

LEAD POLLUTION IN BANGLADESH

New research published in the Lancet Planetary Health is expanding our understanding of the impact of lead pollution. Global deaths attributable to lead exposure, previously estimated at 900,000, are now 5.5 million. Bangladesh has its own shared of children lead poisoned as one of the LMIC countries.

ANNUAL IMPACT OF LEAD EXPOSURE IN BANGLADESH ¹

138,054

Cardiovascular Disease (CVD) deaths from lead

20,596,306

loss of IQ points in children under 5

\$10,897M

cost of IQ loss from lead

\$17,736M

cost of CVD mortality from lead

SOURCES OF EXPOSURE IN BANGLADESH ²

The Rapid Market Screening (RMS) program is a project of Pure Earth with support from Open Philanthropy, the Effective Altruism Global Health and Development Fund, and GiveWell to gain insights into the consumer products and foods that contribute to lead poisoning in low- and middle-income countries. Between 2021 and 2023, researchers analyzed lead concentrations in thousands of products and foods from markets across 25 countries, including Bangladesh.



RAPID MARKET SCREENING FINDINGS

03 districts were the part of the screening: Khulna, Barishal, and Rajshahi

samples of market products collected and analyzed

197

11 product types sampled: Aluminum cookware, aluminum, ceramic, steel, melamine, and plastic foodware, toys, cosmetics, paint - unclassified, craft/art, spices, and rice/starch

24% of samples contained lead levels above the threshold level

Metallic foodware, Ceramic foodware, and Paint

contained the highest levels of lead



A total of 197 samples were collected and analyzed; lead is detected in 55 samples.

The samples with maximum readings with lead in each district are mentioned below:



METALLIC FOODWARE

- Khulna: 1496 PPM
- Rajshahi: 853 PPM
- Barisal: 1310 PPM



CERAMIC FOOD WARES

- Khulna: 822 PPM
- Rajshahi: 4636 PPM
- Barisal: 1310 PPM

The percentages of some of the major samples that exceeded the relevant reference level:

- Metallic foodware (59%)
- Ceramic foodware (44%)
- Paint - Unclassified (54%)
- Paint - arts/craft (50%)*
- Rice/Starch (17%), and
- Toys (13%)

*Results from 5 or fewer samples



PAINT - UNCLASSIFIED, CRAFT/ART

- Khulna: 31360 PPM
- Rajshahi: 8186 PPM
- Barisal: 12230 PPM



TOYS

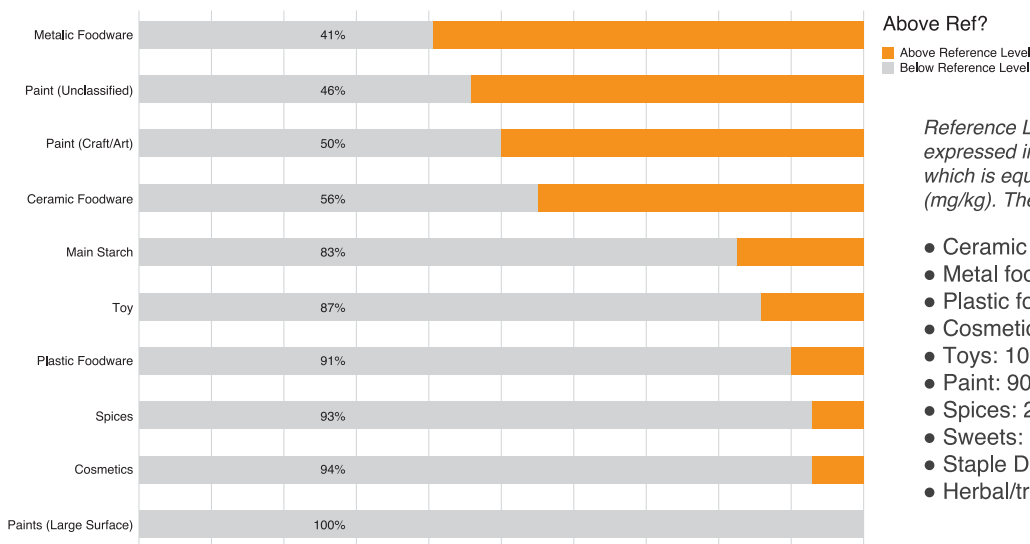
- Khulna: 606 PPM
- Rajshahi: 1814 PPM
- Barisal: 755 PPM

The samples were tested with a ThermoFisher NITON hand-held portable X-ray fluorescence Heavy Metal Analyzer (Olympus Vanta Model). Samples were purchased and tested off-site.

No. and type of samples analyzed from Khulna, Rajshahi, and Barishal divisions are:

- Metallic foodware: 27
- Ceramic foodware: 09
- Plastic foodware: 11
- Paints: 30
- Rice/Starch: 12
- Toys: 30
- Spices: 46
- Cosmetics: 32

% of Samples Below or Above Reference Level in Bangladesh



Reference Levels and measured lead levels are expressed in parts per million of lead (ppm), which is equivalent to milligrams per kilogram (mg/kg). The following reference levels are used:

- Ceramic foodware: 100 ppm
- Metal foodware: 100 ppm
- Plastic foodware: 100ppm
- Cosmetics: 2 ppm (EU/Germany)
- Toys: 100 ppm (US)
- Paint: 90 ppm (UNEP)
- Spices: 2 ppm (EU)
- Sweets: 0.1 ppm (US)
- Staple Dry Foods: 0.2 ppm (FAO)
- Herbal/traditional medicines: 10 ppm (WHO)

1. Global Cost of Lead Exposure in Children and Adults. The Lancet Planetary Health. Larsen, Bjorn and Sánchez-Triana, Ernesto September 2023.

2. Rapid Market Screening Final Report. Pure Earth September 2023.