

CASE STUDY

Developing an environmentally sound lead-acid battery recycling industry in Senegal

- In partnership with the Senegal government and international agencies the International Lead Management Center (ILMC) successfully reduced levels of lead exposure caused by the informal recycling of used lead-acid batteries (ULAB).
- ILMC, an organisation managed through the International Lead Association, assisted in the introduction of an environmentally sound ULAB recycling plant in Senegal, West Africa, and a battery collection centre to prevent further lead contamination.



Main market - Thiaroye-Sur-Mer, Senegal

Exposure risks

In the spring of 2008 ILMC was asked to provide technical assistance to the Senegal government following suspected instances of acute lead poisoning in the population of Thiaroye-Sur-Mer, a district of the capital Dakar. The source of the lead was thought to be dust in the air and soil in the yards of homes.

At the time, one of the main sources of income of Thiaroye-Sur-Mer was the informal recycling of used lead-acid batteries (ULAB) from vehicles. This involved breaking up ULAB and melting the plates to reclaim the lead. Often this took place in the homes and backyards of local residents leading to lead exposure. Government estimates suggested that unregulated recycling exposed some 40,000 people in the town to lead dust.



Pond in Thiaroye-Sur-Mer where the batteries were broken open, dumped and the oxide washed from the grids into the water

Partnership action

ILMC at the request of the Secretariat of the Basel Conventionⁱ, and in conjunction with the not-for-profit Blacksmith Instituteⁱⁱ, the University of Dakar's Toxicology Department and the Senegalese Ministries of Health and the Environment and Natural Resources, was part of a taskforce set up to reduce lead exposure and develop a safe battery recycling industry.

While ILMC focused on the environmentally sound management of ULAB, the Blacksmith Institute worked on site remediation and community development. The ILMC mission was focused on finding the reasons for the lead contamination and suggesting options to eliminate the sources and causes of the population exposure in consultation with the World Health Organization (WHO) and the UNEP Office for the Coordination of Humanitarian Affairs (UNEP-OCHA) offices in Geneva.

The Senegal government worked quickly to shut down the informal battery smelting operations and removed 300 tonnes of lead contaminated soil, sand and battery waste from Thiaroye-Sur-Mer. Following the joint intervention by ILMC, the Blacksmith Institute and its local partners, the contaminated area was cleaned up with lead in soil levels reported to be below 400 ppm (compared to more than 400,000 ppm previously). The exposure to children, measured as lead in blood has also reduced dramatically and is expected to continue falling in the years to come.

CASE STUDY continued...

About ILMC

The International Lead Management Center (ILMC) was created in 1996 by the international lead industry, in conjunction with the Organisation for Economic Co-operation and Development. The ILMC is funded by the International Lead Association and offers hands-on advice and assistance from its experts to developing countries and those in transition across all aspects of the lead industry from mining, smelting, refining, production and recycling.

For more information contact info@ilmc.org

Finding a long-term solution

ILMC also identified the need for a smelter to recycle ULAB in an environmentally sound way which met national environmental and health standards. As a result, a new lead smelter was built with expert advice from ILMC. In return for the investment, the Senegal Government agreed to comply with its obligations under the Basel Convention and prohibit the export of ULAB. The smelter owner also agreed to pay traders a fair price for ULAB at a rate set by the Government as there was otherwise a danger that informal recycling would resume as a source of income if prices paid were too low.

A new smelter was built at Sebikotane, 50km east of Dakar - see map (right). In its first year the plant produced about 8,000 metric tonnes of lead bullion from recycled ULAB and in 2012 a second furnace was added and the Government granted import licences to the smelter owner to import ULAB from neighbouring countries. Output is now around 15,000 metric tonnes per year and the plant also recycles all the by-products.

Further improvements

ILMC has also continued to work with the government of Senegal to introduce environmentally sound ULAB collection and recovery networks and thereby prevent a recurrence of lead contamination. It was agreed by all the interested parties that any solution should, if at all possible, generate some *green jobs* and the ULAB collection centre should employ local people who had previously been involved in informal recycling. Furthermore, if power could be supplied to the centre it could then offer a recharging service to the local community for lead-acid batteries which could generate additional income. This would also help households that relied on batteries for their power source.

ILMC also took responsibility for scrutinising all estimates and bills for clearing the land for the collection centre, training staff and the planning application. The culmination of this phase of the project was the construction of a ULAB collection and service centre in 2013 with funding from the UN Common Fund for Commodities (CFC) – ILMC and the UN International Lead Zinc Study Group (ILZSG) were instrumental in securing these funds.

Senegal battery recycling today

Lead battery recycling in Senegal today is a far cry from that in 2008 when the government turned to ILMC and other organisations for help. Nowadays batteries are recycled in conditions that control exposure to workers, the local population and the environment, allowing the valuable lead to be recovered and used again in new batteries or other sustainable applications. Furthermore the introduction of a formal scrap battery collection system and service centre adds another level of environmental protection, as well as providing vital jobs for those previously involved in informal recycling. As a result the health of workers, the local population and the surrounding environment has improved dramatically.

The level of co-operation between the various government agencies in Senegal, WHO, the Blacksmith Institute and ILMC together with the industry partner has also proved itself to be a valuable model for future lead pollution projects in developing countries.



Sebikotane, Senegal - the location for the new ULAB recycling plant (A)

¹ The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal has 178 member countries and protects human health and the environment against the adverse effects resulting from the generation, management, trans-boundary movements and disposal of hazardous and other wastes.

² The not-for-profit Blacksmith Institute works to solve pollution problems in the developing world, cleaning up highly polluted sites where children are most at risk.