

BY EMAIL

11 May 2016

Caroline Lapointe
Commission scolaire de Montréal

Re: Opinion regarding lead levels in tap water at FACE School during work to replace the pipes

Dear Caroline:

In response to your informing us of the lead levels measured in tap water at FACE School, we are sending you our opinion concerning the potential health risks for children and staff at this school. First, it is acknowledged that children under 6 are the ones most vulnerable to lead because, among other things, they absorb more lead.

It should first be pointed out that plumbing work is currently being done at the school. Therefore, it is difficult to determine if the very high level of lead measured in a water tap at the school reflects the usual situation at this site.

Table 1 presents lead levels measured in 11 water taps at FACE, early in the morning, before students arrived (T=0), and after letting the tap run for at least 5 minutes (T=5 min) as required by the Ministère du Développement durable, de l'Environnement et de la Lutte aux changements climatiques's *Regulation respecting the quality of drinking water* (hereafter called *Regulation*). Lead levels at time zero are not very high (2 to 27 µg/L); however, these levels can't be compared to the standard of 10 µg/L (0.010 mg/L) in the *Regulation*. Lead levels measured after running the tap for 5 minutes showed that 9 samples met the standard of 10 µg/L and 2 samples exceeded this standard. The lead level in the sample from the tap in classroom 459 was very high, measuring 470 µg/L. However, since the water was yellowish when the sample was taken and there was black residue on the faucet aerator screen, it is possible that this figure is linked to the plumbing work being carried out. A sample from the water fountain in room 154, a kindergarten classroom, measured 16 µg/L.

Table 1. Lead levels measured in the water of several taps at FACE school

Location	Lead levels ($\mu\text{g/L}$)		Colour of the water
	T= 0 with aerator	T= 5 min. without aerator	
Main water valve 1A SS	2		Clear
Tap, room 459 ¹	11	470	Yellowish
Drinking fountain, room 405	12	10	Clear
Drinking fountain, room 308	2.5	5.9	Clear
Boys' washroom, East	14	1.5	Clear
Drinking fountain, room 208	3.8	5.5	Clear
Kindergarten drinking fountain, room 154	<10	16	Clear
Drinking fountain, room 104-A	4	4	Clear
Girls' washroom, O-31	1.3	<10	Clear
Tap, lab 10	27	2.8	Clear
Women's washroom, 255	12	<10	Clear

¹There was black residue on the faucet screen when the sample was taken.

In our experience, we sometimes see very high lead levels in some tap water measured in schools at certain times, due to the presence of plumbing components containing lead (e.g. valves, soldering, etc.); the rest of the time, lead levels are low. This may be the case for the tap in room 459, where the lead level was 11 $\mu\text{g/L}$ at time 0 and 470 $\mu\text{g/L}$ after letting the tap run for 5 minutes. As stated earlier, we can't exclude the possible influence of the plumbing work currently being carried out.

In the past, we have evaluated the health risks for children attending elementary schools where water lead levels occasionally rose as high as 470 $\mu\text{g/L}$ (unpublished document). Given that *i*) lead levels are very high only at one moment, *ii*) the same children don't always drink water when lead levels are very high, and *iii*) the proportion of water consumed at school is very low compared with total consumption during the day, we don't believe that the occasional presence of very high levels of lead in the school water is a problem for children's health.

The occasional presence of high levels of lead in the water of some taps at school isn't a new source of exposure; parents of children today have drunk the same water. In addition, children's exposure to lead has declined substantially over the past few decades because lead has been eliminated from various sources (e.g. gas, lead paint, etc.): blood lead levels in children under age 6 have fallen from 190 $\mu\text{g/L}$ in 1972 to under 20 $\mu\text{g/L}$ today¹ (Figure 1).

¹Beausoleil and Brodeur, 2007. *Le plomb dans l'eau potable sur l'île de Montréal – État de situation et évaluation des risques à la santé*. Direction de santé publique de l'Agence de la santé et des services sociaux de Montréal 48 pages. Available at http://www.dsp.santemontreal.qc.ca/fileadmin/documents/dossiers_thematiques/Environnement/EauPotable/Plomb_dans_l_eau_potable_2007.pdf

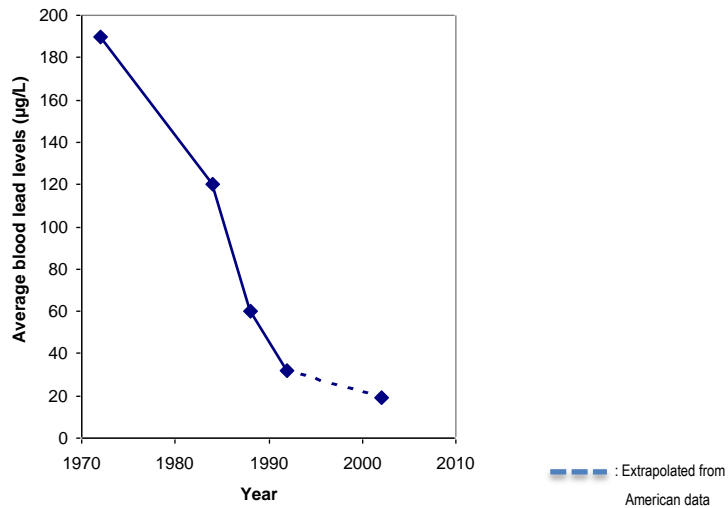


Figure 1. Evolution of average blood lead levels in children under age 6, over the past decades (Beausoleil and Brodeur, 2007)

Nonetheless, given the work that is currently being done at FACE and the sometimes yellowish colour of the water at the school, preventive measures should be put in place related to drinking this water. Distributing bottled water was definitely appropriate.

In addition, as long as the water is yellowish and the work continues, we recommend that you keep distributing bottled water to people occupying the rooms affected. During the work and once it has been completed, it is important to assess the pertinence of draining the pipes and cleaning faucet aerator screens in drinking water taps.

Once the plumbing work and clean up have been completed, we recommend that you test the water in room 459, where lead levels were determined to be 470 µg/L. Lead concentrations in the water could be measured after 30 minutes of stagnation, using the following sequence: 1st, 2nd, 3rd and 4th litres, after running the water 2 minutes, 3 minutes and 5 minutes. These results will enable you to assess whether the very high levels of lead measured were due to the plumbing work; if they weren't, you can evaluate the degree to which those very high lead levels might be consumed. This will then help you determine if interventions are required.

If you have any additional questions, please contact us.

Julie Brodeur, M.Sc., toxicologist

Monique Beausoleil, M.Sc., toxicologist

Translated by Sylvie Gauthier, trad. a.