

Some metallic toys and low-cost jewelry present health risks for young children

March 5 2014



This is Dr. Gérald J. Zagury, Professor in the Department of Civil, Geological and Mining Engineering at Polytechnique Montréal. Credit: Polytechnique Montréal

We know that babies and young children often put non-food items in their mouths, a behaviour that occasionally leads to swallowing of foreign objects. Metallic toys and low-cost jewelry often contain toxic substances such as lead and cadmium. Do these objects present a health risk for young children?

To answer this question, Gérald J. Zagury, a professor in the Department

of Civil, Geological and Mining Engineering at Polytechnique Montréal, and Mert Guney, a former doctoral student under Professor Zagury's supervision, examined metals contamination in a selection of 72 toys and jewelry items purchased on the North American market. They then conducted in vitro tests on 24 samples by recreating the biochemical conditions of the gastrointestinal system in the laboratory in order to get an accurate answer.

"We observed that [cadmium](#) and [lead contamination](#), both very toxic metals, are a major problem, especially when it comes to metallic jewelry and toys. Copper, nickel, arsenic and antimony were also present in some samples," explains Professor Zagury. In-depth tests showed that the metals can be mobilized into the digestive fluids once contaminated items are ingested. The researchers also observed that the mobilized quantities of cadmium, [lead](#) and nickel from some samples exceeded the safety threshold levels that a child can be exposed to without suffering acute harmful effects (abdominal pain, nausea, vomiting and diarrhea) or variable chronic effects depending on the contaminant. It must be noted that chronic ingestion of lead and cadmium can have irreversible effects on a child's intellectual development.

Provided by University of Montreal

Citation: Some metallic toys and low-cost jewelry present health risks for young children (2014, March 5) retrieved 8 May 2024 from <https://medicalxpress.com/news/2014-03-metallic-toys-low-cost-jewelry-health.html>

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