

February 12, 2015

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Team Leader
Ministry of the Environment and Climate Change
Environmental Sciences and Standards Division
Standards Development Branch
Drinking Water Standards
40 St. Clair Avenue West, 7th Floor
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Dear Mr. Deshpande:

**RE: Response to EBR Registry Number 012-1594 - Technical Discussion Paper on
Proposed Ontario Drinking Water Quality Standards**

Thank you for the opportunity to provide written comments on the above EBR posting.

The Canadian Environmental Law Association (CELA) supports moving ahead with these new and revised drinking water standards. Notably, the Ontario Drinking Water Advisory Council (ODWAC) recommended adopting or modifying the standards for many of these substances several years ago. The Ministry's proposed standards largely reflect the ODWAC's recommendations, as well as the Health Canada guidelines (prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment) for the maximum acceptable concentrations of these substances.

The intent after the Walkerton Inquiry was for Ontario to become and remain a leader in drinking water quality. This was the reason for establishing the ODWAC, with the mandate to provide advice to the Minister of Environment on protecting Ontario's drinking water. Moving on the proposed new and revised drinking water standards outlined in the discussion paper will help the province achieve this objective. However, there remain some substances with respect to which Ontario should adopt a more protective standard.

We have four recommendations:

- 1.) Lower the current drinking water standard for trihalomethanes to 0.080 mg/L, as per the ODWAC's advice transmitted to the Minister of Environment in 2005.*
- 2.) Further decrease the drinking water standard for haloacetic acids to 0.060 mg/L, as advised by the ODWAC in 2008.*

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- 3.) *Lower the current drinking water quality standard for tritium to 20Bq/l, as advised by the ODWAC in 2009.*
- 4.) *The government should review drinking water standards every 5 years to ensure that they continue to be protective as well as to reflect technology capable of measuring below current detection limits for key pollutants such as vinyl chloride.*

Arsenic

CELA supports lowering the Ontario Drinking Water Quality Standard (ODWQS) for arsenic to 0.010 mg/L from the previous standard of 0.025mg/L. This would bring Ontario's standard in line with Health Canada's 2006 guidelines and ODWAC's recommendations to the Ministry in 2006. Similarly, CELA has also been advocating for revised standards.¹ According to Health Canada's guidelines, arsenic is highly toxic and a known human carcinogen with significant adverse impacts for human health.² In addition to cancer, long term exposure to arsenic can result in cardiovascular disease, diabetes, developmental effects, and neurotoxicity.³

The ODWAC has affirmed that the standards for carcinogenic contaminants in Ontario should be as close to 'essentially negligible' as possible (one new cancer above background levels in a million people, after a lifetime (70 years) of exposure).⁴ This revised ODWQS is not in the essentially negligible range; however, this is what is considered to be achievable at reasonable cost to drinking water treatment systems.⁵ The estimated lifetime risk of excess internal organ cancers for this revised ODWQS is 3 to 39 additional cancers. While this is an improvement over the previous standard (8 to 97 additional cancers),⁶ water treatment systems should be encouraged to reduce arsenic levels in drinking water as much as possible and the ODWQS should be further revised when feasible.

Carbon tetrachloride

CELA supports adopting the more stringent value of 0.002 mg/L for carbon tetrachloride, in comparison to the previous standard of 0.005 mg/L. Carbon tetrachloride is an ozone depleting substance posing risk of liver toxicity and possible carcinogenic effects for humans.⁷ This revised standard reflects both Health Canada's maximum acceptable concentration in drinking water, most recently revised in 2010, as well as the ODWAC's advice to the Minister in

¹ Javed, U. Canadian Environmental Law Association (CELA). "Arsenic in Drinking Water: Ontario's Failure to Endorse Health Canada's Guideline." 20 May 2014. <http://www.cela.ca/blog/2014-05-20/arsenic-drinking-water-ontarios-failure-to-endorse-health-canada-guideline> [Javed].

² *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Arsenic."* Prepared by the Federal-Provincial-Territorial (FPT) Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario May 2006. <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/arsenic/index-eng.php> [Health Canada]

³ Javed, *supra* note 1

⁴ Ontario Drinking Water Advisory Council (ODWAC). Letter to The Honorable John Gerretson, Minister of Environment, 27 May 2010 http://www.odwac.gov.on.ca/reports/ODWAC_Annual_Report_2010_2011.pdf [ODWAC]

⁵ ODWAC. Letter to The Honorable Laurel C. Broten, Minister of Environment. 28 April 2006.

http://www.odwac.gov.on.ca/public_advice_letters/042806_Arsenic_Advice_Letter.pdf

⁶ *Health Canada, supra* note 2

⁷ *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Carbon Tetrachloride."* Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario November 2010 <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/carbon-carbone/index-eng.php> [Health Canada].

July 2011.⁸ Moreover, these are more stringent standards than those set by the US Environmental Protection Agency (0.005 mg/L), the World Health Organization (0.004), and Australia (0.003). The California Environmental Protection Agency is 0.001.⁹

Benzene

CELA supports decreasing the drinking water standard for benzene to 0.001mg/L, down from 0.005 mg/L. This is consistent with ODWAC's advice to the Minister in May 2010 and it is more stringent than Health Canada's guideline, which was reaffirmed as 0.005mg/L in 2009.

ODWAC's more stringent standard reflects the objective of implementing standards that are as close to essentially negligible risk as possible (Health Canada's standard is only partly within the essentially negligible range). Other jurisdictions have adopted a similar guideline or standard of 0.001mg/L (for instance, the United Kingdom, Australia, and the European Community).¹⁰

Benzene is a known human carcinogen according to the International Agency on Cancer Research. By lowering the standard to 0.001mg/L, Ontario will reduce the estimated risk of excess cancers from 10.1-20.8 cancers to 2.0-4.2 cancers.¹¹

Vinyl Chloride

CELA supports the revised drinking water standard of 0.001mg/L for vinyl chloride. This reflects the advice given to the Minister by ODWAC in October 2013 and it is more stringent than the Health Canada guideline reaffirmed in 2013.¹²

While this standard of 0.001mg/L is still not within an essentially negligible range, this is because commercial drinking water testing laboratories are unable to achieve the detection limits required for such a standard. As such, ODWAC recommended a standard of 0.001mg/L as it is detectable by current commercial drinking water analysis methods. The estimated lifetime cancer risk level for a 0.001mg/L standard is 25 in a million.¹³ This standard should be further revised in the future as detection limits improve.

Chlorite/Chlorate

CELA supports adopting an ODWQS for chlorite and chlorate, as ODWAC recommended that a standard should be adopted for these substances approximately seven years ago. This proposed new ODWQS for chlorite and chlorite at 1mg/L is in line with ODWAC's recommendation in

⁸ ODWAC. Letter to The Honorable John Wilkinson, Minister of Environment. 26 July 2011. http://www.odwac.gov.on.ca/reports/ODWAC_Annual_Report_2011_2012.pdf

⁹ Health Canada, *supra* note 7

¹⁰ ODWAC, *supra* note 4

¹¹ *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Benzene"*. Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario June 2009 <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/benzene/index-eng.php>.

¹² *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Vinyl Chloride"*. Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario March 2013. http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/vinyl_chloride/index-eng.php.

¹³ ODWAC. Letter to The Honorable Jim Bradley, Minister of Environment. 30 October 2013. http://www.odwac.gov.on.ca/reports/ODWAC_Annual_Report_2013_2014.pdf [ODWAC]

2007, as well as Health Canada's guidelines affirmed in 2008.¹⁴ Quebec's guideline is slightly more stringent, at 0.08mg/L.¹⁵

Chlorite and chlorate are disinfectant by-products present in drinking water when chlorine dioxide is used for disinfection and hypochlorite is used for chlorination. While reducing waterborne disease, chlorite may pose health effects such as decreased brain weight and modified liver weight, while chlorate has been associated with smaller body and organ weight and blood, pituitary, and thyroid abnormalities.¹⁶ CELA echoes the ODWAC's recommendation that systems using chlorine dioxide or hypochlorite monitor quarterly for chlorite and chlorate.

2-Methyl-4-chlorophenoxyacetic acid (MCPA)

CELA supports adopting an ODWQS for MCPA at 0.1mg/L. According to Health Canada's 2010 guidelines, it is among the top 10 pesticides sold in Canada. Available studies examining MCPA (in isolation from other pesticides) revealed it may cause adverse kidney effects.¹⁷

This standard reflects ODWAC's advice to the Minister in 2011 and Health Canada's guidelines in 2010, while remaining less stringent than Quebec's standard of 0.03mg/L¹⁸ and the World Health Organization recommended standard of 0.002mg/L.¹⁹ As noted by ODWAC, adopting this standard will improve Ontario's drinking water without increasing the regulatory burden, as it is already measurable and achievable by current technology.²⁰

Trihalomethanes (THMs)

CELA recommends revising the ODWQS for trihalomethanes to 0.080 mg/L, as advised by the ODWAC in November 2005. Trihalomethanes are possible human carcinogens.

The ministry proposes to maintain the current drinking water standard at 0.100 mg/L, reflecting Health Canada's guidelines. The concern appears to be that municipal drinking water systems will need time and financial resources to optimize treatment processes. The ministry expects that decreased THM levels will also be achieved through the treatment process optimization programs adopted in order to meet the proposed standards for haloacetic acids (HAA).

However, according to the ODWAC, most Ontario drinking water systems can meet a lower

¹⁴ ODWAC. Letter to The Honorable Laurel C. Broten, Minister of Environment. 23 August 2007. http://www.odwac.gov.on.ca/public_advice_letters/082307_Chlorite_Chlorate_Advice_Minister.pdf.

¹⁵ *Regulation respecting the quality of drinking water*. c Q-11, r 40, s.3 http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/Q_2/Q2R40_A.htm [Quebec regulation]

¹⁶ *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Chlorite and Chlorate"*. Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario June 2008 <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/chlorite-chlorate/index-eng.php> [Health Canada].

¹⁷ *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "2-Methyl-4-chlorophenoxyacetic acid"*. Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario February 2010 <http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/mcpa/index-eng.php> [Health Canada].

¹⁸ Quebec regulation, *supra* note 15

¹⁹ Health Canada, *supra* note 17

²⁰ ODWAC. Letter to The Honorable John Wilkinson, Minister of Environment. 31 March 2011. http://www.odwac.gov.on.ca/reports/ODWAC_Annual_Report_2010_2011.pdf

standard of 0.080 mg/L. In their advice to the Minister in 2005, ODWAC noted that this standard had already been achieved, or was capable of being achieved, by most water treatment plants in Ontario.²¹ Moreover, in 2006 the Ministry proposed to adopt a standard of 0.08 mg/L and noted in the Environment Registry that "this lower value was supported by the stakeholder comment on the EBR."²²

Given that decreased THM and haloacetic acids levels can be achieved through similar optimization processes and that decreased THMs are already expected from these processes, it is unclear why the lower standard for THMs is now considered overly burdensome. Quebec's water quality standard for THMs is 0.080 mg/L.²³ The ministry should similarly revise the standard to 0.080 mg/L in order to protect Ontario's drinking water and remain a leader in drinking water quality.

Recommendation #1: Lower the current drinking water standard for trihalomethanes to 0.080 mg/L, as per the ODWAC's advice transmitted to the Minister of Environment in 2005.

Haloacetic acids

CELA supports adopting an ODWQS for haloacetic acids, but recommends adopting a standard of 0.060 mg/L, as advised by the ODWAC in November 2008. Although this is a more stringent standard than the Health Canada guidelines, there are several reasons why a 0.080mg/L standard for haloacetic acids may continue to pose health risks for Ontarians.

In a July 2006 letter to the Minister, the ODWAC raised early concerns with the analysis and conclusions recommended in the Health Canada guideline. Of significance is that with the currently proposed standard of 0.080 mg/L, levels of dichloroacetic acid (a haloacetic acid) that possibly constitute health risks could be present in drinking water without exceeding this standard.²⁴

The ODWAC notes that an essentially negligible cancer risk for dichloroacetic acid would be 0.01mg/L. In a letter to the Minister in November 2008, the ODWAC acknowledged that the Health Canada guidelines were developed after concluding that essentially negligible cancer risk "cannot be achieved without compromising the effectiveness of disinfection."²⁵ Both the USEPA and the province of Quebec have adopted a standard of 0.060 mg/L.²⁶ It is reasonable to conclude that this standard is achievable without compromising the effectiveness of disinfection.

²¹ ODWAC. Letter to The Honorable Laurel C. Broten, Minister of Environment. 30 November 2005. http://www.odwac.gov.on.ca/public_advice_letters/113005_THMs_endorsement_letter.pdf

²² Environmental Registry. "Proposal to adopt a more stringent Ontario Drinking-Water Quality Standard (ODWQS) for total trihalomethanes (THMs) than the Canadian Drinking Water Guideline (CDWG)" EBR Registry Number: RA06E0001. Posted 7 April 2006. <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTEwMjU3&statusId=MTY1NTMx&language=en>.

²³ Quebec regulation, *supra* note 15

²⁴ ODWAC. Letter to The Honorable Laurel C. Broten, Minister of Environment. 27 July 2006. http://www.odwac.gov.on.ca/public_advice_letters/072706%20HAAs%20Advice.pdf

²⁵ ODWAC. Letter to The Honorable John Gerretson, Minister of Environment, 29 July 2008 http://www.odwac.gov.on.ca/public_advice_letters/072908%20HAA5%20Final%20Advice.pdf [ODWAC]

²⁶ *Ibid.*; Quebec regulation, *supra* note 20

The ministry's concern with a 0.060 mg/L standard is that 90 systems would have to undergo upgrades in order to meet this lower standard. The ministry points out that as Ontario has lower bromide levels than the US, a lower standard for haloacetic acids may not be necessary. However, after reviewing data from Ontario water treatment systems haloacetic acids levels, the ODWAC concluded that many Ontario plants would be able to meet a standard of 0.060 mg/L. The ODWAC further recommended that treatment plants with levels of haloacetic acids that exceed 0.060 mg/L should particularly evaluate their dichloroacetic acid in response. Levels of dichloroacetic acid above 0.030 mg/L should require the plant to undergo an optimization study.²⁷

Recommendation #2: Further decrease the drinking water standard for haloacetic acids to 0.060 mg/L, as advised by the ODWAC in 2008.

Tritium

Tritium is notably absent from the substances considered by the Ministry in this proposal. In response to a formal request for advice from the Minister, in May 2009 the ODWAC recommended revising the drinking water standard for tritium to 20 Bq/L following extensive consultation. In May 1994, Ontario's Advisory Committee on Environmental Standards also recommended lowering the drinking water standard for tritium to a similar 20bq/L.²⁸ Likewise, CELA recommends a revision of the current ODWQS for tritium in accordance with the advice provided by the ODWAC in May 2009.

Once tritium enters the human body, it emits ionizing radiation.²⁹ Even at low levels, this radiation can cause cancer. A report from the U.S. National Academics of Science in July 2005 noted that there is no safe level of exposure to radiation.³⁰ Submissions to the ODWAC's consultation process for the ODWQS for tritium noted the elevated health risks of environmental carcinogens for women, children, teenagers, the unborn, the elderly, Aboriginal people, and those with compromised immune systems. These submissions also revealed concerns with the risk model upon which the current ODWQS is based, as it does not take into account non-lethal cancer effects, including non-fatal cancers, genetic mutation, cardiovascular disease, respiratory failure, and sterility, among others.³¹

²⁷ ODWAC, *supra* note 25

²⁸ ODWAC. "Report and Advice on the Ontario Drinking Water Standard for Tritium." Prepared for the Honourable John Gerretsen, Minister of Environment by the ODWAC. 21 May 2009. http://www.odwac.gov.on.ca/reports/052109_ODWAC_Tritium_Report.pdf [ODWAC].

²⁹ Registered Nurses' Association of Ontario (RNAO). Tritium Standard Review. Submission to Ontario Drinking Water Advisory Council. 27 March 2008.

³⁰ Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, National Research Council. *Health Risks from Exposure to Low Levels of Ionizing Radiation*. BEIR VII Phase Two (2006). <http://www.nap.edu/catalog/11340/health-risks-from-exposure-to-low-levels-of-ionizing-radiation>

³¹ ODWAC, *supra* note 28

Ontario's current standard for tritium at 7,000Bq/L reflects the Health Canada guideline. As reported by Health Canada in 1995, the lifetime excess cancer risk for this level of tritium was 600 in a million.³² This does not represent essentially negligible risk, as defined by the ODWAC.

The ODWAC's recommendation is practical and achievable. As tritium cannot be effectively treated by municipal-scale water treatment facilities, it must be reduced from the source. While some radiation occurs naturally, historic nuclear testing and contemporary nuclear reactors are the main sources of tritium which currently contaminate Ontario's drinking water.³³ Tritium is the main radionuclide emitted from Canadian Deuterium Uranium (CANDU) reactors.

According to a submission from the Canadian Nuclear Association, a standard of 20 Bq/L on an annual average basis is achievable without significant cost to the industry. Industry concerns with increased costs appear based on the impression that the industry will have to revise their approach to meeting regulatory requirements for other radionuclides. However, according to ODWAC, the approach to tritium should not be used to guide an approach to other standards.³⁴

Several jurisdictions have adopted tritium limits that are significantly lower than Ontario's present standard, including the US EPA (740 Bq/L), the California EPA (740 Bq/L maximum concentration level, 14.8 public health goal), and the European Union (100 Bq/L).³⁵ Ontario should adopt this more stringent standard of 20 Bq/L in order to protect the health of Ontarians and remain a leader in drinking water quality.

In a joint-letter to the Premier in 2012, CELA and several other organizations expressed concern that the Ontario government was receiving pressure from nuclear proponents not to implement ODWAC's standard.³⁶ This is alarming given that the Ontario Power Generation is capable of meeting ODWAC's recommended standard. Moreover, the current limit is being used in public messaging as reassurance that leaks or spills have not posed risk to public health, as the leak was still compliant with the ODWQS. This is inaccurate and disingenuous.³⁷ The current standard for tritium is not currently sufficient to protect public health and the risk will only increase if nuclear power is expanded in the province.

Recommendation #3: Lower the current drinking water quality standard for tritium to 20Bq/L, as advised by the ODWAC in 2009.

³² *Ibid.*

³³ *Guidelines for Canadian Drinking Water Quality: Guideline Technical Document "Radiological Parameters"*. Prepared by the FPT Committee on Drinking Water of the FPT Committee on Health and the Environment. Health Canada Ottawa, Ontario May 2009. http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/radiological_para-radiologiques/index-eng.php#a6.4 [Health Canada].

³⁴ ODWAC, *supra* note 28

³⁵ ODWAC, *supra* note 28.

³⁶ CELA, International Institute of Concern for Public Health, Northwatch, the Registered Nurses Association of Ontario, and the Occupational and Environmental Working Group Toronto Cancer Prevention Coalition. Letter to The Honourable Dalton McGuinty, Premier of Ontario. 24 October 2012.

³⁷ *Ibid.*

Recommendation #4: The government should review drinking water standards every 5 years to ensure that they continue to be protective as well as to reflect technology capable of measuring below current detection limits for key pollutants such as vinyl chloride.

Thank you for considering our comments.

Sincerely,
CANADIAN ENVIRONMENTAL LAW ASSOCIATION



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