

Exposures to lead require ongoing vigilance

Editor — We concur with the concerns over the safety of lead expressed in the article by Helen Gavaghan (1). In many countries, environmental exposure to lead has been a protracted public health concern because of its known neurodevelopmental effects. Common lead sources include paints, industrial emissions, crockery fired with lead-containing ceramic glaze, lead-soldered food cans and exhaust from vehicles using leaded fuel. Gavaghan and also Landrigan (2) stress the ongoing health burden of lead in developing countries that persist with leaded fuel.

However, even in developed countries where strict controls have been implemented, sources of lead can emerge unexpectedly — as illustrated by the examples reported in this letter — and which brings into focus the need for ongoing vigilance.

Candles with traditional wick material encasing a thin metal core were imported into Australia in the late 1990s. Analysis revealed that some wick cores were composed of lead, causing immediate concern regarding inhalational exposure to aerosolized lead. A consultant researcher constructed a test chamber incorporating filters to trap particulate metal air emissions. Experiments with burning lead-wick candles and extrapolation of air-lead data to realistic room sizes showed that burning for 1.5 to 6 hours could generate average lead levels of up to 100 µg/m³ (3). Daily or once weekly exposure to levels exceeding, respectively, 10 µg/m³ and 60 µg/m³, would exceed the Provisional Tolerable Weekly Intake for a 10-kg child. In view of these results, the national authorities banned lead-wick candles.

During the course of a recent pregnancy, a woman who had emigrated from India had consumed “herbal” tablets prescribed by an Ayurvedic doctor for a gastrointestinal complaint.

Complications and clinical examination at 30 weeks’ gestation suggested lead poisoning. Tablet analysis showed up to 9% lead, and the woman’s lead ingestion probably exceeded the average lead intake in Western diets by at least 50-fold. Her blood-lead was 108 µg/dl (5.2 µmol/l), a level known to be fatal. Chelation therapy was initiated, and soon after she delivered a pre-term 1.6-kg baby diagnosed with bilateral diaphragmatic palsy. The baby’s blood-lead was 244 µg/dl, being the highest level recorded for a surviving infant. The child received immediate chelation therapy and was released four months later from hospital but with a poor neurodevelopmental prognosis (4).

A 66-year old man in Australia had suffered from progressive malaise for two years. Blood tests showed massive lead poisoning (98 µg/dl). An environmental investigation revealed that he had consumed home-made red wine, a sample of which contained 14 mg lead/l (70 times the Australian limit). In his wine preparation process, grape crushings were placed in a highly corroded enamel bath tub for a week prior to bottling. The wine’s acidity (pH 3.8) probably contributed to the solubilization of lead from the enamel glaze; a test with commercial red wine of similar pH confirmed this hypothesis. This case study emphasizes the importance of using food-grade materials for the preparation or storage of home-made produce (5).

Another recent lead exposure related to installation of PVC pipe containing lead stabilizer in a remote community’s drinking-water pipe network, while lead

exposure was averted by banning miniature moulded-lead soldiers that had appeared on the retail market.

These examples highlight the fact that all countries must maintain a high level of vigilance since there is an abundance of unsuspecting sources of lead in the environment. Vigilance could be assisted by broadening community awareness, and by enforcing stricter controls over use of products known to contain lead as well as stricter surveillance/testing of imported goods. ■

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Conflicts of interest: none declared.

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5. Mangas S, Visvanathan R, van Alphen M. Lead poisoning from homemade wine: a case study. *Environmental Health Perspectives* 2001;109:433-5.

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