



**International Lead Management Center**

**Responsible Care**

**Lead Risk Reduction**

**“The ILMC Experience”**

**India Lead Zinc Development Association**

**National Conference on Eco-friendly Recycling of Lead & Zinc**

**Prospects & Perspectives**

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# International Lead Management



## The Formation of the ILMC

In 1996 the Environment Ministers of the Organization for Economic Cooperation and Development (OECD) issued a Declaration on Lead Risk Reduction seeking to voluntarily develop and strengthen national and cooperative efforts considered necessary to reduce risks from exposure to lead.

In the build up to the OECD Declaration the International Lead Industry, through the Offices of the Lead Development Association International (LDAI) and the International Lead Zinc Research Organization (ILZRO), lobbied strongly for a voluntary approach to Lead Risk Management on the basis that restricting lead product production throughout the OECD, as originally proposed under a draft Council Act, would not necessarily restrict the availability of those products amongst member countries under prevailing World Trade Organization (WTO) rules. Indeed, the likely consequence was that it might even export any environmental threats and occupational exposure to the developing world if production moved to countries outside the OECD.

# International Lead Management

## What is the ILMC?

### Lead Risk Reduction Program

- *Created in 1996*
- *OECD Ministerial Declaration*
  - *Pilot Projects*
  - *Information Data Base*
  - *Outreach Program*
  - *Inquiries Desk*



### What is the ILMC?

The acceptance of these arguments by the OECD Ministers led to an innovative approach to the management of lead risk and the creation of the International Lead Management Center, the ILMC, in the summer of 1996.

It was also agreed with the Ministers that the objectives of the voluntary lead risk reduction program would be best demonstrated by:

- introducing specifically designed Risk Management Pilot Programs.
- sharing risk management procedures through an information data base.
- an outreach program enabling the ILMC to work with International Agencies

and

- opening an inquiry desk to facilitate the free transfer of risk reduction strategies.





### **Pilot Programs – Project Partners**

From the outset of the formation of the ILMC it was apparent that the Lead Industry alone could not resource or fund a comprehensive series of Lead Risk Reduction Pilot Programs required under the terms of the OECD Ministerial Declaration.

Co-Funding and Resource partnerships have therefore been a key element in the delivery of the Lead Risk Reduction and Responsible Care Programs

## Key Success Factors

<u>Partners</u>	- <i>Identified &amp; Engaged</i>
<u>Responsibilities</u>	- <i>Defined &amp; Owned</i>
<u>Environment</u>	- <i>Sound &amp; Sustainable</i>
<u>Communication</u>	- <i>Honest &amp; Open</i>
<u>Implementation</u>	- <i>Multi-Stakeholder</i>
<u>Objectives</u>	- <i>Agreed &amp; Focused</i>
<u>Understand</u>	- <i>Key Issues</i>
<u>Stakeholders</u>	- <i>Committed</i>



### Key Success Factors

Many important lessons have been learned during the implementation of the Pilot Programs. And that is PRECIOUS.

- Identify and engage key partners, such as the Ministries of the Environment and Health
- Responsibilities are clearly defined and ownership of the Project is localized.
- Environmental goals are based on sound practices and are sustainable.
- All communications are honest and open.
- Ensure that there is a multi-stakeholder approach, including local NGOs
- Objectives are realistic, focused and agreed by stakeholders
- Understand the key issues. - The problems, the root causes and the resolution.
- Ensure that stakeholders are fully committed to work together to achieve the objectives

# Lessons Learned

## Lead Risk Reduction:

- ✓ Does not have to be expensive
- ✓ Communicate good practice
- ✓ Infrastructure is important
- ✓ Similar issues in many countries
- ✓ Restrict informal sector activities
- ✓ “Fair Pricing” converts the “informals”
- ✓ Consider Regional solutions



## Lessons Learned

There were also some surprising lessons learned about implementing Lead risk Reduction Programs.

Firstly, achieving significant reductions in lead exposure does not have to be an expensive exercise.

Indeed, communicating how to achieve sound environmental management methodologies and best working practices will result in significant improvements to environmental performance and a reduction in occupational exposure.

However, infrastructure is important, especially when introducing biological surveillance and environmental monitoring for the first time.

Although certain problems are country specific, many lead exposure issues are similar and so exchanging information about successful case studies is a valuable way to extend a risk reduction program.

Restricting the battery recycling activities of the “informal sector” will dramatically reduce the adverse environmental impact created by their poor recovery practices.

In cases where it is uneconomic for a country to recycle batteries, then regional solutions should be considered as a viable and sustainable option.

## Mission Continues.....

### Secretariat to the Basel Convention:

- Technical Guidelines for  
Used Lead Acid Batteries (ULAB)  
Published 2002 in six UN languages



### Mission Continues

In 2003 the OECD accepted that the Lead Industry had met its obligations and fulfilled the commitments made as a result of the Ministerial Declaration. However, the Industry did not want to find itself under threat again by the International Community and decided to extend the risk reduction activities of the ILMC beyond the Country Based Pilot Programs and use the experiences gained on regional and global projects.

To an extent, Global Outreach activities had already begun in 2000 when the ILMC were invited by the Basel Convention Secretariat to provide expertise in the preparation of Technical Guidelines for the Environmentally Sound Recovery of Used Lead Acid Batteries.

The country selected to lead the project was Brazil and the ILMC worked with the Brazilian Department of the Environment and Natural Resources to produce a comprehensive set of Guidelines.

The Guidelines were approved by the Basel Technical Working Group in May 2002 and adopted unanimously by the Conference of the Parties in 2002.

Subsequently, the Guidelines were published in the six UN languages in 2003 and to this day remain the best guide to sound recycling of used lead acid batteries.

# Basel Technical Guidelines

## ULAB Pre-Treatment Phases

- Collection
- Packaging
- Transport
- Storage



### Basel Technical Guidelines

So I will give you an overview of the content of the Guidelines.

Not surprisingly the Guidelines start with the Pre-Treatment Stages of ULAB Recovery, that is:

- Collection
- Packaging
- Transport
- Storage

# Basel Technical Guidelines

## Recycling

- **Battery Breaking**
  - *Manual*
  - *Mechanical*
- **Lead Recovery**
  - *Pyrometallurgical*
  - *Hydrometallurgical*
- **Refining**



## Basel Technical Guidelines

Guidance about the Recycling Processes includes:

- ULAB breaking
  - Manual
  - Mechanical
- Lead Recovery using:
  - Pyrometallurgical processes, including Rotary Furnaces
  - Hydrometallurgical technologies
- Lead Refining

# Basel Technical Guidelines

## Environmental Controls

- **Impact Assessments**
- **Pollution**
  - *Prevention*
  - *Treatment*
- **Monitoring**



### Basel Technical Guidelines

The chapter about Environmental Controls explains how to:

- Undertake an Environmental Impact Assessment of a Recycling Plant
- Maintain control regimes to minimize the risks of adverse:
  - Effluent Discharges
  - Fugitive Emissions
- Apply process treatments to eliminate certain pollutants, such as sulfur dioxide
- Set up atmospheric and effluent monitoring stations to record environmental performance

# Basel Technical Guidelines

## Health Aspects

- **Lead Exposure**
- **Occupational Limits**
- **Prevention**
- **Control mechanisms**
  - *Surveillance*
  - *Intervention*



## **Basel Technical Guidelines**

Maintaining high standards of Occupational Health in a Lead Recovery operation is vital and the Guidelines explain:

- The adverse health effect of lead exposure
- How to apply the recommended limits for occupational exposure
- The measures necessary to prevent elevated levels of lead exposure
- The Control mechanisms to monitor employees' lead exposure, including medical surveillance and intervention.

# Basel Technical Guidelines

## Implementing ULAB Recovery

- **Recycling options**
  - *Domestic*
  - *Export*
  - *Regional Solutions*
- **Collection Infrastructure**



### Basel Technical Guidelines

Finally, I will just mention that the Guidelines also have a Chapter that provides a framework for the implementation of a program for the environmentally sound recovery of ULAB.

The various recycling options are considered in the context of ensuring environmentally sound recycling, such as:

- Domestic Recycling if there are suitable facilities with capacity
- Export to a country with environmentally sound recycling capacity
- Regional solutions that build on complementary synergies

There is also a section that examines ULAB collection options and the different infrastructure required in each case, depending on whether it is market driven or incentive based.

## Mission Continues.....

### Secretariat to the Basel Convention:

- Regional Project for the Environmentally Sound Management (ESM) of Used Lead Acid Batteries



### Mission Continues

Once the Basel Technical Guidelines were adopted by the Parties to the Convention, the Basel Secretariat invited the ILMC to provide technical support for a sponsored Regional Project for the Environmentally Sound Management of Used Lead Acid Batteries in Central America, Colombia, Venezuela and the Caribbean Island States.



### SBC ULAB Project - Participating Countries

The ten Countries participating in the Regional Used Lead Acid Battery (ULAB) Project are:

México, Guatemala, El Salvador, Costa Rica, Panama, Colombia, Venezuela, Trinidad and Tobago, St Lucia and the Dominican Republic.

Project activities are coordinated locally by the Basel Convention Regional Centers in San Salvador and Trinidad and Tobago.



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# Regional ULAB Project

**Outcomes:**





- ✓ A 7 Step Approach to ESM
- ✓ A strategy restricting “*Informals*”
- ✓ Training Manual ULAB ESM
- ✓ A Regional Strategy for the ESM of ULAB Recovery ILMC



### SBC ULAB Project – Outcomes


There have been some significant outcomes from this project, namely:

1. A Model seven step process to achieve Environmentally Sound Management (ESM) of Used Lead Acid Batteries (ULAB).
2. A strategy to restrict the illicit activities of the “*informal sector*”, whilst providing them opportunities to work in the “*formal sector*” collecting ULAB for shipment to a licensed smelter.
3. A comprehensive Training Manual that covers all the requirements of the Technical Guidelines and the Model seven step approach to achieving environmentally sound management of used lead acid batteries at a National Level.
4. A Regional Strategy agreed by ten Countries as part of the Pilot Project for the Environmentally Sound Recovery of Used Lead Acid Batteries in accordance with the Basel Technical Guidelines.

## Model 7 Step Process

1. Inventory –
  - **ULAB & Recyclers**
2. Public education/awareness
3. Policy development
  - **Regulations/instruments**
4. Consolidation of “informals”
5. Collection & storage
6. Transport & shipping
7. Recycling



**A Model seven step process to achieve the ESM of ULAB.**

The first stage is to complete an inventory of the likely sources of ULAB, with particular attention to the quantities, collection mechanisms, collection rates and possible trends in ULAB for the next five years. The inventory should also include a list of licensed secondary lead plants, complete with a summary of smelting capacity, environmental control systems and occupational welfare provisions. If possible, unlicensed reconditioners, illegal smelters and legitimate battery retailers should also be noted together with summaries of their operations, noting any environmental threats.

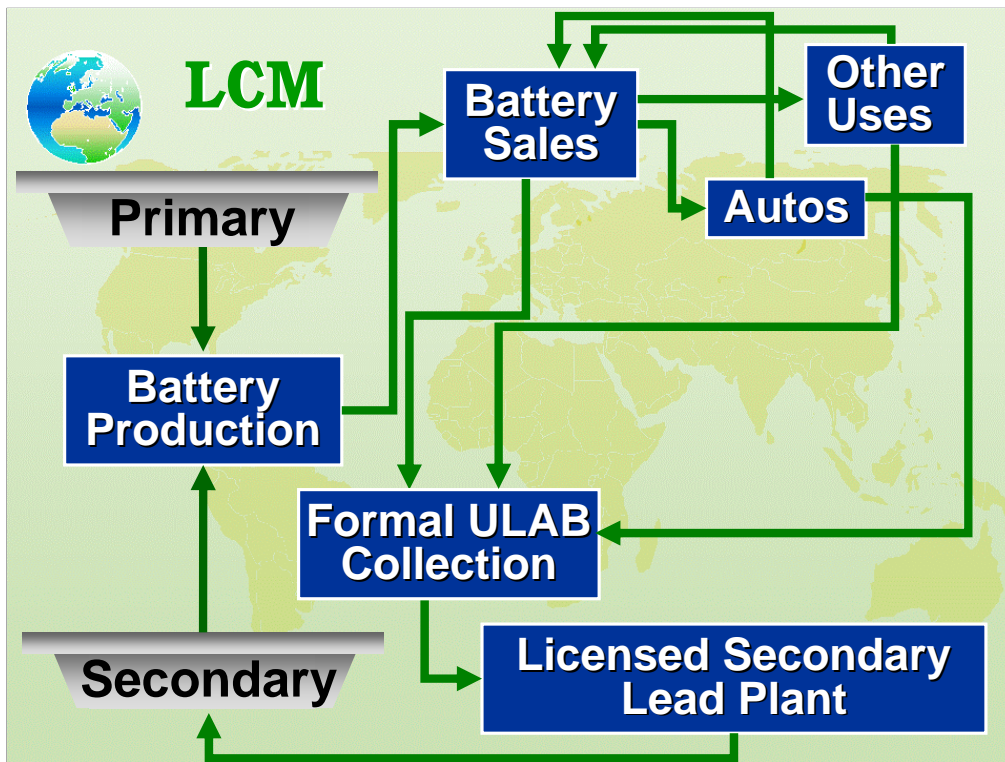
ULAB collection schemes will only be effective if the public is aware of them and the benefits of recycling together with an appreciation of the dangers of allowing ULAB to be dumped into the environment or recycled by unlicensed operators. Public education and awareness can be raised in any number of different ways, but the key is to ensure that you reach the target audience and those most likely to be at risk if ESM of ULAB is not achieved.

The words licensed and unlicensed is used many times in the context of ULAB recovery and it only emphasises the need for regulation and enforcement of environmental and occupational health standards. Current regulations and instruments need to be critically reviewed and strengthened where necessary.

A persistent threat to the environment and local populations are “informal” recovery operations of unlicensed battery reconditioners and smelters. These operations consistently flout environmental regulations, but are notoriously difficult to close down and will demand the utmost ingenuity to change their ways.

The SBC has published a set of excellent Guidelines that assist in the preparation of procedures for collection, storage, transport and shipping of ULAB.

For those countries without smelting capacity the model will end at step number 6, but countries with smelters proceed to the final stage and consider the environmental performance of their recyclers.

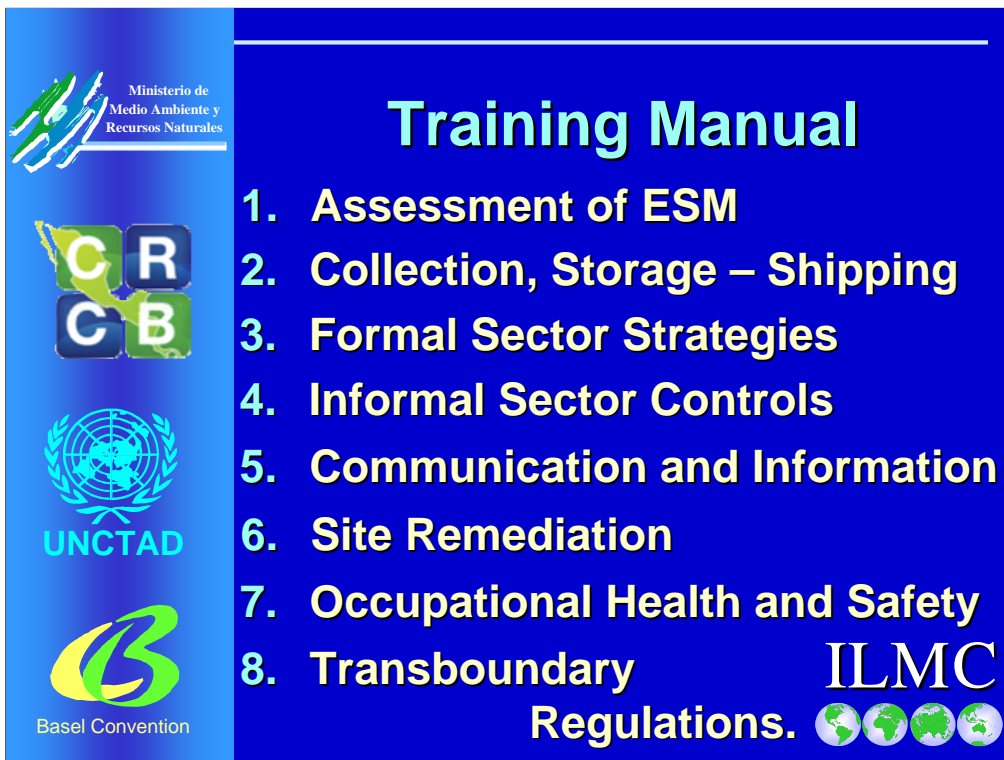


### A Strategy to Restrict and Eliminate the “informals”

In every ILMC study of used lead acid battery recovery, the vast majority of lead exposure problems were caused by the poor recycling methods used by the “informal” sector. This was certainly the case in Central America.

However, if a chain of custody is established for lead acid batteries, then used batteries would ONLY be sent to certified collection centers and licensed recycling plants.

At a stroke, the illicit and polluting activities of the “informal” sector can be eliminated and then with unbroken environmental integrity, Product Stewardship gives way to a sustainable mechanism for the lead life cycle.



## SBC ULAB Project – Training Manual

Chapter 1 explains precisely how to conduct an accurate national inventory of used lead acid batteries, essential to prepare a National Action Plan.

Chapter 2 provides a range of illustrations, graphics and interactive examples of best practice for Used Lead Acid Battery collection, storage, transport and shipping.

Chapters 3 & 4 deal with the different strategies required to control the environmental performance of the formal sector and restrict the undesirable activities of the “informals”.

Communication, information and education issues, including public awareness and community engagement are covered in Chapter 5.

Of concern to nearly all the governments of Central America is Site Remediation and cost effective options are outlined in Chapter 6.

Chapter 7 covers the essential elements of occupational health and safety at every stage to the Used Lead Acid Battery recovery process.

And finally, Chapter 8 provides a step by step explanation of the Basel Convention’s requirements and obligations concerning the control of Transboundary Movements of used lead acid batteries.



The slide features a blue background with a white horizontal line at the top. On the left side, there is a vertical column of logos: the logo of the Ministerio de Medio Ambiente y Recursos Naturales (Ministry of Environment and Natural Resources) at the top, followed by the CRCB logo (Central Regional Council for Basel Convention), the UNCTAD logo (United Nations Conference on Trade and Development), and the Basel Convention logo at the bottom. The main content area on the right contains the title 'Regional Strategy' in a large, bold, white font. Below the title, there is a numbered list of four phases: 1. ULAB Inventory, 2. Identify ESM facilities, 3. Establish ESM Registry, and 4. Exploit synergies. In the bottom right corner, the ILMC logo is displayed, consisting of the letters 'ILMC' above four small globe icons.

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# Regional Strategy

1. ULAB Inventory
2. Identify ESM facilities
3. Establish ESM Registry
4. Exploit synergies

ILMC

## **SBC ULAB Project – Regional Strategy**

The Regional Strategy falls into 4 phases;

1. Firstly the countries in the Region conduct a ULAB inventory and develop their NAP.
2. Environmentally Sound ULAB Collection Centers and Recycling Plants in the Region are identified and Assessed for conformance with national legislation and the Basel Technical Guidelines.
3. A register of Environmentally Sound Collection Centers and Recycling Plants in the Region is published and then only those facilities should be utilized for ULAB recovery.
4. Synergies are exploited so that countries without environmentally sound recycling plants transport their ULAB to those countries with such plants under the terms of the Basel Convention.



### SBC ULAB Training Manual – Cambodian Project

The Training Manual has since been used by the Cambodian Ministry of the Environment to prepare a national inventory of ULAB and formulate a National Action Plan for the ESM of the recovery process.

## Lead Action Today

- **Phase III of the Central American and Caribbean Project for the ESM of ULAB – to include all the countries in the Region**
- **Senegal – West Africa – Emergency Response and Long Term Commitment**



### Lead Action Today

Currently there are two active Lead Risk Management projects involving the ILMC and two in the planning stage.

The preparations for Phase III of the Central American and Caribbean Used Lead Acid battery recovery project that will include all the countries and island states in the region.

Secondly we are supporting a major international emergency response mission in Senegal to eliminate the adverse health and environmental impacts associated with informal ULAB recycling in Dakar.



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# SBC Regional Project

## Phase III:

- Establish an ESM Registry
- Basel Convention Training
- Establish Collection Networks
- Secure adoption of Strategy



### **SBC ULAB Project – Phase III – Regional Recycling Hubs**

The ILMC is working with the Basel Convention Regional Center in San Salvador to prepare the groundwork for the implementation of the next phase of the Regional Strategy. That is to:

- Establish a Registry of all the smelters that are in compliance with the Basel Technical Guidelines for the ESM of ULAB. So far, ES smelters have been identified and assessed in Venezuela, Colombia, Mexico and most recently, Guatemala. New smelters are to be constructed in Costa Rica and the Dominican Republic.
- Train all Government Agencies involved in the transboundary movement of ULAB in the correct procedures for import and export in accordance with domestic legislation and the Basel Convention.
- Establish ULAB Collection Networks to ensure all ULAB are sent to ES Smelters.
- Secure the agreement and cooperation of all Governments in the Region to adopt the Regional Strategy and maximize the synergies for the ESM of ULAB in order to eliminate the illegal and polluting activities of the informal sector.



### Thiaroye Sur Mer

The tragedy that is Thiaroye Sur Mer brings home to us the importance of product stewardship and how “informal” recycling of Used Lead Acid Batteries (ULAB) in the developing world is responsible for the vast majority of lead contamination and population exposure.

Thiaroye Sur Mer (TSM) is a town on the outskirts of Dakar in Senegal. The population of about 100,000 is mainly poor, living at barely subsistence levels. Traditionally TSM has been a fishing community and for many years local blacksmiths extracted lead from used car batteries to cast fishing weights. However, a decline in the fishing industry, and an increase in the availability of ULAB lead to Blacksmiths and other “informal” traders to look for alternative outlets for the lead recovered from the used batteries.



# Tiar oye Sur Mer

**Late 2007 - Early 2008 - 18 babies die at TSM**

## **Emergency Response:**

- **Blacksmith Institute**
- **Secretariat Basel Convention & ILMC**
- **World Health Organization**



## **Tiaroye Sur Mer**

In late 2007 and the early part of 2008 as many as eighteen babies died in TSM over a period of only two or three months. Now is it not uncommon for babies to die in poor communities, especially in a country where malaria is endemic and in a township without running water and proper sanitation. In fact, parents thought that their children had died of malaria.

The Environment Ministry of Senegal contacted the Blacksmith Institute in New York, and they specialize in remediation of contaminated sites, for assistance with the soil remediation at TSM.

Dakar is host to the Basel Convention Regional Centre (BCRC) for West Africa and the office is attached to the Ministry of the Environment, so not surprisingly, the Government of Senegal and the BCRC contacted the SBC in Geneva seeking urgent assistance to set up an environmentally sound ULAB recycling process. The same day the SBC received the request from the Government of Senegal, it was passed to the ILMC for our immediate attention.

The Senegalese Ministry of Health contact the local office of the World Health Organisation (WHO) and the headquarters in Geneva, because of the health needs of the children at TSM with high lead in blood elevations.

# Tiar oye Sur Mer

## Missions in 2008

- **Joint Missions with the SBC & BI**

## Agreed Plan of Action

- **BI to remediate the TSM site**
- **ILMC to set up ULAB Collection Center**
- **ILZSG/ILMC Application to the CFC**

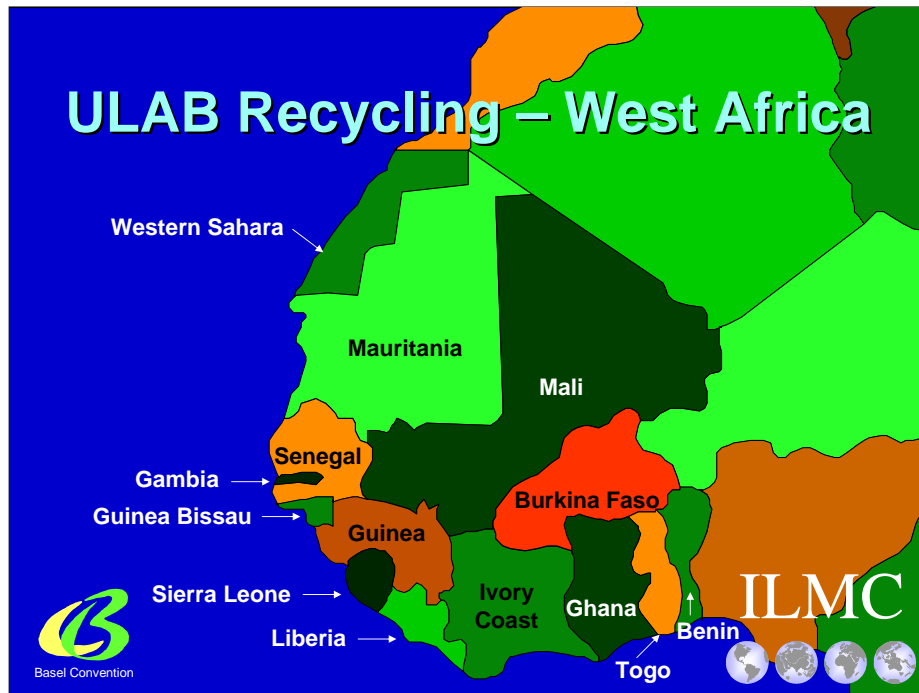


## Tiaroye Sur Mer

Last year the ILMC undertook two joint missions on behalf of the Basel Secretariat in conjunction with the Blacksmith Institute to resolve the issues at TSM and set out a plan to eliminate the exposure problems including an environmentally sound procedure or process for ULAB recovery.

The short and long term plan of action agreed with the Government of Senegal involved the Blacksmith Institute remediating the site at TSM and the ILMC setting up a ULAB collection center in Dakar in accordance with the Basel Technical Guidelines and in conjunction with the local population.

Working with the International Lead Zinc Study Group (ILZSG), an application has been made to and approved by the Common Fund for Commodities (CFC) for the necessary funds to set up the ULAB collection center. Sites close to TSM have already been surveyed and we anticipate the operation will be commissioned later this year.



### **West Africa – Regional Project for the Environmentally Sound Management of Used Lead Acid Batteries**

Of course the situation in Dakar is not an isolated case and the ILMC is also working closely with the Basel Convention Regional Center in Dakar with a view to developing a Regional solution to ULAB recovery in West Africa. There is already interest from the Philips Lighting Group in the Netherlands, who have commissioned a study of ULAB recycling in Ghana and the ILMC is providing technical support to “Partners in Development” who undertaking the study.



### Asian ESM Demonstration Project for ULAB Recovery

With Asia becoming the bull market for automotive battery sales, it is also the region with the biggest growth in unregulated and informal ULAB recycling. However, as the buying public become more discerning about the environmental provenance of leaded products so, there is pressure from not only NGOs and Governments to eliminate the informal sector, but also from the formal Industry sector operating to international standards for environmentally sound management.

So, building on the work previously undertaken in the Far East with UNCTAD in the Philippines and the Basel Secretariat in Cambodia, the ILMC has joined with the International Labour Organization (ILO), the ILZSG, the Non- Ferrous Metals Association of China and the Common Fund for Commodities to develop a demonstration project for the Responsible Care of ULAB through Life Cycle Management of Lead Acid Batteries.

Seven countries will participate in establishing the demonstration models:

- Cambodia - Exporter of ULAB by land
- China - Domestic recycling of ULAB only
- Indonesia - Domestic and imported ULAB recycling
- Philippines - Domestic and imported ULAB recycling
- Singapore - Exporter of ULAB by land and sea
- Thailand - Domestic recycling of ULAB only
- Vietnam - Domestic and imported ULAB recycling

# ESM Demonstration Project

## Objectives:

- Establish ESM life cycle models
- Benchmark ULAB recovery operations
- Set up an ESM compliance mechanism
- Promote the adoption of NAPs
- Show the viability of Regional Strategy



## Asian ESM Demonstration Project for ULAB Recovery

The objectives of the Project are to:

1. Establish ESM Models for Used Lead Acid Batteries through Life Cycle Management of:
2. ULAB Collection
3. Storage
4. Packaging
5. Transport/Shipping
6. Recycling
7. Benchmark and register ULAB recovery operations using an agreed Assessment Tool
8. Set up an ESM compliance mechanism based on the Basel Technical Guidelines, viability and sustainability
9. Promote the adoption of National Action Plans for the ESM of ULAB in all participating countries based on the Cambodian Model for NAP development.
10. Show the viability of a Regional Strategy for the ESM of ULAB where synergies are exploited to maximize the use of sound recovery operations.