



## All lead exposures matter

The systematic review by Ericson and colleagues<sup>1</sup> did an excellent job of outlining the extent and challenge of global lead poisoning. The review also pointed to the absence of testing capacity as the authors were only able to locate reports of blood lead levels in fewer than a third of the 137 low-income and middle-income countries (LMICs). We believe this indicates a need to expand laboratory capacity to test for blood lead levels in all countries.

The systematic review listed “probable sources” of exposure for the included studies, but lead exposures generally come from multiple sources. A single dominant source might be of the greatest concern for an individual, among a specific subpopulation, or within a specific geographical area. However, as we become increasingly concerned with lower exposures, every source contributing to an incremental increase in blood lead level is of greater importance in contributing to the body’s lead burden.

With an understanding that lead has been and continues to be used in thousands of products, there is an extensive list of sources that are ultimately of concern. We feel that it is premature to conclude that sources of lead exposure in LMICs are different from those in high-income countries and that “lead-based paint does not appear to be a major source of lead exposure in LMICs”<sup>1</sup> on the basis of a single study that did not measure exposure (eg, blood or bone lead levels).<sup>2</sup>

This study reported lead paint testing among 122 homes and schools in Indonesia, of which 88 (72%) were built within the past 20 years.<sup>2</sup> The study assessed lead levels from an average of 12 test locations per home, whereas similar assessments in the USA that follow test protocols require 50–100 test locations per home to completely map the presence of lead

on interior and exterior surfaces. This convenience sample of homes was not representative of the 64·1 million housing units in Indonesia, and therefore certainly not representative of all homes in LMICs.<sup>3</sup>

Furthermore, exposures from lead paint are not limited to home interiors, given that these coatings are also applied to bridges, boats, roadways, automobiles, and other products. Even homes with lead-based paint on the exterior only generally have high dust and soil lead contamination.<sup>4</sup> Para-occupational or take-home exposures from workers manufacturing lead paint and from those working in construction and painting are known to be a substantial source of exposure. Furthermore, lead paint is most problematic when it is disturbed during renovations and repainting, which is the reason why the USA has a specific rule to address these practices in homes built before 1978.<sup>5</sup> Generally, the worst exposures occur in older homes with lead-based paint that deteriorates over many decades.

It is important that Ericson and colleagues<sup>1</sup> have highlighted the disparity in exposures between LMICs and high-income countries. However, it is also important to recognise that we do not have sufficient data to assess exposures in most countries and we certainly do not have sufficient data to rank or draw any firm conclusions on the relative weight of lead exposure sources globally. Instead, we should focus on regulating and controlling all sources of lead exposure to prevent workers, children, and future generations from this fate.

PG reports serving as an expert witness on cases involving lead poisoning and Occupational Knowledge International has received funding to work on lead poisoning prevention. YI declares no competing interests.

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- 1 Ericson B, Hu H, Nash E, Ferraro G, Sinitsky J, Taylor MP. Blood lead levels in low-income and middle-income countries: a systematic review. *Lancet Planet Health* 2021; **5**: e145–53.
- 2 Ericson B, Hariojati N, Susilorini B, et al. Assessment of the prevalence of lead-based paint exposure risk in Jakarta, Indonesia. *Sci Total Environ* 2019; **657**: 1382–88.
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- 5 Federal Register. Part II: Environmental Protection Agency. April 22, 2008. <https://www.govinfo.gov/content/pkg/FR-2008-04-22/pdf/E8-8141.pdf> (accessed March 23, 2021).