

# Rapid Marketplace Screening in **BANGLADESH**



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## BACKGROUND

Pure Earth has conducted Rapid Marketplace Screening (RMS) with support from GiveWell in 12 countries including Bangladesh.

Pure Earth developed and followed a sampling protocol based on a Desk Review Report (DRR) which summarized published literature on known lead exposure sources to inform initial sampling and analysis of products, commodities, and substances that may contain lead.

The trained investigators of Pure Earth conducted the formative research (FR) with the information presented in the DRR, entered the markets, and determined what lead-containing products to sample.

## METHODOLOGY

- Train the investigators on project goals, procedures, data entry process in SurveyCTO, and operating XRF instrument.
- Identify Markets
- During the market visit: Collect samples, fill out market-level questions, vendor-level questions, and product questions

- Level the samples with a Unique ID
- Level the sample photo and photo ID
- Analyze the samples via XRF
- Send selected samples for laboratory testing
- Upload the data using SurveyCTO

**04** districts: Dhaka, Khulna, Rajshahi, and Barishal were the part of the Rapid Marketplace Screening study.

**367** samples of market products collected and analyzed

**96** samples were found lead-positive including aluminum cookware, ceramic foodware, local paints, toys, amulets, pigments, and other non-food items.

*The investigators visited a total of 15 markets in four districts, collected 367 samples which were potential sources of lead as identified during the desk review.*

## OBJECTIVE

- To identify sources of lead exposure and prioritize countries for future interventions.
- This formative research is to guide a larger, more formal and comprehensive sampling and testing of selected 'lead-positive' products.

# XRF TESTING ON SAMPLES

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.



## List of Market

### Dhaka City

1. Mirpur Co-operative Market
2. Mirpur Shah Ali Market
3. Mohammadpur Town Hall Market
4. Mirpur Capital Tower Market
5. Mohakhali Kacha Bazar
6. Mohakhali Bazar
7. Mohakhali Shattola Bazar
8. Chowk Bazaar

### Khulna Division

1. Boro Bazar
2. Prantik Market
3. New Market

### Rajshahi Division

1. Shaheb Bazar
2. New Market

### Barishal Division

1. Shagordi Market
2. New Market

## XRF ANALYSIS

### SAMPLES WITH HIGH LEVEL OF LEAD (Pb)

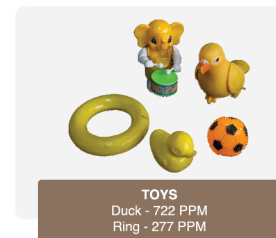
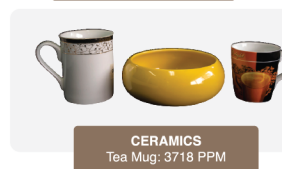
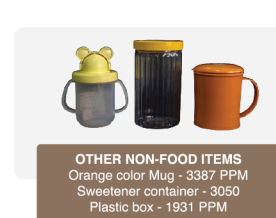
Dhaka City, Phase 01, Samples:

- Spices - 13 samples
- Pottery - 6 samples
- Ceramics - 3 samples
- Medicines - 14 samples
- Cosmetics - 46 samples
- Toys - 7 samples
- Paints - 11 items
- Other foods - 21 samples
- Other non-food items - 22 samples
- Other non-food items (pigment) - 11 samples
- Cookware from recycled aluminum - 9 samples

Lab Test Result:

- Vegetables, Fresh Turmeric 17922 PPM
- Vegetables, Cauliflower 3998 PPM

## RMS RESULT PHASE 01 AT DHAKA CITY





## XRF ANALYSIS

### SAMPLES WITH HIGH LEVEL OF LEAD (Pb)

Khulna, Rajshahi, Barishal, Phase 02, Samples:

- Aluminium cookwares: 47
- Toys - 31
- Spices - 49
- Paints - 30
- Rice - 13
- Cosmetics - 34

## RMS RESULT PHASE 02 AT KHULNA, RAJSHAHI, BARISHAL DIVISIONS



**ALUMINUM COOKWARE & FOOD WARES, CERAMIC FOOD WARES**  
Khulna: 853 PPM  
Rajshahi: 2118 PPM  
Barisal: 1310 PPM



**TOYS**  
Khulna - 606 PPM  
Rajshahi - 1814 PPM  
Barisal - 755 PPM



**LOCAL PAINT: YELLOW PIGMENTS**  
Khulna: 31360 PPM  
Rajshahi: 28902 PPM  
Barisal: 12230 PPM

*In the first phase, a total of 163 samples of 11 types of items were screened; lead is found in 40 samples of 9 types of items' category.*

*In the second phase, a total of 204 samples were screened; lead is found in 56 samples.*

The preliminary findings show that 96 samples are lead-positive among 367 samples, where the major sources were aluminum cookware, ceramic foodware, local paints, toys, amulets, pigments, and other non-food items.

## REFERENCE LEVELS

*Decorative Paint - 90 ppm (UNEP, Bangladesh)*

*Toys - 90 or 100 ppm for paint or coatings (US Consumer Product Safety Commission)*

*Rice & cereals - less than 0.1 mg/kg) as defined by WHO/FAO*

*Major Starch - 0.1-0.5 ppm (US FDA;WHO/FAO)*

*Raw & processed turmeric - 2.5 ppm (mg/kg).(BSTI)*

*Spices other than turmeric - 2mg/kg (QCVN 8-2:2011/BYT)*

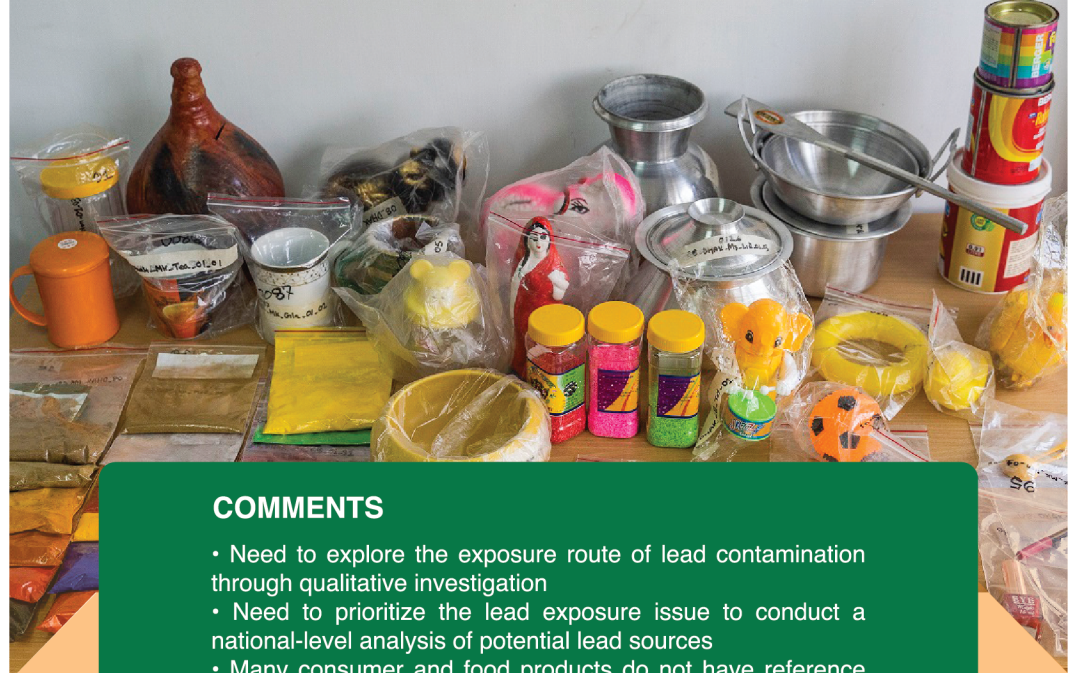
*Cosmetics & Vermilion (Sindoor) - 10 ppm for lipstick; 20 ppm for other types (FDA)*

*Metal foodware: 100ppm*

*Ceramic foodware: 100ppm*

*Plastic foodware: 100ppm*

*Herbal/traditional medicines: 10ppm (WHO)*



## COMMENTS

- Need to explore the exposure route of lead contamination through qualitative investigation
- Need to prioritize the lead exposure issue to conduct a national-level analysis of potential lead sources
- Many consumer and food products do not have reference values/standards for using lead in the products. Need to standardize the use of lead
- Strict monitoring and enforcement of the law and regulations are required to prevent using lead arbitrarily
- Public awareness raising and capacity building of the relevant authority on lead issue is crucial to prevent the sources of lead exposure

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