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Water Quality Divisions
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Submitted via email: water_eau@hc-sc.gc.ca

Re: Comment on "Guidelines for Canadian Recreational Water Quality"

We writing on behalf of Lake Ontario Waterkeeper, Fraser Riverkeeper and Ottawa Riverkeeper regarding Health Canada's draft *Guidelines for Canadian Recreational Water Quality*, *Third Edition* prepared by the Federal-Provincial-Territorial Working Group on Recreational Water Quality of the Federal-Provincial-Territorial Committee on Health and the Environment and dated September 2009.

We are independent, federally registered charitable organizations that work to restore and protect swimmable, drinkable, fishable water for every community in our watersheds. Over the years, we have had many opportunities to observe, monitor, and offer advice regarding water quality and beach postings in our communities. We have also reviewed the document for public comment in its entirety. Our comments and recommendations below are based on this experience.

We commend the Working Group and the Committee for their study of recreational water use in Canada. Interacting with the water is an important, culturally and socially significant activity for many Canadians and for many visitors to our country. Staff at Lake Ontario Waterkeeper and/or Ottawa Riverkeeper would be very pleased to meet with you to discuss our recommendations in detail and to discuss alternatives to the area of the document that poses the greatest threat to water quality and the health of our communities: the "guidelines" described in Section 4.2 for secondary recreational contact. **In our view, this section of the document is seriously flawed and requires dramatic amendment.**

RISKS TO HUMAN HEALTH AND THE ENVIRONMENT

We note that the document makes recommendations based on health risks but does not address risks to the natural environment. For example, "The values represent risk management decisions based on the assessment of possible health risks for the recreational water user the the recognition of the significant benefits that recreational

water activities provide in terms of health and enjoyment," (p. 9). We understand that Health Canada's mandate is "to help Canadians maintain and improve their health." Overlooking risks to the natural environment and relying solely on threats to human health, however, fails to further that mandate. First, it overlooks the connections between degradation of the natural environment and increased risks to human health. As the document describes, poor water quality can also nurture parasites, algae, and other ecosystem changes that lead to human health impacts. Second, it fails to recognize, as the document states, that indicators such as *E. coli* can indicate water quality impairment but are *not* the only contaminants of concern; sewage also carries pathogens and chemicals that pose threats to public health. Third, Health Canada runs the risk of offering advice that is contrary to - or at least inconsistent with - standards established by other federal government departments such as Fisheries and Oceans and Environment Canada. By failing to recognize risks to the natural environment, Health Canada thus risks failing to fulfill its mandate and overstepping its jurisdiction.

Recommendation #1: Compare the proposed guidelines to guidelines established for the protection of human health *and* the natural environment - such as Ontario's Provincial Water Quality Objectives. Where stricter standards are required to protect *both*, stricter standards should be used. Specifically, recommendations for *E. coli* in freshwater should be no higher than 100 cfu/100 mL, Ontario's water quality objective that protects both human *and* aquatic life.

PROTECTION FOR ALL WATERS

On page 21 of the document, it is stated that "It may also be acceptable to reduce monitoring frequencies for recreational water areas that consistently demonstrate poor water quality results, but only where appropriate management actions are taken to discourage recreational use, and provided that the risks are clearly communicated to the public." We recognize that apparent common-sense in reducing sampling frequencies in areas little-used by the public but are deeply concerned by this recommendation for a number of reasons. First, at least in Ontario, it is generally illegal to impair the use that can be made of public waters. Thus, it is the *polluter* and not just the *citizen* who must be warned about the water quality problem. It is the *polluter* who must be deterred from his behaviour and the *citizen* who should be encouraged to enjoy her environment as soon as it is once again safe to enter the water. Ontario's Beach Management Protocol requires that, where poor water quality is found at public beaches, a survey must be completed in order to identify and then halt the source(s) of contamination. Waterkeepers are concerned that our Federal departments would take actions to discourage recreational use of our public waters.

In our experience, discouraging recreational use of public waters is something that should only be done in emergency circumstances and on a temporary basis. Once an

area is deemed "undesirable" for recreational use, it tends to be under-protected in perpetuity. As successive generations are established near areas where recreational use of the water is discouraged, they lose all memory of that place as one worthy of protection and their desire to make use of the water.

Recommendation #2: Where chronic poor water quality conditions are found, surveys should be completed to identify the source of the contamination. Actions should be taken by the appropriate federal, provincial or territorial government to address the contamination and/or enforce the applicable environmental legislation. The entire process should be transparent to the public.

PROPOSED GUIDELINE AND RISK TO HEALTH AND THE ENVIRONMENT

Section 4.1.1 sets out the guideline for *E. coli* for freshwaters. We appreciate and endorse the combination of both a geometric mean and a single-sample maximum concentration. We note, however, that the maximum geometric mean is twice as high as Ontario's Provincial Water Quality Objective: 100 cfu/100 mL. Furthermore, the document states the following:

The guideline values for the recommended indicator of faecal contamination for fresh and marine waters are estimated to correspond to a seasonal gastrointestinal illness rate of approximately 1-2% (10-20 illnesses per 1000 bathers) ... [T]he Working Group concluded that this is a tolerable and reasonable estimate of the risk of illness likely to be experienced by users engaged in a voluntary activity. (p. 29)

With respect to the Working Group, this conclusion is untenable for at least three reasons. First, the public by-and-large does not know that a sign posted by the government reading "Water Suitable For Swimming" actually means "10-20 of the next 1000 bathers will likely go home sick today." Both the guideline of 200 cfu/100 mL and the sign are misleading. Second, only the individual should determine what is a "tolerable" or "reasonable" risk when it comes to his or her health. The Working Group may be qualified to offer advice, but it cannot choose for the individual what is an appropriate level of risk. Third, there is a more protective and already established standard employed in Ontario: 100 cfu/100mL of water. There is no need to increase the level of risk to the general public.

Recommendation #3: Lower the risk to the public by employing an already accepted, stricter standard for E. coli: 100 cfu/100 mL. If the Committee is unwilling to adopt this standard, all signage or materials informing the public that an area is "suitable" for recreational contact should contain a qualifier to the effect that there is a statistical likelihood that some individuals may still experience health effects as a result of low levels of pollution in the environment.

"SECONDARY" ACTIVITIES

Section 4.2 of the document is entitled "Water intended for secondary contact recreational activities". This section of the document is the most objectionable and requires significant revision.

First, the concept of "water intended for secondary contact..." is a fallacy. Water is water. There is no such thing as waters "intended" for secondary contact, waters "intended" for primary contact, "working rivers", or any other such adjectives we may choose to use. We have only rivers and creeks, lakes and oceans, bays and so forth. Whether or not those waters are safe for human and aquatic life depends on our own choices and activities; it is not in any way a characteristic of the waterway itself.

When a person undertakes what Health Canada has defined as a secondary contact recreational activity, there is always a risk of immersion. Whether in a flat-water canoe, a sailboat or a power boat, there is always an inherent risk of being fully immersed in the water.

The document itself states that there is no rationale for this deeply flawed guideline:

There is not sufficient information to enable the development of health-based guideline values for human exposure to faecal pathogenic microorganisms in recreational waters through secondary contact activities ... The guideline values represent risk management decisions based on the assessment of the expected exposure scenarios and ... are intended to provide some level of protection until epidemiologically based guideline values can be derived ... [T]he Working Group concluded that this is a tolerable and reasonable estimate of the risk of illness likely to be experienced by users engaged in a voluntary activity. (p. 41)

If there is not sufficient information and there is no epidemiologically-based guideline, than no guideline at all should be offered. Trying to create a reasonable guideline in the absence of sufficient information led to a standard that is almost certain to pose a threat to human and aquatic life. In our experience, 1000 *E. coli* is a level often found in the middle of raw sewage spills. It is typically accompanied by strong and offensive odours, cloudy and aesthetically displeasing water, and easily identified environmental impacts on plants, fish, and sediment. Lake Ontario Waterkeeper would be pleased to meet with your staff to talk about case-specific examples where we have collected samples near or at 1000 *E. coli* to help illustrate why this standard will most certainly pose a threat to human and aquatic life.

As described above, when water quality problems are identified, actions should be taken to resolve the problem (i.e., the pollution) and not just the symptom (i.e., human health impacts). The proposed approach seems to condone pollution, entrench contaminated water as a way of life, and dismiss entire waterways as second-tier. Such an approach fails to fulfil the Health Canada mandate and at the same time goes beyond the department's jurisdiction: it is for the individual and the community to decide how waterways should be used.

The recommended guideline is also *ten times higher* than what is known to be the guideline for protecting human and aquatic life. Health Canada is, in effect, tacitly endorsing pollution levels that are known to have impacts on the natural environment. Again, this does not appear consistent with the department's mandate or jurisdiction.

Recommendation #4: The entire section regarding "secondary contact recreational activities" should be removed from the document.

Failing that, the limit should be the same as the primary contact standard until a science-based, defensible alternative can be proposed.

IMPORTANCE OF THIS ISSUE

We appreciate the time and resources that have been allocated to this very important issue. It is beyond dispute that wastewater contains a wide range of chemicals and pathogens such as: nitrogen, phosphorous, lead, cadmium, mercury, viruses, parasites and bacteria. Daniel Blumenthal and A. James Ruttenber, *Environmental Health,* 242-243 (2nd ed.1995). In fact, it has been estimated that over 100 different kinds of viruses, parasites and bacteria occur in sewage material. National Academy of Sciences, *Managing Wastewater in Coastal Urban Areas,* 203 (1993).

For over half a century, it has been well established that exposure to water pollution is linked to a higher incidence of illness. Health effects of exposure to pollutants include viruses, skin disorders, ear infections, liver disease and even death. *Id.* For example, a study conducted on Sydney beaches found that the incidence of respiratory, ear and eye symptoms increased with increasing levels of pollution. SJ Corbett, et al., *Health Effects of Swimming at Sydney Beaches*, 83 Am. J. Public Health 1701 (1993). Typically, people become exposed to these diseases via two major pathways: swimming in contaminated waters or eating contaminated fish or seafood. *Id.* [1]

[1] Exposure to pathogens through swimming generally occurs when contaminated water is accidentally swallowed or aspirated. *Id.*

The ingestion of sewage-contaminated seafood can result in hepatitis and viral gastroenteritis. *Id*. at 204. Studies have shown that swimmers who bathe in polluted water experience a higher number of upper respiratory and gastrointestinal illnesses. *See e.g*., A.H. Stevenson,*Studies on Bathing Water and Health*, 154 Am. J. Public Health, 871(1953). In fact, it has also been established that swimming in even marginally polluted water is associated with the transmission of gastroenteritis. *See e.g*. R.P. Seyfried, *A Prospective Study of Swimming-Related Illness: Swimming Associated Health Risk*, 75 Am. J. Public Health 1068 (1985); Ferley, J.P. et. al., *Epidemiological Significance of Microbiological Pollution Criteria for River Recreational Waters*, 19 Int. J. Epidemiol. 198 (1989). A 1995 epidemiological study conducted by the Santa Monica Bay Restoration Project and University of Southern California researchers examined the health effects of swimming near storm drain outfalls in Santa Monica Bay, a body of water plagued by urban runoff and sewage spills. Haile, R. et al., *An Epidemiological Study of Possible Adverse Health Effects of Swimming in Santa Monica Bay* at 6 (Santa Monica: Santa Monica Bay Restoration Project, 1996).[2] The study found that people who swam directly in front of these storm drains experienced substantially more fevers, chills, ear discharge, vomiting, and similar maladies than those who swam 100 or 400 yards away from the outlets.

Studies have documented that there is an increased risk associated with bathing in waters with high coliform levels. *See e.g*., M.D. Prieto, et. al, *Recreation in coastal waters: Health Risks Associated with Bathing in Sea Water*, 55 J. Epidemiol Community Health 442 (2001). In fact, certain pathogens are specifically linked to untreated human waste. One such pathogen is the parasite *entamoeba histolytica*, exposure to which results in acute and chronic diarrhea. NATIONAL ACADEMY OF SCIENCES, *supra*, at 206-207. The most common agents of infection are *girardia lamblia* and *cryptosporidium*, each of which has been identified as the source of outbreaks throughout North America since 1971. *Id.* at 207. The bacterium *shigella* has been also identified as the cause of the majority of gastroenteritis outbreaks between 1981 and 1987. *Id.* at 207-208.

In addition, the discharge of sewage into our waters is a significant contributor to the adverse nutrient levels in our lakes, rivers, streams and oceans. EPA has identified nutrient loading as a major cause of pollution in the waters of the United States.[3] The over enrichment of aquatic systems with nutrients is the source of water quality problems like hypoxia (excessive oxygen levels) and the disruption of ecosystems such

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[2] This executive summary of this document can be found online at http://www.santamonicabay.org/site/library/layout/detail.jsp?id=86&categorySearch=yes.

[3] U.S. E.P.A. Office of Water, *Nutrient Criteria Technical Guidance Manual Estuarine and Coastal Marine Waters*, 1-1 (October, 2001), http://www.epa.gov/ost/standards/nutrients/marine/.

algal and phytoplankton blooms[4]. Furthermore, excessive nutrient levels resulting from sewage discharges and overflows can have grave public health effects[5].

Thank you for considering our submissions. We look forward to your reply. Please do not hesitate to contact us if you have any questions, require clarification, or would like to meet in person to discuss our submission.

Yours truly,

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[4] *Id.* at 2-3.

[5] *Id.* at 1-1.