VERMONT
DEPARTMENT OF HEALTH

Health Advisory
January 9, 2018

TO: Vermont Health Care Providers in Rutland County
FROM: Health Commissioner Mark Levine, MD

Elevated Lead Levels in School Drinking Water

As part of a voluntary pilot testing program in 16 schools, lead has been found in drinking water at Castleton Elementary School at levels above the EPA action level and the Vermont health advisory. One reason this school was chosen for testing was because of the high percentage of children ages 1 to 2 in the community who have elevated blood lead levels. This means there may be sources of exposure other than school drinking water.

Normally when a child has an elevated blood lead level (≥ 5 µg /dL – micrograms per deciliter), we try to identify the source of the exposure. In this case, an exposure has been identified and eliminated, but the question of whether to test the blood of those who may have been exposed remains.

EPA Action Level (15 ppb), AAP Recommendation and Vermont Health Advisory (1 ppb)
The EPA action level for lead in drinking water is 15 ppb. The American Academy of Pediatrics recommends lead in drinking water not exceed 1 ppb. Because there is no safe level of lead, the Health Department has established a Vermont Health Advisory of 1 ppb, and encourages schools to take action to reduce lead levels in drinking water as low as possible.

Castleton Elementary School Results
The elevated lead levels in the drinking water at Castleton Elementary School were found in "first draw" samples, which are taken after the water stands in the plumbing overnight. These first draw results, which range from 16 ppb to 43 ppb at nine locations, represent the likely maximum level of lead from each drinking fountain or faucet sampled. Lead levels in "flush" samples for these taps, which are taken after running the water for 30 seconds, were low (2 ppb or lower). Results for each of the taps can be found on the Health Department's website: www.healthvermont.gov/school-drinking-water.

Northwest Primary School in Rutland will also be testing for lead in drinking water in the coming months. Results will be posted on the Health Department's website when that testing is completed.

Considerations for Testing Blood Lead Levels in Children
The amount of exposure for each individual child is unknown. Exposure is influenced by how much and how often they drink, and their body size. Using an EPA model that predicts blood lead from drinking water, the Maine and Vermont health departments developed estimates of the relationship between school drinking water lead level and average contribution to blood lead level. Estimates are based on a child between 5 and 6 years old consuming half of their daily water intake from an affected tap.

A drinking water lead level of –

- 15 to 75 ppb is estimated to contribute 3 µg/dL to the child's blood lead level.
- 76 to 225 ppb is estimated to contribute 8 µg/dL to the child's blood lead level.
- 226 to 425 ppb is estimated to contribute 13 µg/dL to the child's blood lead level.

- 426 to 625 ppb is estimated to contribute 18 µg/dL to the child's blood lead level.
- 626 to 900 ppb is estimated to contribute 23 µg/dL to the child's blood lead level.

We believe these are worst-case estimates of the drinking water contribution to blood lead levels because:

1) based on the low levels of lead found in "flush" samples, we expect that the lead levels in the water will decrease throughout the day as taps are used, and
2) children may drink less than 50 percent of their daily water intake from one school faucet.

After the exposure is stopped, it takes at least a month for the blood lead level to drop by half.

Other reasons for blood lead testing:

- potential for additive effects through exposure to lead in a house or apartment building built before 1950, or an adult who has occupational exposure to lead
- previously identified behavioral or academic problems
- parent's concern and desire to know if the child has been exposed
- developmental problems/delays or behavioral problems such as aggression, hyperactivity, attention deficit, school problems, learning disabilities, excessive mouthing or pica behavior
- signs consistent with lead poisoning: irritability, headaches, vomiting, seizures or other neurological symptoms, anemia, loss of appetite, abnormal pain, cramping or constipation

Healthy Homes Resources

Should a child from Castleton Elementary School have a confirmed (venous) elevated blood lead level, the Health Department's Healthy Homes program has resources available to assist parents in identifying other possible sources of lead that could be contributing to a child's lead burden.

Report blood lead test results – In addition to your normal blood lead reporting, if you decide to test a patient, please send the patient's name and date of birth to the Health Department at AHS.HealthyHomes@vermont.gov or by calling 1-800-439-8550. The patient's name and date of birth will allow us to match their blood lead result with their school.

Questions – Call the Environmental Health Division at 1-800-439-8550 for questions about this health advisory or to discuss any blood lead test results.

For more information –

- About the pilot project: www.healthvermont.gov/school-drinking-water
- Clinical treatment guidelines for confirmed blood lead levels: www.healthvermont.gov/sites/default/files/documents/pdf/Env_CEH_BLTestingGuidelines.pdf