March 15, 2017

By email: water_eau@hc-sc.gc.ca

CDW Secretariat
Water and Air Quality Bureau
Health Canada
269 Laurier Avenue West, 3rd Floor, A.L. 4903D
Ottawa, Ontario K1A 0K9

To whom it may concern,

Re: Public Consultation: Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Lead

The Canadian Environmental Law Association (CELA) has a long-standing interest in the issue of lead contamination and health, in particular children's health. We have conducted law reform advocacy and public education on this issue for over thirty years. As such, CELA welcomes the opportunity to provide comments on the draft drinking water guideline prepared by the Federal-Provincial-Territorial Committee on Drinking Water (the draft guideline).

CELA notes that the document is to be considered a draft which will be revised following evaluation of comments received. It is CELA's hope that the comments and recommendations provided below will prove valuable in carrying out this revision and may help provide for an even stronger protection.

The draft guideline is not merely a technical document

First of all, CELA notes that, while the draft guideline is referred to as a "technical document"[1], it goes beyond providing a purely technical assessment. The guideline is based on what is deemed reasonably achievable, taking into account cost considerations implicitly and explicitly.[2] Such an approach cannot avoid including a consideration of what is economically feasible rather than simply technically feasible.

While CELA welcomes a discussion about what is economically and technically feasible, the purpose of such a discussion must be to address the identified health risks within the shortest possible time. CELA therefore recommends that any delay in the implementation of necessary health protective measures be accompanied by comprehensive reasons for such delays, including

[1] See page 1 and 2.
[2] At page 63 it is explicitly stated that the suggested Maximum Allowable Concentration (MAC) of lead of 5 mcg/L is based in part on what is achievable at reasonable cost. As seen below, the draft guideline furthermore relies on US assessments of laboratory testing capabilities in setting the MAC. The US assessments of feasibility necessarily include an element of cost-benefit analysis in its conclusions on feasibility, which has been imported into this draft guideline through its reliance on those US assessments.

explicit timelines detailing how and when any identified health risks will be fully mitigated. In the present context this should include an assessment of the time and cost required to fully mitigate the current exposure to lead, as well as a plan for achieving such a goal.

In this regard, CELA finds that although the draft guideline provides a compromise of 5mcg/L which appears to have some factual foundation, it would be of great benefit to the various stakeholders as well as the public to be provided with further information on how this compromise fits into in a Canadian context.

The guideline relies on a certain degree of cost-benefit analysis. This analysis is, however, very vague and as a consequence it remains unclear how much it would cost to meet this limit, and indeed how much it would cost if the guideline proposed a lower limit. CELA recommends that such considerations should be set out more clearly as their absence represents a weakness in the draft guideline.

While CELA strongly supports the efforts of the Federal Government in proposing this draft guideline and while a Maximum Allowable Concentration (MAC) of 5 mcg/L is a significant step forward, especially compared to the US limit of 15 mcg/L[3] and the European Union and WHO limits of 10 mcg/L,[4][5] it appears that only limited work has been done to determine the practical feasibility of this limit in Canada and what it might take to put in place an even lower limit.

At page 20 of the draft guideline, reference is made to the US EPA's Practical Quantitation Limit (PQL)[6]. It is stated that this limit is currently set at 5mcg/L. It appears that this limit is a key part of the reason for proposing a MAC of 5mcg/L.

On page 21 it is stated that no equivalent centralized program (for assessing PQL) exists in Canada that allows for the collection and assessment of analytical data, leading to the conclusion that establishing a PQL for Canadian laboratories is not possible. It is, however, also stated that currently available Canadian data suggests that Canadian laboratories cannot achieve a lower PQL. No reference is provided as to what data is relied upon here.

While practical limits to testing capabilities may dictate to what degree it will be possible to test for compliance with a given MAC, the lack of specific information as to the capabilities of Canadian laboratories makes it impossible for CELA to provide constructive input on whether Canadian laboratories are indeed incapable of achieving a higher standard than presumed in the draft guideline. It furthermore limits CELA's ability to assess the need to improve on current testing capabilities. Given the importance of testing when setting the proposed 5 mcg/L limit, the

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[3] 40 CFR Part 141, Subpart I - Control of Lead and Copper.
[4] COUNCIL DIRECTIVE 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, Annex I, Part B (Chemical Parameters), as last amended latest amended by Commission Directive (EU) 2015/1787 of 6 October 2015.
[5] Guidelines for drinking-water quality, fourth edition, WHO, 2011, page 383. The limit of 10mcg/L is maintained in the first addendum to the fourth edition of the WHO Guidelines for drinking-water quality, released in 2017.
[6] I.e. the lowest level that can be reliably achieved within the specified limits of precision and accuracy during routine laboratory operating conditions.

lack of clarity on this point presents an important issue to address in the draft guideline. CELA therefore recommends that further information be provided on the testing capabilities of Canadian laboratories and reserves judgment on the proposed MAC until this is done.[7]

The draft guideline contains limited references to sources dated after 2014

CELA notes that the draft guideline is dated October, 2016. The guideline, however, only references one source dated 2015 and one dated 2016, while 18 references are made to sources dated 2014.

This suggests that the guideline may not have taken into account research done in the past two years. This is corroborated by a statement on p. 62, which refers to a major revision of the US Lead and Copper Rule, which, it is said, is not expected to be completed before 2015. 2015 has passed, but there is no mention of the status of the Lead and Copper Rule revision. The revision is still ongoing.[8]

CELA appreciates the significant work that has been carried out in providing a comprehensive scientific foundation for the guideline. CELA further recommends that, to ensure the currency of this valuable work, the guideline be updated to include any recent research and possible policy changes on lead in drinking water.

Need for a Public Health Guideline (PHG) as well as a targeted approach

The draft guideline acknowledges that the MAC is established on the basis of analytical limitations and feasibility[9] and that it is not possible to identify a Blood Lead Level (BLL) considered to cause no harm in children.[10]

It is CELA's view that this knowledge, combined with the fact that even very low amounts of lead in drinking water are likely to have neurodevelopmental effects in children[11], calls for a Public Health Guideline (PHG) that sets out the level of lead in drinking water that must be met to avoid harm in children altogether.[12]

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[7] CELA notes that according to WHO, detection limits as low as 1 mcg/L can be achieved - see http://www.who.int/water_sanitation_health/dwq/chemicals/lead.pdf, page 13. Health Canada's existing guideline provides that detection limits of less than 1 mcg/L can be achieved, while PQL's are usually 1-3 mcg/L during routine monitoring – see https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-lead.html, at note 11. The draft guideline itself, on page 10, mentions a detection limit of 0.5 mcg/L, and on page mentions a detection limit as low as 0.02 mcg/L. All of these sources suggest that sufficient testing capabilities already exist which would allow for a lower limit than the proposed 5 mcg/L.

[8] See LEAD AND COPPER RULE REVISIONS WHITE PAPER, October 2016, available at https://www.epa.gov/sites/production/files/2016-10/documents/508_lcr_revisions_white_paper_final_10.26.16.pdf. The conclusion on page 18 suggests that the review will take place in 2017.

[9] E.g. page 2 and 3 of the draft guideline.

[10] Pages 2, 55, 61 and 63.

[11] See page 61-62 of the draft guideline, for an assessment of the drinking water lead levels at which neurodevelopmental effects would be a consideration.

[12] See for example the 0.2 mcg/L found in California (page 62 of the draft guideline), although the calculations on page 59-62 suggest an even lower level might be appropriate when it comes to children.

Rather than simply providing that lead in drinking water should be kept as low as reasonably possible (ALARA), CELA recommends that the draft guideline be updated so as to provide a PHG which clearly sets out what the long-term health goal is. This will provide stakeholders and the public with a better understanding of what needs to be done to eliminate the adverse effects caused by lead in drinking water.

It has been documented that 5µg/L will have a measurable impact on children.[13] Even if it is currently not possible to rely on a limit lower than 5µg/L – be it for practical, financial or scientific reasons – the knowledge that 5µg/L has measurable impacts on children should lead to clear goals aimed at removing known sources of lead as fast a reasonably possible. A PHG is likely to contribute to achieving such goals.

In preparing its response CELA has furthermore reviewed preliminary data on the BLL's of young children provided by Public Health Ontario.[14] The data covers children predominantly 0-6 years of age located in the GTA and Kingston, and provides information on the distribution and age-related trend of BLL's in these children as well as information regarding risk factors leading to higher BLL's.

The data suggests that lower socio-economic status, age, ethnicity, immigrant or refugee status, and age of housing are risk factors when looking at BLL's in pre-school children. CELA notes that the preliminary data shows that all tested children had some amount of lead in their blood (from 0.15 mcg/L to 3.92 mcg/L), while children aged 1-2 years, children from low income households and children living in older housing experience higher than average BLL's.

This data makes it clear that, despite improvements over the years, nearly all children still have significant BLL's, suggesting that more work is needed to reduce lead exposure for all children.

The data also strongly suggests that an approach which targets children with higher than average BLL's, e.g. very young children from low income households living in old housing stock, should be considered.

In addition to the above-mentioned PHG, CELA therefore recommends that the draft guideline be updated to take into account the data from Public Health Ontario once it is made available. This should include a targeted lead reduction effort aimed at children identified in the preliminary data as having the highest BLL's.

Sampling methodology

A key goal of sampling is to determine, as accurately as possible, the amount lead that is actually consumed.[15] The best way to achieve this would be to collect a representative sample. Obtaining such a sample may, however, be unfeasible if a large number of samples are to be collected. As

[13] Page 19 of the draft guideline.
[14] Preliminary data provided by Public Health Ontario during the *"OEH Seminar: TARGetKids: A study of children's blood lead"*, which took place Friday March 10, 2017: https://www.publichealthontario.ca/en/LearningAndDevelopment/Events/Pages/OEH-Seminar_TARGetKids_A-study-of-children%E2%80%99s-blood-lead.aspx.
[15] Other goals include determining possible sources of lead.

such, a more manageable sampling protocol may have to be used. The draft guideline suggests two approaches that may be used, namely Random Daytime (RDT) sampling and 30 minute Stagnation time (30MS) sampling.

In the draft guideline it is stated, that while RDT sampling may require 2-5 times more samples to be taken to provide a statistically robust result,[16] it also appears to provide slightly higher readings than 30MS samples, which the draft guideline suggests may underestimate lead exposure.[17]

CELA agrees with the use of RDT samples, provided that a sufficient number of samples are taken to ensure a sufficient statistical basis.

With regards to the 30MS samples, CELA recommends that the approach used in Europe be applied. Part D.2. of Annex II to the Drinking Water Directive,[18] provides that if fixed stagnation time methods are used rather than RDT sampling, the particular stagnation time sampling must be carried out in a manner that does not result in fewer cases of non-compliance than would be the case if relying on RDT sampling. In line with this approach CELA recommends that stagnation times longer than 30 minutes be used, where data suggest that this is needed in order to avoid the risk of underestimating actual lead exposure.[19] [20]

On page 5 of the draft guideline, it is suggested that the results of two samples should be averaged when carrying out 30MS sampling. CELA recommends that both results be provided in order to show the variation in exposure between the two samples, and possibly help encourage the use of flushing where relevant.

Filtering at point of use (POU)

CELA submits that the primary goal of drinking water guidelines should be public health and safety. Where there are known issues with lead in water that could be addressed through filtering, filtering should be explicitly recommended.

The use of filtering, however, also amounts to an admission that water at the POU is inadequate from a health perspective. CELA agrees with the statements on page 3, 26 and 27 that filtering at the consumer level should be considered an interim rather than permanent solution. The need for filtering is in essence a symptom of insufficient water quality, and thus more of a band aid than a proper solution.

CELA therefore recommends that filtering be relied on as an official but temporary solution in relevant cases, and that filtering recommendations must be accompanied by an identification of

[16] Draft guideline, page 4.
[17] Draft guideline, page 13-14.
[18] Ibid., note 4.
[19] This concern is mentioned at bottom of page 13, top of page 14.
[20] In a recent round of sampling in New York schools, abandoning a pre-stagnation flushing approach (with 8 hours of stagnation time) led to significantly higher levels of lead in water being detected: https://www.nytimes.com/2017/02/03/nyregion/new-york-dept-education-lead-water.html?amp;_r=1. The results highlight the potential risk of relying on pre-stagnation flushing, even where stagnation times are significantly longer than 30 minutes.

the actual/likely sources of lead and a suggestion for removing these sources. Where the sources of lead are controlled by the federal or provincial governments or by a municipality filters should be provided free of charge. Similarly, where it is found that low-income households are exposed to lead above the draft guideline MAC, financial support should be provided – especially in households with children.

The Ontario section of the draft guideline

The commentary on page 101 regarding the anticipated impact of the draft guideline in Ontario suggests that Ontario will adopt the guideline.

It is CELA's recommendation that Ontario move quickly in adopting the guideline once it is finalized. CELA also recommends that the province not only embrace the guideline but also the underlying science which strongly suggests a need to work towards meeting the limit of 5 mcg/L, as well as further reducing the lead in drinking water to a level significantly below 5 mcg/L.

As the province points out, pipes and fittings contribute significantly to the total lead concentration in drinking water. CELA recommends that such sources – as well as faucets which may leach up to 31% of the lead found in initial samples[21] – are actively targeted as part of an effort to meet and exceed the proposed 5 mcg/L limit.

Summary of Recommendations

Recommendation 1: CELA recommends that any delay in the implementation of necessary health protective measures be accompanied by comprehensive reasons for such delays, including explicit timelines detailing how and when any identified health risks will be fully mitigated, an assessment of the time and cost required to fully mitigate the current exposure to lead, and a plan for achieving such a goal.

Recommendation 2: CELA recommends that cost considerations underpinning the proposed limit of 5 mcg/L be set out more clearly, in order to determine how this proposed limit fits into a Canadian context.

Recommendation 3: In relation to determining a Practical Quantitation Limit (PQL) in Canada, CELA recommends that further information be provided on the testing capabilities of Canadian laboratories.

Recommendation 4: CELA recommends that, to ensure its currency, the guideline be updated to include any recent research and possible policy changes on lead in drinking water.

Recommendation 5: CELA recommends that the draft guideline be updated so as to provide a PHG which clearly sets out what the long-term health goal is, thereby providing a better

[21] Sandvig, A., Kwan, P., Kirmeyer, G., Maynard, B., Mast, D., Trussell, R.R., Trussell, S., Cantor, A. and Prescott, A. (2008). Contribution of service line and plumbing fixtures to lead and copper rule compliance issues. Water Research Foundation, Denver, Colorado (Awwa Research Foundation Project No. 90721), Chapter I, page 5 and figure 3.1 on page 48.

understanding of what still needs to be done to eliminate the adverse effects of lead in drinking water.

Recommendation 6: CELA recommends that the draft guideline be updated to take into account the data from Public Health Ontario once it is made available, including a targeted lead reduction effort aimed at children identified in the preliminary data as having the highest BLL's.

Recommendation 7: If fixed stagnation time sampling is used, CELA recommends that the stagnation time be extended beyond 30 minutes where data suggest that this is needed to avoid the risk of underestimating actual lead exposure.

Recommendation 8: CELA recommends that where 30MS sampling is used both sample results be provided in order to show the variation in exposure between the two samples.

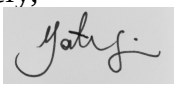
Recommendation 9: CELA recommends that filtering be relied on as an official but temporary solution in relevant cases, and that filtering recommendations be accompanied by an identification of the actual/likely sources of lead and a suggestion for removing these sources. Where the sources of lead are controlled by the federal or provincial governments or by a municipality filters should be provided free of charge. Similarly, where it is found that low-income households are exposed to lead above the draft guideline MAC, financial support should be provided – especially in households with children.

Recommendation 10: CELA recommends that Ontario move quickly in adopting the guideline, and that Ontario embraces the underlying science which strongly suggests a need to further reduce the lead in drinking water to a level significantly below 5 mcg/L.

Recommendation 11: CELA recommends that pipes, fittings and faucets are actively targeted by Ontario as part of an effort to meet and exceed the proposed 5 mcg/L limit.

CELA would be happy to meet at your convenience to discuss any of our comments or recommendations.

Sincerely,



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