

## The toxic side of India's battery industry

In the first of a two-part series, Mint reveals how rising demand and the entry of new firms into the market, along with lack of proper attention to collection and recycling, have led to increased levels of lead exposure among factory workers

**Maitreyee Handique**

New Delhi: The car you drive to work, the ATMs you use to withdraw cash, the inverters that act as backups in areas with intermittent power supply—they're all powered by squat boxes of energy known as lead-acid batteries.

In India, according to a recent report by **Angel Broking Ltd**, lead-acid batteries form a nearly Rs. 10,000 crore industry; some industry estimates point out that with local battery brands flourishing across the country, that figure could even be as high as Rs. 17,000-18,000 crore.



But the ecosystem in which these batteries are produced and recycled has a dark underside. Blood samples of workers in the industry, collected and analysed by Bangalore-based National Referral Centre for Lead Poisoning Prevention in India (NRCLPI), show up the presence of threatening levels of lead. Depending on the duration of exposure, lead can act as a toxin to vital organs, cause blood disorders, and in its severest form, prove fatal.

The NRCLPI's study, conducted in 2009 and again earlier this year, surveyed factory workers employed by one of India's top battery companies, three mid-level players, and a recycling giant. The workers were spread across plants and facilities in Krishnagiri in Tamil Nadu, Bangalore and Secunderabad in Andhra Pradesh, and Pune. A large recycling plant in Hubli was also part of the study.

According to copies of the reports that *Mint* has obtained, tests carried out on sample sizes of between 21 and 100 workers showed that 46-80% of the workers had blood lead counts higher than 43 micrograms per decilitre (mcg/dl), the permissible limit set by the US-based Occupational Safety and Health Administration.

India has not established biological exposure indices for lead or other hazardous chemicals for the workplace. It follows standards established by the American Conference of Governmental Industrial Hygienists; the maximum permissible lead level in those standards is more stringent, at 30 mcg/dl.

The NRCLPI study found that at least 70% of the workers at the Krishnagiri plant had elevated blood lead levels—in one case, higher than 200 mcg/dl. In Bangalore, at least eight workers with lead counts of between 74-94 mcg/dl were missing, having "left" the factory when researchers went back after eight months for a second set of samples.

Since 2007, NRCLPI has diagnosed 800 battery workers with lead poisoning, but its reports remain confidential because of non-disclosure agreements signed with the companies. "Results show that the industry is not complying with environment standards," says T. Venkatesh, principal adviser at NRCLPI. "This is unacceptable."

Most of these violations have escaped government scrutiny, in part because the market is scattered, employing several lakh people. India's largest lead-acid battery firms, Exide Industries Ltd and Amara Raja Batteries Ltd, which control 85% of the formal market, employ 6,000 and 4,000 workers, respectively.

Several firms, including Exide and Amara Raja, did not respond to questions relating to battery collection and recycling.

Lead is a particularly insidious industrial toxin. Every worker involved in the battery industry faces some level of exposure and thus needs protective gear. Lead also never dies, getting used over and over again.

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Negligible safety standards and an explosive growth in lead use make a disastrous combination, says Ravi Agarwal, director of Toxics Link, a Delhi-based non-governmental organization. "There is no reason why workers at large companies should have high exposures," he says. "All these plants would have to shut if they were in Europe, where norms are strict."



The problem is further exacerbated by the fact that no blood lead monitoring facilities currently exist in hospitals run by the Employees' State Insurance Corporation, the premier organization serving factory employees. Industrial health is also low on the list of priorities among trade unions.

Yet, the lead-acid battery industry, upon which many facets of Indian industrialization depend, is booming. Lead batteries are used to cool railway coaches, and run the railways' signalling system and communication exchanges. They keep telephone

Risky business: A worker assembling a battery in Old Delhi. As companies fail to collect used batteries efficiently, more lead is getting recycled in the informal sector, where tracking effects of lead exposure among workers is difficult.

Maitreyee Handique/Mint

exchanges buzzing. Industrial goods cannot be produced without power backups. Inverters and power utilities also need battery banks.

Add to this the rapidly rising number of cars, trucks, forklifts, submarines and army tanks in India. With lithium-ion cells still a long way off from becoming common, lead batteries are the predominant power source in cars.

Maruti Suzuki India Ltd, India's biggest car manufacturer, produced 322,373 cars between July and September this year alone, up 30% from the same period last year.

Demand being as high as it is, more firms are poised to enter this space. Su-Kam Power Systems Ltd, which currently manufactures inverter batteries, will launch its automotive and power plant range of batteries by the end of this year. Luminous Power Technologies Pvt. Ltd will raise money from the capital markets next year to expand its range of products.

Battery scrap recyclers are also climbing up the value chain. In February, Kolkata-based Associated Pigments Ltd signed up with the US-based Pilot Battery Co. Ltd to make batteries. Earlier this month, Gravita India Ltd, which claims to run scrap recycling operations in Ghana, Ethiopia and Zambia, went public in an initial public offering that was oversubscribed 40 times.

Part of the reason for the steep demand and short supply is the deficit in lead. Hindustan Zinc Ltd (HZL), the country's only miner of lead, produces 85,000 tonnes a year out of the 400,000 tonnes consumed within the country, a company official said.

According to a February report by Brickwork Ratings, only a quarter of India's lead requirement is met by HZL. More than half is retrieved from secondary smelting and the informal sector, and the balance met by imports.

The perils of lead recycling have prompted the government to put in place regulations for safe recycling. Battery manufacturers are required to collect 90% of their sales volume. But investigations by Occupational Knowledge International (OK), a US-based non-profit assisting firms in controlling industrial waste, show that companies have barely met these commitments.

Details sought under the Right to Information Act across six states by one of OK's representatives shows that companies such as GNB Technologies India Pvt. Ltd, a subsidiary of the US-based Exide Technologies, reported zero recycled lead collection during 2007-2009. Amara Raja has barely managed 26%. According to OK's October release, Tractors and Farm Equipment Ltd scraped together 11%, while Tudor Tyres and Batteries Ltd has collected 39% of its sales.

"Few manufacturers are meeting regulatory requirements, and there is no penalty for those who fail to meet them," Perry Gottesfeld, OK's president, wrote in an email. "Clearly, this system is not working to ensure future supplies, when you factor in the 20% growth that these companies have been experiencing."

The less lead there is in the formal sector, the more there is in unorganized recycling, where it becomes even harder to track health and safety standards.

As business and worker interests collide, the government's Batteries (Management and Handling) Rules, first introduced in 2001, were amended in May, making it mandatory for all companies to report employees' blood lead samples every six months. But the new stringency has thus far had limited success.

Two officials at the Central Pollution Control Board (CPCB), who did not want to be named because they are not allowed to speak to the media, said that these company reports have started arriving, but they are often "doctored" by companies to show less exposure.

These predicaments call for a change, says J. S. Kamyotra, CPCB's member secretary. "Workers are (being) exposed to lead," he says, "and recyclers have to be responsible now."