National Strategy for Used Lead Acid Battery (ULAB) Recycling in Bangladesh

A Sustainable Strategy for ULAB Waste Management

Report By

Environment and Social Development Organization – ESDO

In Association with

United Nations Environment Programme - UNEP

ESDO

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Acronyms

ADB	Asian Development Board
BUET	Bangladesh University of Engineering and Technology
DoE	Department of Environment
DGHS	Directorate General of Health Services
ESDO	Environment and Social Development Organization
ESM	Environmental Sound Management
GDP	Gross Domestic Product
HSE	Health, Safety and Environment
Icddr,b	International Centre for Diarrhoeal Disease Research, Bangladesh
ILA	International Lead Association
IPS	Integrated Power System
LAB	Lead-Acid Battery
MoEFCC	Ministry of Environment, Forest and Climate Change
NBR	National Board of Revenue
Pb	Lead
SLI	Starting, Lighting and Ignition
SRO	Statutory Regulatory Order
ULAB	Used Lead-Acid Battery
UNEP	United Nations Environment Programme
UPS	Uninterruptible Power Supply
WLAB	Waste Lead-Acid Battery

Executive Summary

Among many issues related to the burning concern of environmental pollution, toxic chemical impacts are gradually drawing attention to global and national policies. One such rising concern is the ramifications of the impacts of recycling lead and used lead acid batteries (ULAB)[1]. This category of batteries has long been used because of its efficiency for storing energy over long periods. Since the ULABs are recycled and reused in several sectors in Bangladesh due to the high demand, there is also an association with a great deal of lead pollution in soil and water that ultimately causes harm to human health and the environment. The lead pollution is attributed to unsafe, informal, illegal, and unregulated ULAB recycling facilities that have been established all over the country.

Target audience

This report is designed for policymakers considering the introduction of measures to reduce consumption by making goods last longer and to improve the management of ULAB in Bangladesh.

Structure

The assessment starts with an overview of the global and regional trends of lead-acid battery production, consumption and end-of-life management. The assessment continues by examining the environmental, social and economic impacts of the mismanagement of battery waste, generated from the formal and informal sectors of used lead-acid battery recycling.

The study then presents the recent conditions in terms of waste management and public awareness, followed by a strategy for policymakers looking to reduce lead pollution from the lead-acid battery in the concluding chapter.

Why we need to change

The Ministry of Environment, Forest and Climate Change of the Government of Bangladesh published a gazette to implement "Used Lead-acid Battery (ULAB) handling and management rules" in 2006; where the prior environmental certification is required before recycling any ULAB. However, a study by icddr,b (2021) reveals that almost half of the industry's lead supply is sourced from ULABs that are recycled by informal small enterprises. Though the 2006 rules on ULAB cover most aspects of ULAB management, there exist some gaps that needed to be addressed. Hence, the Department of Environment (DoE) drafted an amendment to the rules in 2018 which is now under review.

After careful consideration of the 2018 draft and comparing the relevant laws, regulations, and guidelines from other countries with similar cultural, economic, social, and demographic conditions to Bangladesh, there are still some gaps in the draft rules, summarized below.

Key gaps in the existing SRO:

(a) **The Mismanagement of Recycling:** There is no proper management of and implementation of the Rules relating to LAB and ULAB in Bangladesh.

[1] Used lead-acid batteries (ULAB) and waste lead-acid batteries (WLAB) are defining the same type of hazardous waste, focusing on the waste part of the life cycle of batteries. They are often used interchangeably.

(b) **Safe Handling of Toxic Components:** ULAB contains certain toxic components such as lead and dilute sulfuric acid, which are required to be handled safely but which is not properly addressed in Bangladesh.
(c) **Prohibiting Child Involvement:** There is no current age limit for labors. There needs to be an age limit for working in ULAB processing units.
(d) **Public Health and Environmental Exposure:** No mention of public health and environmental exposure measuring procedure or safety related clause.

As a result, there is now a need for appropriate legislation for battery handling, transporting, and end life management systems in Bangladesh. For this purpose, the government needs a strategic plan to follow and establish an environmentally sound management system throughout the country.

Key findings and recommendations

Bangladesh is believed to have more than 1,100 informal and illegal ULAB recycling operations across the country. To date, 270 of these locations have been identified and assessed by environmental health professionals from Pure Earth and the Department of Geology of the University of Dhaka. These assessments reveal high concentrations of lead surrounding, informal ULAB recycling operations and severe public health risks to nearby residents. The environmental and demographic data captured through these assessments is publicly available in an online database at www.contaminatedsites.org. Based on these findings, informal and unsound ULAB recycling is believed to be a significant contributor to population lead exposure across the country and the primary contributor to lead pollution hotspots.

The average concentration of lead in children's blood in Bangladesh is estimated to be among the highest in the world at approximately 8 micrograms per deciliter (µg/dL). This concentration is significantly above the "reference level" of 5 µg/dL that triggers government intervention and case management for a child in the United States. A recent meta-analysis suggests that nearly 28.5 million children in Bangladesh have blood lead levels (BLL) above 5 µg/dL, and that more than 21 million have BLLs above 10 µg/dL (Ericson, 2020). At these levels, it would be reasonable to expect significant IQ reductions among the tens of millions of chronically exposed children. It has estimated that 35.5 million children in Bangladesh are affected with blood lead levels above 5 µg/dL[2], making the country the fourth most-seriously hit in the world[3].

A study of the economic impacts from lead exposure estimates that each year Bangladesh loses US $15.9 billion dollars in GDP from reduced lifetime earning potential among the exposed population[4]. This figure includes only the lost earning potential due to IQ decrements, and does not include healthcare costs, lost earnings from premature death, or lost taxes from illegal ULAB recycling operations. Based on the extraordinary public health and economic toll, investments in lead exposure reduction programs in Bangladesh would likely yield significant returns on investment, resulting in a more productive, healthier and resilient population.

[2] The toxic truth-Children's exposure to lead pollution undermines a generation of future potential, UNICEF and Pure Earth, 2020. https://www.unicef.org/reports/toxic-truth-childrens-exposure-to-lead-pollution-2020#:~:text=Around%201%20in%203%20children,requires%20global%20and%20regional%20interventions
[3] https://www.thedailystar.net/country/news/lead-exposure-bangladesh-4th-worst-hit-terms-affected-children-1938673
[4] https://www.dhakatribune.com/bangladesh/2016/06/01/lead-exposure-costs-bangladesh-15-9-bn-year

Given the broad range of possible actions to curb the mismanagement of used lead-acid batteries and to foster its of environmentally sound management lead-acid in Bangladesh, a 9-step national strategy has been proposed to the government that are looking to adopt similar measures or improve on current ones. The steps are given below:

1. **Target the most problematic areas**

Problematic areas need to be addressed and identified where used lead-acid batteries are recycled illegally by conducting a baseline assessment to identify the locations, as well as the current causes, extent and impacts of their mismanagement.

2. **Evaluate the appropriateness of possible actions**

Consider the best actions to tackle the problem (e.g., through regulatory, economic, awareness, voluntary actions, management procedure), given the country's socio-economic standing and considering their appropriateness addressing the specific problems identified.

3. **Assess sustainable development impacts of preferred options**

Assessment of the potential social, economic and environmental impacts (positive and negative) of the preferred short-listed instruments/actions. How will the poorest be affected? What impact will the preferred course of action have on different sectors and industries?

4. **Development and implementation of a stakeholder engagement strategy**

Identify and engage key stakeholder groups – retailers, consumers, battery manufacturers, industry representatives, local government, manufacturers, civil society, environmental groups and academia – to ensure a broad buy-in. Evidence-based studies are also necessary to counter any opposition from the battery industry.

5. **Raise public awareness**

Public awareness should be raised about the harm caused by toxic waste from a used lead-acid battery. Clearly explain the decision and any punitive measures that will follow.

6. **Capacity building for ESM of ULAB**

Trainings for government officials and other relevant actors (NGO, academics, etc.) need to be