

Lead Battery Recycling in India:

Insufficient to prevent widespread contamination, lead poisoning, and ensure future lead supplies



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October 20, 2010

About OK International:

Occupational Knowledge International (OK International) is a U.S. based non-governmental organization (NGO) dedicated to improving public health through innovative strategies to reduce exposures to industrial pollutants. The organization is working in partnership with industry, government and other stakeholders to encourage the adoption of the Better Environmental Sustainability Targets (BEST) Standard for the lead battery industry. The BEST certification is a voluntary incentive program for lead battery manufacturers who meet environmental performance standards and agree to take back used batteries for environmentally sound recycling.

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Lead Battery Recycling in India: Insufficient to prevent widespread contamination, lead poisoning, and ensure future lead supplies

Occupational Knowledge International (OK International) conducted an investigation into the collection of used lead batteries for recycling by manufacturers in India between 2005 and 2010. The purpose of the study was to evaluate compliance with the Lead Battery Management and Handling Rules (2001) and to gauge the extent to which this regulation encouraged overall product stewardship among lead battery companies.

Our review of the available reports provided by lead battery companies shows that few are complying with the collection provisions of the Lead Battery Management and Handling Rules (2001). The data also demonstrates that the current system is inadequate to ensure that most lead batteries are being collected and taken to registered recyclers. These findings indicate that used lead batteries are not being collected in sufficient quantities to allow for the needed modernization of the lead battery recycling industry in India.

Background

Effective battery collection systems are necessary to facilitate the development of large-scale, environmentally sound recycling facilities. Investments in modern and efficient lead battery recycling plants can only be justified if a supply of used batteries are readily available at a competitive price and in sufficient quantities in the local market. Competition for scrap batteries from low cost, small-scale recyclers and even backyard operators can deter investors from entering what could otherwise be a successful venture.

Small recyclers that dominate the Indian market cannot justify the expense of installing pollution controls and their plants operate at greatly reduced efficiencies. Most rely on coal to fuel crude furnaces. Furthermore the quality of lead derived from these operations is insufficient to be used in producing high quality long-life lead batteries. Hidden costs including the clean up of environmental contamination and health care for overexposed workers are not paid by these small businesses.

Communities surrounding lead battery recycling also experience higher lead exposures. Several published studies have documented significantly elevated exposure levels among children residing near lead battery recycling operations in developing countries and workers in these plants are generally over exposed.

There are dozens of reports of lead battery recycling sites from around the world that have been the source of lead poisoning to local residents.

The demand for lead batteries is predicted to increase for all uses – especially in India where they are used extensively for backup power and growing transportation markets. The expected rise in telecommunications systems, automobiles, and computer sales will fuel future growth in the production of lead batteries. Newer applications for solar power and wind generation will also contribute to its growth.

India has very limited domestic lead production capacity. Most of the lead scrap that is generated locally from melting down lead batteries must be refined at a second smelter to improve its purity before it can be used in making new lead batteries. Inefficient smelters also waste a significant percent of the lead in the form of air emissions. Therefore in India, most of the lead used in battery manufacturing must be imported. Combined with the projected demand for lead batteries in India and poor recycling practices that result in the loss of millions of tones of lead to the environment, we can expect future shortages of this important raw material in the future.

Methods

In 2001 the Ministry of Environment and Forests issued the Indian Battery Management and Handling Rules that require lead battery manufacturers to collect a minimum of 90% of the batteries they sell through dealers. The law established an extensive reporting system for dealers, manufacturers, importers, recyclers and others in the supply chain. Recyclers are also required to be registered by state level pollution control boards.

The extensive data collected for compliance with these provisions has never been evaluated or released to the public. Our goal is to evaluate compliance with this rule and its success in establishing large-scale collection of used batteries in India. In particular, we set out to establish if the largest lead battery producers are collecting a sufficient quantity of lead batteries to encourage additional investment and modernization of this highly fragmented industry.

We contacted the Ministry of Environment and Forests and the Central Pollution Control Board to obtain this data. We were surprised to learn that this information was not being collected or tabulated by the Union Government and we were instead instructed to seek this data from individual state level agencies. Under the under the Right to Information Act we then requested these reports from the following states:

- Andhra Pradesh
- Delhi
- Gujarat
- Haryana
- Karnataka
- Kerala
- Maharashtra
- Tamil Nadu
- Uttar Pradesh
- West Bengal

Our requests to these agencies were limited to specific information from reports that are required to be filed biannually by lead battery manufacturers indicating their performance in complying with the collection provisions of the law. OK International obtained reports from six states that represent the majority of lead battery manufacturing capacity in India. The states for which we obtained information included:

- Andhra Pradesh Pollution Control Board
- Delhi Pollution Control Committee
- Gujarat Pollution Control Board
- Haryana State Pollution Control Board
- Kerala State Pollution Control Board
- Tamil Nadu State Pollution Control Board

In addition, the Karnataka Pollution Control Board provided partial information that was not useful for evaluating compliance with the law or to evaluate the overall rate of lead battery collection by the companies that filed reports. This data is therefore excluded from our analysis.

Results

A review of the data provided indicates that despite regular reporting, most battery producers are not in compliance with the key provision for taking back at least 90 percent of the batteries sold through dealers. Very few companies are complying with this law and even large battery producers are falling short of the mandatory provisions in this standard.

The take back provisions of the Lead Battery Management and Handling Rules do not apply to batteries sold in the wholesale market, to original equipment manufacturers (OEMs) such as vehicle manufacturers, or even to government agencies (e.g. Railways). However, given the large volume of batteries sold through these channels, we also examined the available reports to calculate the percentage of used batteries that these companies are taking back based on total sales or production. From the available data, we can conclude that most lead batteries being produced are not being collected by formal sector industries.

The following summarizes the findings on the collection of used batteries from the data contained in the Tables attached in Appendix A:

- Only a small percentage of the total number of batteries sold are being collected back by battery manufacturers.
- Very few manufacturers are meeting legal requirements to collect 90 percent of the batteries sold through dealers.
- Most major manufacturers are taking back only a small percentage of their total sales including Amara Raja (26%), TAFE (11%), Tudor (39%) and GNB (0%).
- There is no central effort to collect information on compliance with the Battery Management and Handling Rules and there is no penalty for manufacturers who fail to meet the regulatory requirement.

The key reporting parameters shown on the attached tables in Appendix A are as the follows:

- **“% Take Back Per Total Production”** is the percentage of lead batteries collected back over the total number of batteries the company produced or sold during the time period specified.
- **“% Take Back Regulatory”** is the total percentage of lead batteries collected back of the total batteries sold to dealers as per the requirement for compliance with the lead battery handling rules.

Note that several states did not provide a separate break down of "dealer sales" which is necessary to establish the regulatory take back percent as per the Battery Handling Rules.

Current information from the Central Pollution Control Board indicates that there are 336 registered recyclers for lead batteries in India. However, the list also indicates that most of these facilities are small and very few are likely to operate efficiently and with sufficient pollution controls. In fact, there are only 17 facilities with capacity greater than 10,000 tons/year, (which is the minimum size requirement for lead recyclers in China) and only two of these have a capacity that exceeds 50,000 tons/year (the size at which adequate pollution controls are considered to be cost effective).

(See:<http://www.cpcb.nic.in/divisionsofheadoffice/hwmd/lead.pdf>)

Conclusion

The current system is inadequate to collect sufficient quantities of used lead batteries through formal sector channels to enable modernization in the lead battery recycling industry in India. Instead there are a growing number of backyard and small operators relying on wasteful polluting technologies that are thriving under the current situation. A new incentive system is needed to encourage collection and the consolidation of used lead batteries that can facilitate investment in the recycling sector. Without improvements in the collection systems we will not see the necessary investments to modernize this industry, protect public health and the environment, and improve domestic lead supplies in India.

The recently proposed E-waste Management and Handling Rules (2010) borrow many of the provisions of the Indian Battery Management and Handling Rules that are the subject of this report. Experience from the lead battery Rules suggest that this proposed system may be insufficient to encourage significant collection by producers. Despite the greater attention being paid to hazards from electronic waste recycling, there is more lead in a single car battery than in 26,944 cell phones, or 6 standard television monitors, or eleven computers.

Appendix A:

Table 1: Andhra Pradesh RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2007-2009	HBL Systems Limited	81820	Information Not Provided	0	0	0
2007-2009	Amara Raja Batteries Ltd.	3221209	1610604	824563	51	26
2007-2009	Gowell Industries	3230	Information Not Provided	1562	NA	49
2007-2009	Chreeochem. Industries Ltd.	700	Information Not Provided	700	NA	100
2007-2009	Nile Ltd	9021	Information Not Provided	0	0	0

Table 2: Delhi RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2008-2010	Eastman Auto & Power Ltd.	211822	211822	15830	7	7

Table 3: Gujarat RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2008-2009	Tudor India Limited	282483	201475	109555	54	39
2008-2009	Gold Star Battery Pvt. Ltd.	75624	23473	2520	11	3
2008-2009	Exide Industries Ltd.	498461	450407	418379	93	84
2008-2009	Autobat Batteries Pvt. Ltd.	9953	0	8830	0	88

Table 4: Haryana RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2006-2009	Information Not Provided	6054	Information Not Provided	935	NA	15
2005-2008	Paramount Batteries	2463	Information Not Provided	0	0	0

Table 5: Kerala RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2009	National Battery Industries	680	380	304	80	45
2009	Power Controls	150	Information Not Provided	10	NA	7
2008-2010	Vazco Industries	597	Information Not Provided	164	NA	27

Table 6: Tamil Nadu RTI Data

Reporting Period	Manufacturer	Total Production of Lead Batteries	Total Units Sold to Dealers	Total Collection of Lead Batteries	% Take Back Regulatory	% Take Back per Total Production
2007-2009	Exide Industries Ltd.	1899765	1500134	677462	45	36
2007-2010	GNB Technologies Pvt. Ltd.	166478	0	0	0	0
2008-2010	Surya Batteries	28461	Information Not Provided	679	NA	2
2008-2010	Vinco Industries	1350	Information Not Provided	Information Not Provided	NA	NA
2009-2010	High Energy Batteries Ltd.	1469	0	0	0	0
2008-2009	Tractors and Farm Equipment Ltd.	283283	0	30872	0	11
2008-2009	Coimbatore Alkaline Batteries	3826	Information Not Provided	3443	NA	90