



International Lead Management Center

Secretariat for the Basel Convention

***Training Manual for the Preparation of
National Management Plans for Used Lead
Acid Batteries***

**International Lead Zinc Study Group
Economic and Environment Committee**

London April 2005

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Ministerio de
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Technical Guidelines

- **TWG - May 2002**
 - *Adopted Unanimously*
- **Cop VI December 2003**
 - *Adopted Unanimously*
 - *Parties invited to use TG.*
 - *Parties asked to review TG*

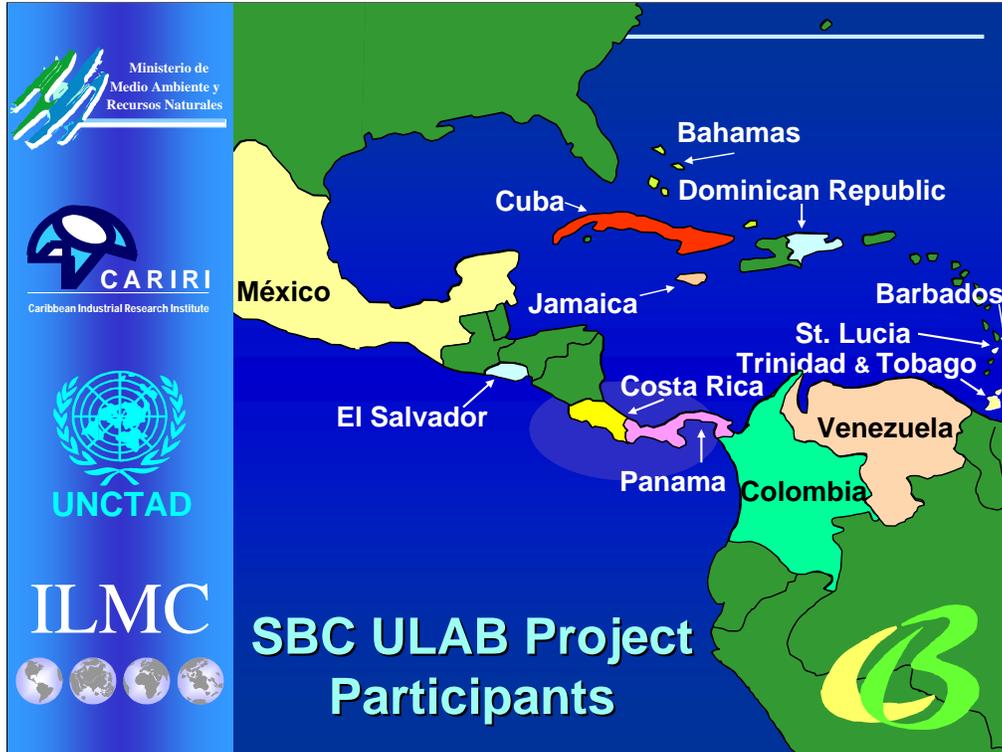


SBC Technical Guidelines

Firstly, let me say that I am employed by the ILMC and I do not work for the Secretariat to the Basel Convention. However, when I was invited by the ILZSG to make this presentation today, I accepted the offer because the ILMC does not only welcome and endorse the approach currently being taken by the Basel Convention Secretariat towards the sound management of ULAB, but we endorse the Basel Convention Technical Guidelines for the Environmentally Sound Management of Waste Lead Acid Batteries (2002) and the newly developed Training Manual for the Preparation of National Management Plans for ULAB.

The Basel Technical Working Group (TWG) took about two years to prepare and finalize the Technical Guidelines. The Brazilian delegation to the TWG were responsible for the preparation of the first draft and their Ministry of the Environment worked closely with the International Lead Management Center right up to the adoption of the final text by the TWG in May 2002. At the time, the document represented the most comprehensive guide to ULAB recovery, covering in detail the legal and practical aspects of ULAB collection, storage, transport and recycling.

In December 2003 at the sixth meeting of the Conference of the Parties (COP VI) the Guidelines were adopted and the Chair of the COP invited the parties to use the Technical Guidelines so that their practical application could be tested and subsequently reviewed at a later stage.



Participating Countries

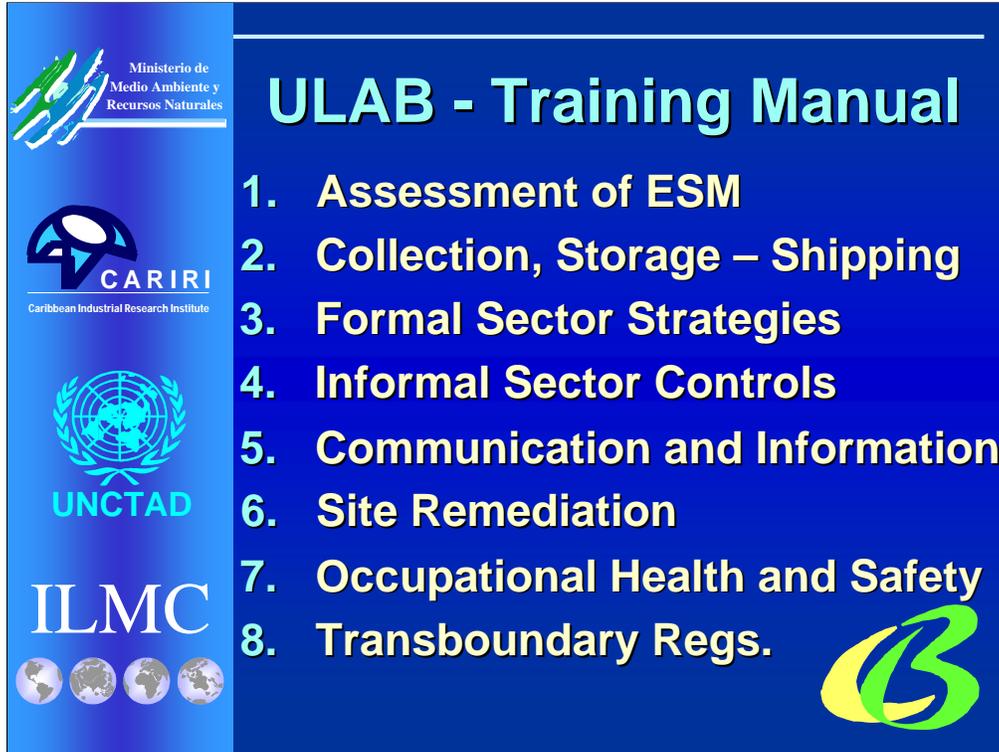
The Conference of the Parties at its fifth meeting adopted the Ministerial Declaration on the Environmentally Sound Management. The declaration marked an important shift in focus of the convention by giving due consideration to the needs of the countries to develop hazardous waste ESM policies, in addition to controlling transboundary movements.

In this context, the SBC initiated a ULAB Recovery Project in ten countries in Central and South America and the Caribbean which was selected as a priority project for funding under the (limited) financial mechanism put at the disposal of the parties for the implementation of the Ministerial Declaration.

This project is proving to be of great value to the region and has already contributed to improved ULAB recovery. However, it has become clear that whilst the Technical Guidelines are comprehensive and represent a useful breakthrough, more detailed practical information and examples of best practice and economic scenarios are required to enable parties to the convention to develop and conduct their ULAB ESM policies in accordance with the principles set out in the Basel Convention Technical Guidelines.

The SBC decided that such requirements could best be met through the preparation of a Training Manual for the ESM of ULAB.

UNCTAD, SBC, UWI, and ILMC are the main contributors to the preparation of the Manual which has also been reviewed by several governments and secondary lead smelting companies in Colombia, El Salvador and Venezuela.



Technical Guidelines for ULAB - Training Manual

A technical assessment of ULAB recovery in the region undertaken by Government Environment Ministries in conjunction with the ILMC had determined that all the Companies visited in México were in compliance with the Guidelines, indeed in many respects they were a “model” for the region in terms of ULAB collection, transport and smelting.

Furthermore, the Basel Convention ULAB project identified environmentally sound smelters in Venezuela and El Salvador. However, a number of shortcomings were also identified and these are targeted in the different chapters of the current Training Manual.

First of all, most agencies involved in the project experienced some difficulties in conducting the initial assessments of ULAB management and generally speaking lacked the appropriate methodology for undertaking national diagnostics of ULAB management. Chapter one of the manual outlines precisely how to conduct an accurate national survey and present the results.

Chapter two provides a range illustrations, graphics and interactive examples of best practice for ULAB collection, storage, transport and shipping.

Chapters 3 & 4 deal with the different strategies required to control the environmental performance of the formal sector and eliminate the undesirable activities in 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 in the region is Site Remediation and cost effective options are outlined in Chapter 6.

Chapter 7 cover the essential elements of occupational health and safety at every stage to the ULAB recovery process.

Chapter 8 provides a step by step explanation of the Basel Convention’s requirements and obligations concerning the control of Transboundary Movements of ULAB.



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ULAB - Training Manual

Benefits

1. Prepared by Project Participants
 - SBC, ILMC, UNCTAD and UWI
2. Based on Best Practice
3. Provides numerous examples
4. Will be available in 3 languages
5. Will be “on-line”



Technical Guidelines for ULAB - Training Manual - Benefits

So what is so special about this Training Manual? Well, apart from targeting the key areas of non compliance with the Basel Technical Guidelines, each Chapter is written by Participants of the SBC ULAB Projects not only in Central and South America and the Caribbean, and also in Cambodia. The experiences of applying the Basel Technical Guidelines by the SBC, the ILMC, the UNCTAD and the University of the West Indies provide excellent advice for trainers.

Furthermore, the Training Manual is based on Best Practice and provides numerous examples of how the Technical Guidelines can and should be applied in a cost effective manner.

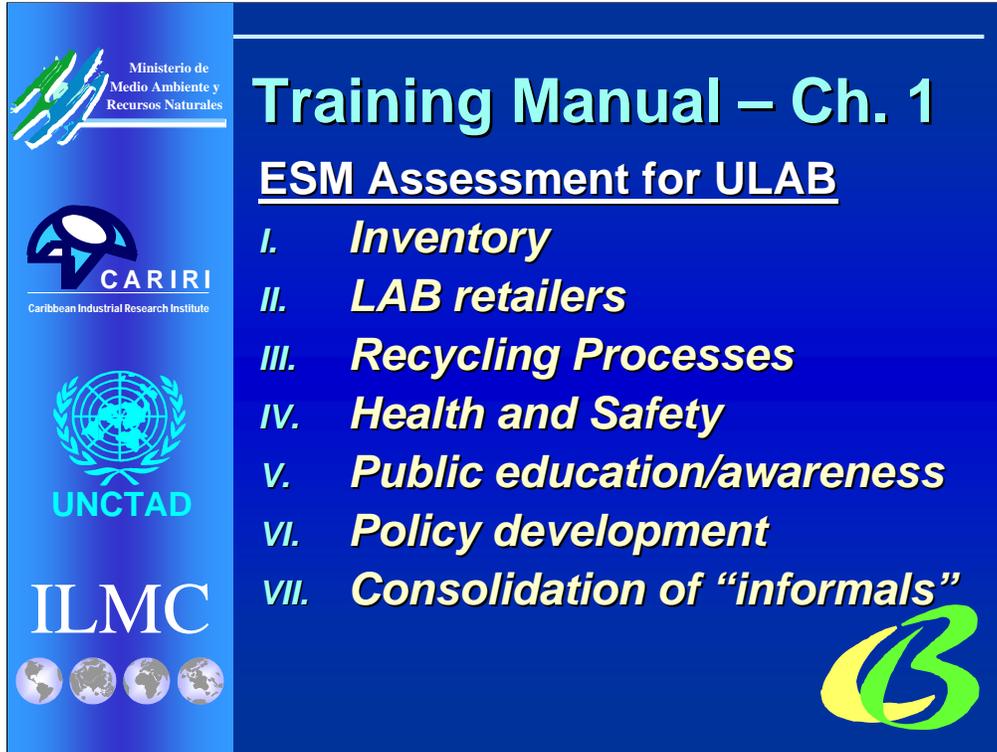
The examples are not only from Parties from the OECD, but they are also drawn from the countries involved in the SBC ULAB Projects. For instance, the methodology for the battery inventory determinations is based on questionnaires and formulae developed during the Central and South American and Caribbean studies and further honed in Cambodia. A number of different ULAB collection schemes are outlined from the refund/deposit schemes favoured in Scandinavia to dealer discounting favoured in the developing world.

Much of the outreach activities covered in the Training Manual are based on successful case studies in Australia, Trinidad and México.

Certain sections of the electronic version are interactive and include a number of case studies linked to external web sites and text references for further reading.

Above all, the Training Manuals will shortly be available in three UN languages (English, French & Spanish) and “on-line” at the Basel Convention Web Site.

<http://www.basel.int/meetings/sbc/workdoc/tm-ulab/techdocs.html>



Assessment of the Management of ULAB at National Level

I now want to look at the eight chapters in more detail and outline the contents of the Manual.

Seven separate factors are taken into account when determining the level of Environmentally Sound Management (ESM) of Used Lead Acid Batteries (ULAB).

- I. Inventory – *ULAB & Recyclers*
- II. LAB retailers - Collection & storage, Transport & shipping of ULAB
- III. Recycling Processes
- IV. Health and Safety
- V. Public education/awareness
- VI. Policy development - *Regulations/instruments*
- VII. Consolidation of “informals”

The first chapter explains how to collect, collate and analyze data and information to assess these seven factors in order to facilitate an assessment of the current state of the management of ULAB. There is also a section that explains how to cope with gaps and uncertainties in the information gathering process. Following the examples in this chapter will enable the correct decisions to be made to remedy any shortfalls in the management control procedures for ULAB.



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Training Manual – Ch. 2

Environmentally Sound Collection, Storage, Transportation

- I. **Collection Infrastructure**
- II. **Successful ULAB Recovery**
- III. **Environmentally Sound Schemes**
- IV. **Methods of Collecting ULAB**
- V. **Storage of ULAB**
- VI. **Transportation of ULAB**
- VII. **Safety**



Environmentally Sound Collection, Storage, Transportation and Shipping Schemes

Similarly Chapter 2 also has seven essential elements vital to establishing an environmentally sound ULAB Collection, Storage, Transport and Shipping Scheme:

- I. Collection Infrastructure - Explains how the necessary infrastructure is a function of;
 - *The LME price of the recovered lead bullion.*
 - *The availability of sufficient ULAB to maintain viable operations.*
 - *The cost of collecting the ULAB.*
 - *The cost of transporting/exporting the ULAB to a recycling plant.*
- II. Successful ULAB Recovery – Outlines the tests that need to be made against any prevailing legislation to identify any one or more of eight key factors such as dumping control mechanisms, discharge controls and so on.
- III. Environmentally Sound Schemes – including details of how to maximize public support, lists of Multiple Recovery and Recycling options and the rationalization of existing schemes to build on what already exists.
- IV. Methods of Collecting ULAB – with case studies and proven return schemes
- V. Storage of ULAB – outlines the rules for safe handling of ULAB and explains with examples how to construct and maintain a safe storage compound for ULAB
- VI. Transportation of ULAB – provides examples of safe packing, loading and safe transportation at local level and across borders.
- VII. Safety – lists and explains the precautions necessary to maintain personal and public safety throughout the collection, storage and transport procedures.

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Training Manual – Ch. 3

Strategies & Policies for Recycling ULAB in the Formal Sector

Aim – Enhance Formal Sector role

- I. *Recovery & recycling rationale*
- II. *Importance of recycling profiles*
- III. *Strategies - no formal recyclers*
- IV. *Strategies - with formal recyclers*
- V. *Regional strategies*
- VI. *National ESM strategies*

Strategies & Policies for Recycling ULAB in the Formal Sector

The aim of Chapter three is to outline measures that enhance the performance and role of the Formal licensed recyclers. Two basic options are discussed in detail, that is, the normative approach and voluntary initiatives. In the context of the traditional regulatory approach this chapter also explains how to develop and monitor a national normative framework. This chapter was prepared by the UNCTAD and much of the experience gained in Projects in the Philippines, Central America, the Caribbean and South East Asia form the basis for the recommended strategies.

- I. The chapter starts with an explanation of the economic rationale for material recovery and recycling, and specifies the factors that affect the sustainability of recyclers.
- II. The next section outlines the two typical collection and recycling profiles and explains how to decide which one would be appropriate to apply nationally.
- III. Then the following three sections examine the different control strategies that should be considered for the ESM of ULAB in countries:
 - *with no formal recycling industry*
 - *with a formal recycling industry recycling locally sourced and imported ULAB*
 - *that wish to adopt a sub-regional co-operative approach*
- IV. The final section sets out the control strategy options for ESM in the context of a national collection and recycling schemes and examines in detail, the following:
 - *Promoting high capacity utilization at licensed smelters;*
 - *Significant governmental intervention and financial support*
 - *A combination of both approaches*



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Training Manual – Ch. 4

Strategies & Policies for Recycling ULAB in the Informal Sector

Aim – To “formalize” the “informal”

- I. Social Dimension***
- II. Advocates preserving skills***
- III. Promotes change of operations***
- IV. Provides options:***
 - Long/Short term***
 - Restructuring***



Strategies & Policies for Recycling ULAB in the Informal Sector

The aim of Chapter four is to outline a number of policy options designed to either restrict or eliminate the activities of the informal sector and assess not only the beneficial environmental consequences, but also assess whether the social impacts are beneficial or lead to adverse consequences that may require either mitigation or a policy adjustment.

Whilst this Chapter is uncompromising in advocating the need to introduce policy measures to curtail the activities of the informal sector, it is sympathetic to the fact that it is often the poorest in society that are adversely affected by a cessation of informal operations. Consequently, the policy options recommended favour strategies that embrace the considerable abilities of the informal operators to collect ULAB and at the same time encourage them to change their mode of operation from battery reconditioning, to supplying licensed smelters with ULAB, and thereby move their business from the informal to the formal sector.

As it is obviously a difficult matter to change attitudes amongst those working in the informal sector and the mode of operation, policy options for both short and long term improvements are outlined together with a number of restructuring options designed to assist with the formalization of the “informals”.






Training Manual – Ch. 5

Communication & Education

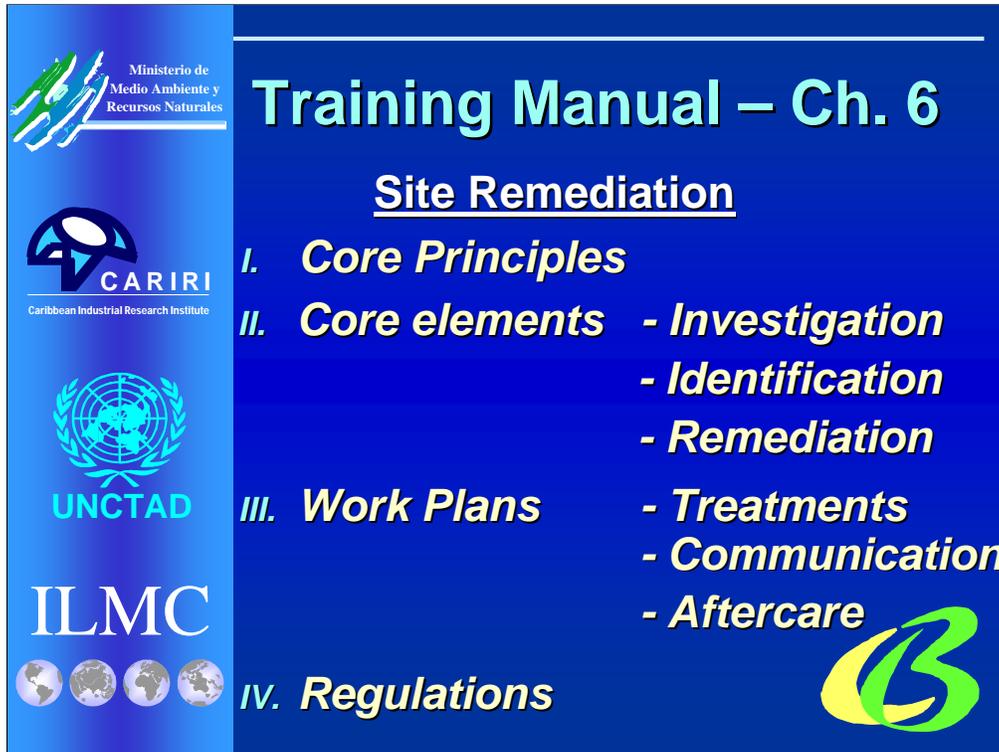
- I. **Communication Tools**
 - *Written Information/Labels*
 - *Maintenance Manuals*
 - *Multi-media and Internet*
 - *Publications and Posters*
- II. **Communication Strategies**
 - *Educational*
 - *Community Outreach*



Communication and Education

There is no doubt that regardless of the number of regulations applicable to the battery industry, the general public and other users of lead acid batteries will place themselves at risk if they do not handle, use, maintain and dispose of batteries in the correct manner. However, the avoidance of lead exposure in humans and any subsequent environmental contamination caused by improper handling of ULAB requires the education of those involved in the lead acid battery (LAB) industry, those that use lead acid batteries and populations most at risk, such as maintenance crews. Their education is therefore essential for the safe handling of ULAB and is a key component of the sound recycling of ULAB. Chapter five of the manual addresses these key issues with advice, guidance and case studies on:

- I. Communication Tools – such as;
 - *Written information and battery labels.*
 - *Workshop maintenance manuals.*
 - *Multi-media, including television and the Internet for interaction*
 - *Publications, such as the local press and Poster campaigns.*
- II. Communication Strategies, including:
 - *Educational and college based awareness programs*
 - *Community Outreach, targeting in particular, mother and baby groups*



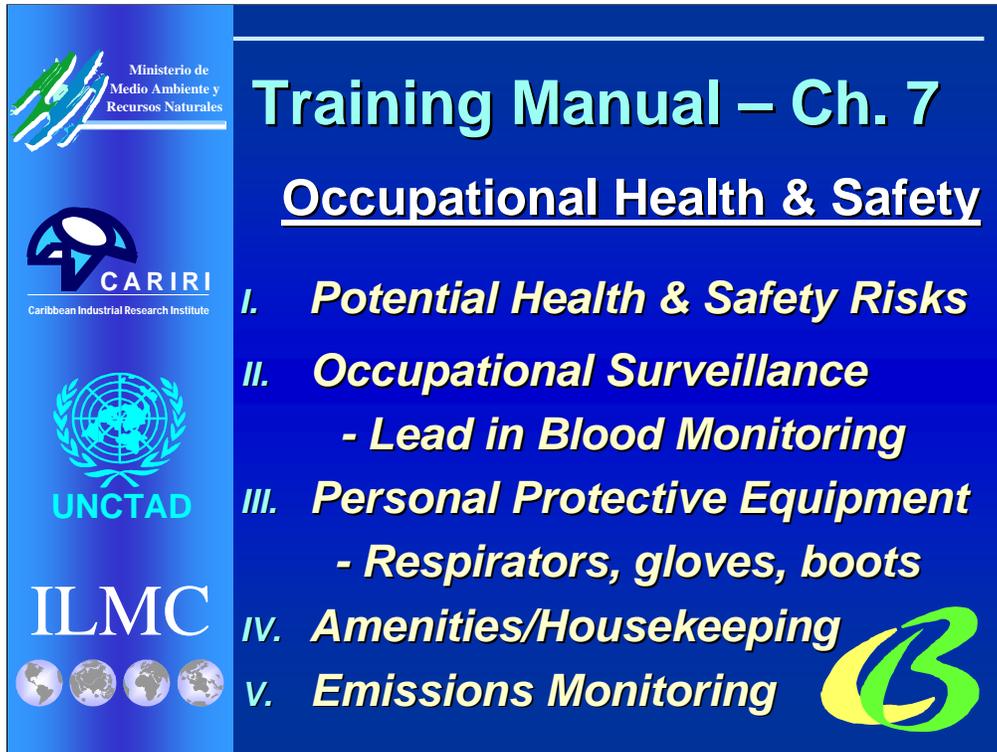
Site Remediation

Modern Environmental Management Systems (EMS) provides a framework for the ongoing control of leaded wastes and residues and minimize the risk of environmental pollution and population exposure. Unfortunately, in the informal sector, no such provisions exist and if a disused site is left unattended, the leaded wastes are likely to leach into the environment and contaminate the surrounding area with lead bearing dust and acidic residues. Chapter 6 of the manual provides an outline methodology to tackle sites suspected to be contaminated and a technical guide to remediation techniques.

The methodology sets out the:

- I. Core Principles – with particular regard to local communities
- II. Core Elements of Possible National Strategies, including:
 - *Investigation*
 - *Identification*
 - *Remediation*
- III. Work Plans
 - *Remediation Options and Treatments*
 - *Communication mechanisms*
 - *Maintenance and aftercare*
- IV. Regulations, including the requirements to set up a monitoring regime.

In addition, the chapter also contains a full account of a remediation case study in Trinidad.



Occupational Health and Safety

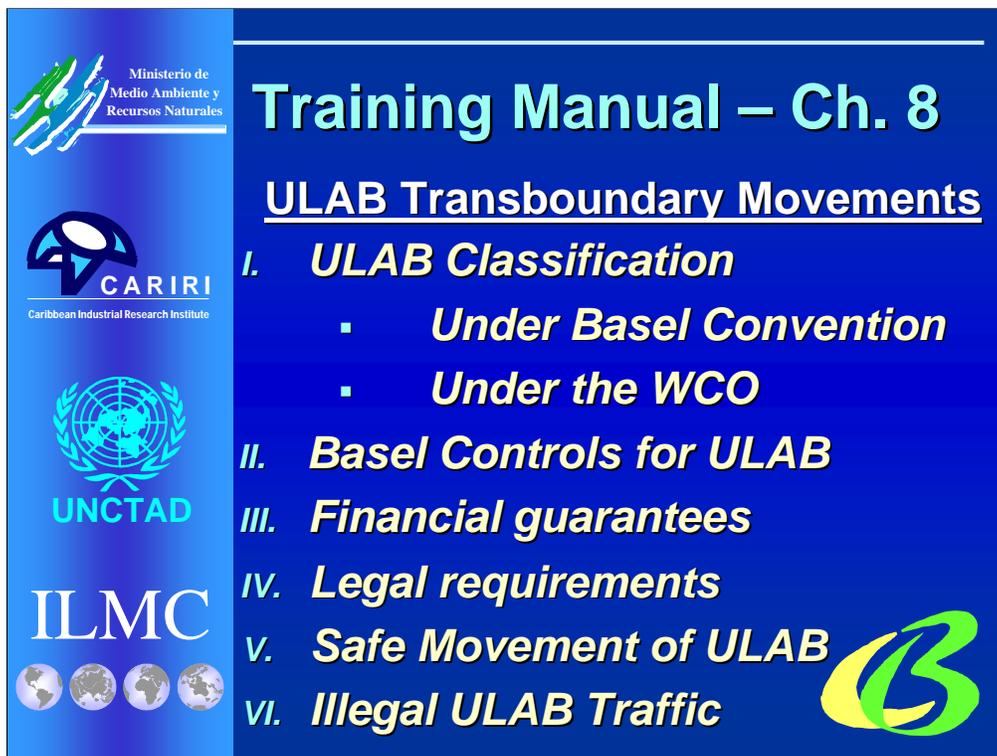
The first section of this chapter sets out clearly the potential occupational and safety risks posed by ULAB if they are not handled correctly or if workers are exposed to leaded dust or fume, or the battery electrolyte during the recycling process.

Monitoring of lead-in-blood levels is a critical measure of workers' health and the second section of the chapter explains how to set up an effective Blood Lead Surveillance Program in conjunction with the medical profession, so that lead exposure is minimal.

The Training Manual provide numerous examples of good operating practice that minimizes personal safety and exposure risks, it is essential that workers take precautions and wear personal protective equipment such as respirators, gloves and boots. The Manual provides a practical guide to the most appropriate PPE and explains how they should be worn and under what circumstances, including the Ten Golden Rules of personal Hygiene.

In many instances it has been found that a lack of a clean workplace and proper amenities to permit workers to change out off their own clothes, wash before leaving work and eat their meals in a lead free environment have been major contributors to occupational lead exposure. The manual lists not only what amenity services should be provided, but also how such facilities should be designed to minimize cross contamination and how housekeeping routines should be established and administered.

Finally, this chapter outlines the basic provisions for a workplace emissions monitoring and control regime, detailing the types of samplers required and how they should be used.



ULAB Transboundary Movements

The last chapter in the Manual has been prepared by the Basel Secretariat and is very much a “hands on” guide to the specific requirements applicable to used lead acid batteries in cases of transboundary movements in the context of the Basel Convention. The Chapter is clear and unambiguous and is set out as follows:

- I. The Classification of ULAB;
 - *Under the Basel Convention, with a clear explanation of the classification of ULAB as a hazardous waste.*
 - *Under the World Custom Organization Harmonized System (HS) of tariff nomenclature for ULAB ensuring the correct codes are used.*
- II. Basel Convention Controls for ULAB Transboundary Movements with an description of the roles of the “States of Import and Export” and a valuable explanation of how to arrange for multiple shipments.
- III. A cautionary note about the need to check for Financial Guarantee requirements that will become the norm when the Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (1999) is ratified.
- IV. In the same vein, States of Export should check the regulations in the State of Import to ensure the movements will be legal.
- V. There is a brief summary of the safe procedures for transport set out in Chapter 2.
- VI. The final section provides invaluable information about the detection and prevention of illegal transboundary movements of ULAB.



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ULAB - Training Manual

What happens now?

- ◆ **Key Development Tool**
- ◆ **National Plans for ESM of ULAB**
 - ➔ *Central & South America*
 - ➔ *Caribbean Island States*
 - ➔ *Cambodia / other ULAB projects*
- ◆ **Model for other Waste Management Systems**



SBC National Management Plans for Used Lead Acid Batteries

So what happens now?

Well, to an extent the answer can be found in the title the Basel Secretariat have given the Training Manual, "National Management Plans for Used Lead Acid Batteries". The Secretariat not only view the Training Manual as supportive of, and complimentary to the Basel Technical Guidelines, but it is regarded as a key development tool essential to the development of any National Plans for the Environmentally Sound Management of Used Lead Acid Batteries.

The Manual will be used extensively in the next phase of the SBC ULAB project in Central and South America, and the Caribbean Island States in the formulation of their respective National Policies and Regional strategies for ULAB management and recovery. It will very likely feature in a follow up to the SBC sponsored National ULAB Inventory Assessment in Cambodia and will be used in all future National ULAB waste management projects.

Furthermore, the Manual will also serve as a model for other hazardous recyclable waste materials.