

## Toxic lead exposure via an unusual source: New BC reporting regulations may prevent similar cases

**E**xposure to lead in Canada has fallen dramatically with its removal from paint, gasoline, plumbing, and other consumer and industrial products. Nevertheless, lead toxicity still occurs.

A 64-year-old male was seen in emergency rooms throughout the Lower Mainland over the course of 5 months, complaining of abdominal pain, dizziness, weight loss, and nausea. Intensive workup for abdominal pathology, including CT, MRI, and upper- and lower-gastrointestinal scopes, was negative. Bloodwork showed a normocytic anemia.

After nearly two dozen medical visits, a consulting internist considered lead toxicity as a unifying diagnosis and ordered a blood lead analysis, which showed significantly elevated blood lead at 5.60  $\mu\text{mol/L}$  (115.94  $\mu\text{g/dL}$ ). The BC Drug and Poison Information Centre was contacted, and chelation therapy with succimer was arranged; the patient's symptoms resolved over the next few months, and his blood level decreased to 0.99  $\mu\text{mol/L}$  (20.5  $\mu\text{g/dL}$ ).

The patient had been taking an ayurvedic herbal remedy purchased in India to treat his type 2 diabetes. A laboratory analysis determined that each tablet contained approximately 12.5 mg of lead. The patient had been taking two tablets daily for many years, yielding a sustained daily exposure of 25 mg.

The patient discontinued taking the herbal remedy, and 3 months later his presenting symptoms had not returned; blood lead levels however, re-

bounded slightly as equilibrium was reached between excretion and bone stores. Health Canada was notified regarding the herbal medication and issued a foreign product alert detailing the risk (<http://healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2018/68602a-eng.php>).

**As of 1 January 2019,  
laboratories testing  
BC patients and paid for by  
public insurance are obliged  
to report all analyses of lead  
and mercury in blood and  
urine to the BC Provincial  
Health Officer.**

The two BC laboratories that test clinical samples for metals analyze just over 2600 blood lead, 1800 blood mercury, and 110 urine mercury samples every year. Some of those samples are screening tests based on presumed exposure to metals at the workplace. Few of those tested have results as striking as the patient described above, whose high and ongoing lead exposure resulted in significant morbidity. His case, however, is not unique and points to the need to follow up on high-level metal biomarker test results for the opening they offer into family and community exposures, which in the absence of investigation and testing may pass unnoticed.

As part of new regulations under the BC Public Health Act, as of 1 January 2019, laboratories testing BC patients and paid for by public insurance

are obliged to report all analyses of lead and mercury in blood and urine to the BC Provincial Health Officer, who has delegated the receipt, investigation, and surveillance of results to the BC Centre for Disease Control (BCCDC) acting in concert with regional health authorities. BCCDC will assess trends in testing and in metal biomarker levels by geography and demography, and for those 100 or so results per year above an investigation/action threshold, will contact the ordering clinician and through the clinician the patient, to assess the likely source of exposure. BCCDC will work with the two BC testing laboratories, Doctors of BC, WorkSafeBC, medical health officers, and environmental health officers in health authorities, the Provincial Health Officer, and privacy experts to ensure that the system works effectively in pinpointing to whom and where high-level exposures to mercury and lead occur, in order to trigger early intervention and prevent additional toxic heavy metal exposures.

—David McVea, MD  
University of British Columbia  
Public Health and Preventive Medicine Residency

—James Lu, MD  
Medical Health Officer, Vancouver Coastal Health

—Morris Pudek, MD  
Regional Medical Discipline Leader, Clinical Chemistry, Vancouver Coastal Health

—Benjamin Sehmer, MD  
Internal Medicine, Richmond Hospital

—Tom Kosatsky, MD  
Medical Director, Environmental Health Services, BCCDC