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CDW Secretariat
Water, Air and Climate Change Bureau
Health Canada
3rd Floor, 269 Laurier Avenue West
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Ottawa, Ontario K1A 0K9

Dear Secretariat:

**Re: Consultation on Enteric Protozoa: Giardia and
Cryptosporidium January 28, 2011**

The Ontario Public Health Association (OPHA) appreciates the opportunity to provide comments on Health Canada's Guideline Technical Document: Enteric Protozoa: Giardia and Cryptosporidium. We would like to take this opportunity to congratulate Health Canada on this document as it is an excellent reference paper for Public Health professionals in Canada. It would also be of benefit to Health Ministries in all Canadian provinces.

OPHA is a not-for-profit organization with a unique interdisciplinary and multifaceted structure that provides a unified and independent approach to safeguarding and improving the health of all Ontarians. For over 60 years, OPHA has provided leadership on important issues and has served as a catalyst for strengthening public and community health by supporting key functions such as health protection and Promotion, disease and injury prevention, monitoring health status and decreasing disparities. Through strategic collaborations and partnerships, OPHA is increasingly positioning itself as the voice of public health in Ontario.

Health Risks Associated with Enteric Pathogens in Recreational Waters

OPHA understands, as identified in the Executive Summary, that this Guideline Technical Document reviews and accesses identified health risk associated with enteric protozoa in drinking water. Section 5.2.4 Waterborne Illness: does however, make reference to several Cryptosporidium outbreaks "...associated with swimming pools, wave pools and lakes". OPHA recommends that this document address the health risks associated with Giardia and Cryptosporidium in these recreational settings including splash pads. Currently these facilities are of great concern to public health agencies as they are a high risk as they are implicated in a number of outbreaks in North America, including Ontario.

OPHA has developed a position paper in this regard and other references can be provided upon request. Recreational waters deserve attention in this Guideline as these waters are often ingested by children using such facilities and, therefore, needs to meet Canadian drinking water standards. (Children tend to open their mouths when playing at splash pads and drink splash pad water. Other exposures occur through contact with the eyes and ears).

Recommendation: More recent in-depth research is needed on Cryptosporidium waterborne outbreaks related to splash pads and other recreational water facilities that have inadequate treatment devices installed. This is needed to increase knowledge and prevent illness, especially in facilities that *recycle* the water. This is considered a high risk practice for transmission of Protozoa outbreaks. Health Canada should stress the importance of environmental monitoring, and specifically, the need to use safe potable water in the operation of these facilities. This is needed in order to protect the health of all users (especially children) of these recreational water facilities.

Risk Assessment

The discussion on risk assessment is a critical section and should be one of the first sections of the document. Public health professionals are quite familiar with the etiology of Cryptosporidium and Giardia, and the analytical and treatment sections. While important, this area is not the priority when looking for information on how to investigate an outbreak or how to consider the burden of disease estimates to help set health-based water treatment goals.

Relationship to Indicator Organism

Section 5.3 (page 18) in the Guideline discusses assessing drinking water for *E.coli* as part of a multi-barrier (source-to-tap) approach for protecting water quality. While section 5.3.1 makes the point that the *absence* of *E.coli* does not necessarily indicate that enteric protozoa are also absent, it also identifies that *E. coli* and total coliforms are currently the best available indicators for verifying microbiological quality for treated drinking water. Section 5.3.2 addresses surface water sources, raising questions regarding the appropriateness of using *E.coli* as an indicator of

protozoan contamination in surface waters, and highlighting the need for routine protozoa monitoring of surface waters. This reinforces the importance of having good analytical and sampling capabilities for enteric protozoa and improving the technology for protozoan detection. This becomes even more important during outbreaks. The Centers for Disease Control in the USA recommends that health officials conduct environmental testing for *Cryptosporidium* in the case of suspected or confirmed outbreaks.

Analytical Methods

Health Canada should encourage provinces to adopt the analytical methods and sampling procedures identified in this Guideline for use by their public health laboratories (e.g. Ontario Agency for Health Protection and Promotion) and local public health units respectively. As a minimum this should be the reference for outbreaks, i.e. allow for public health to use the sampling and subsequent analytical procedures for cyst detection, including the use of Polymerase Chain Reaction (PCR) for the detection of (oo) cysts.

Source Water Protection

The analytical methods suggested in the document should not only be used for monitoring by public health; they can also serve as source water protection and prevention initiatives which could also be used to protect our drinking water intakes by the Ministry of the Environment (MOE) and local regions and municipalities. In the post Walkerton inquiry reports, Justice O'Connor was very clear in suggesting that the monitoring of our source water is also a very important step in a multi-barrier approach to protect our drinking water supplies. This fits nicely into the discussion on page 25 which indicates the importance of characterizing the vulnerability of source water quality - "Best way to do this is to conduct routine analyses for Crypto and Giardia". This section should also be cross-referenced with the use of Quantitative Microbial Risk Assessment Approach (QMRA) on page 39.

Currently in Ontario and other parts of Canada local public health units do not have easy access to certified private and public labs that do testing for *Cryptosporidium* and *Giardia*.

Recommendation: Health Canada should provide leadership, in the form of additional funding and expertise, to ensure the availability of laboratory analyses for enteric protozoa. This would permit real time testing so local health units would have access to certified analytical testing for protozoa to assist during outbreaks and special water sampling studies. Testing for *Cryptosporidium* is also a public health recommendation by the Centers for Disease Control in the case of suspected or confirmed outbreaks in the USA.

Recommendation: Section 6.4.3 (Molecular Methods) Pages 21-22 needs to be rewritten as it is very difficult to understand as written, specifically the section on PCR testing.

Turbidity is an effective monitoring tool and, “*reducing turbidity is an important step in the inactivation of Cryptosporidium and Giardia*” (Page 29). Chemical and UV disinfection are inhibited by particles that protect the protozoa. In addition, turbidity will also consume the disinfectant and reduce the effectiveness of the disinfection process. Protozoa oocysts have been shown to be resistant to chlorine and chemical disinfectants; the physical removal of these organisms by filtration is necessary. This understanding reinforces that actions should be taken to prevent the reintroduction of debris to recreational and drinking water from filters that may contain protozoa, especially when the presence of *Cryptosporidium* and *Giardia* are confirmed by monitoring and in outbreak situations.

Recommendation: Continue to promote testing and the use of turbidity and the Canadian Drinking Water Standards (Nephelometric Turbidity Units (NTU)) as an important monitoring tool to help protect public health. Large drinking water facilities should use inline continuous monitoring while small drinking water systems can use a handheld device and laboratory assistance. In addition, research is required to better understand the relevance of protozoa inactivation and the effect of particles on microbiological inactivation.

7.2 Residential Scale (Page 33)

Since Health Canada does not recommend specific brands of drinking water devices and recommends National Standards Foundation (NSF) certified devices, they should not allow any treatment device to be sold to the consumer that does not have NSF/ANSI standard certification. For example, currently in Ontario there are only a small handful of UV treatment units that carry the NSF certification label.

Recommendation: Only NSF certified devices meeting Standard 55 or 58 and any other applicable standard should be allowed to be sold in Canada.

9.0 Risk Assessment

As mentioned under general comments, risk assessment is an important section and should be one of the first sections of the document and not placed at the end.

Recommendation: Move the 9.0 Risk Assessment section closer to the beginning of the document. At the very least, mention the main points of this section in addition to QMRA in the introduction or the executive summary.

9.0 Risk Assessment (Page 39)

The use of QMRA and the 10^{-6} DALLY for a risk assessment of a particular water source needs more emphasis and adoption by both the Ministry of the Environment and the Ontario Ministry of Health and Long Term Care. This would help ensure consistency in sampling and risk assessment protocol. Information from actual case studies of *Cryptosporidium* and *Giardia* contamination of water supplies would assist public health in understanding the limitations of QMRA models and the 10^{-6} ; and in reducing model uncertainties.

Recommendation: Request the members of the Federal-Provincial-Territorial Committee to adopt in their own jurisdictions (especially MOHLTC and MOE) the use of the QMRA and 10^{-6} DALLY.

Recommendation: Health Canada should host information sessions for public health professionals (especially environmental public health practitioners which includes Medical Officers of Health, environmental health officers and public health inspectors) to review this document and enable knowledge transfer for consistent adoption and implementation of the contents.

Recommendation: The Contact Time tables for *Cryptosporidium* and *Giardia* found on pages 79-84 should be expanded to include regular chlorination and chloramination (other than chlorine dioxide). There is a body of evidence that the oocyst forms of *Giardia* and *Cryptosporidium* are highly resistant to chlorine and other chemical disinfectants. The reliability of proposing effective contact times for these forms is questionable. In addition, tables for UV inactivation of *Cryptosporidium* and *Giardia* should also be provided. See previous comments about the importance of filtration to remove cysts from drinking water supplies.

Recommendation: A list of definitions could also assist to improve this document.

Thank you once again for the opportunity to provide comments to Health Canada on this consultation regarding Enteric Protozoa: *Giardia* and *Cryptosporidium*.

Sincerely,



Liz Haugh
President