochure_parks.pdf
- In-depth Action Plan – Roger Williams University
  https://www.rwu.edu/sites/default/files/downloads/ehs/severe_weather_preparedness_plan.pdf
- Government of Canada Emergency Preparedness Recommendations
  https://www.getprepared.gc.ca/cnt/rsrcs/pblctns/yprprdnssgd/index-en.aspx
- Provincial Emergency Management Organizations
  https://www.getprepared.gc.ca/cnt/rsrcs/mrgnc-mgmt-rgnztns-eng.aspx