



**Business Round Table on
Sustainable Development**

The Green Lead Initiative

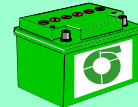
**Sydney
29th November 2004**

**Phillip Toyne
Green Lead Working Group**

Green Lead™

What is Green Lead?

- ❖ *Sound Lead Life Cycle Management*
- ❖ *Proactive Product Stewardship*
- ❖ *Involves all LAB Stakeholders with interests in the Environment and Population Health*



What is Green Lead?

The basic philosophy behind the Green Lead initiative is the sound management of the lead life cycle. This means the identification of impacts associated with lead, the establishment of procedures to minimize or eliminate these impacts. Those organizations that adhere to these procedures will be Green Lead certified, as will the lead products they produce or handle.

Green Lead is a pro active product stewardship program aimed at contributing to broader and better sustainable development outcomes for the lead industry through management of the lead product life cycle.

Such an undertaking will involve many stakeholders from the lead industry and those NGO's and community groups with interests in the environment and population health.



Introduction

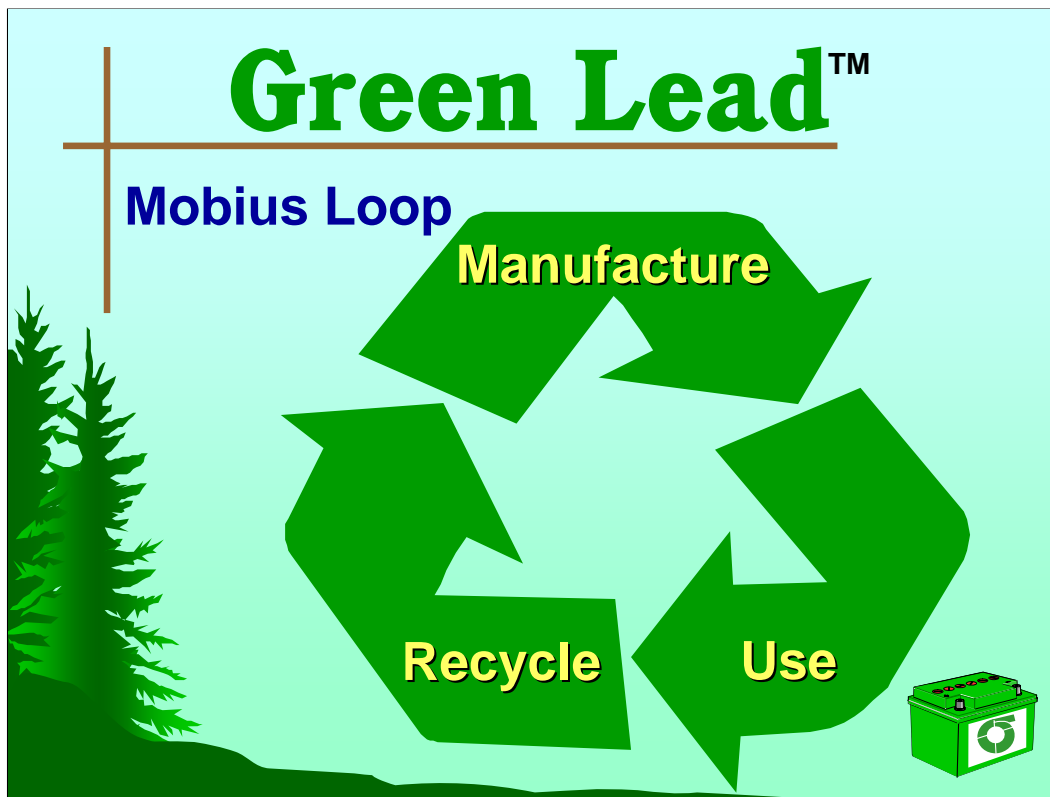
The Lead Industry is constantly trying to satisfy regulators, NGOs, International Environmental Agencies and local communities that its products can be managed in ways offering the highest levels of personal safety and environmental protection from cradle to grave and then beyond.

To address the issue of changing and improving practices associated with lead, the Green Lead Project is being created as a Product Stewardship initiative of the *Lead industry for the lead life cycle*.

The basic process concept of Green Lead is the identification of impacts associated with lead, establishment of standards and mechanisms to minimize these impacts and the certification of organizations that achieve these standards. It is the world's most ambitious product stewardship exercise.

It will focus initially on lead in batteries, which accounts for 75% of global lead use.

(More Details of the scheme can be found at www.greenlead.com)



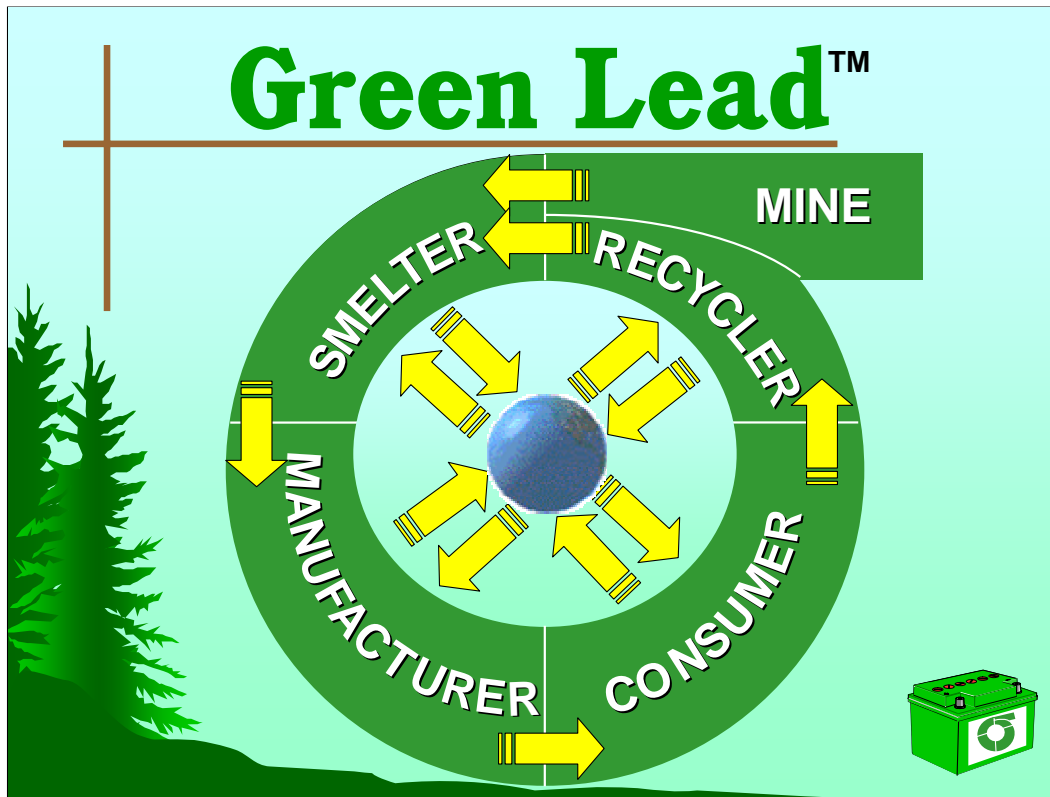
Product Stewardship

No doubt you are all be familiar with the widely used recycling symbol, the Mobius Loop. In the case of lead acid batteries the cycle goes from manufacturing through use and then following recovery, back to the battery manufacturer for the cycle to be repeated. This is the life cycle of a lead acid battery.

Now Product Stewardship is a principle that directs all actors in the life cycle of a product to minimize the impacts of that product on the environment. What is unique about product stewardship is its emphasis on the entire product system in achieving sustainable development.

Under a product stewardship regime, all participants in the product life cycle - designers, suppliers, manufacturers, distributors, retailers, consumers, recyclers and disposers - share responsibility for the environmental effects of products. (Northwest Product Stewardship Council, 2000)

The cooperative nature of Product Stewardship allows opportunities for the identification and reduction of environmental impacts that is not possible with traditional environmental management. It also means that each player is accountable to other members of the product chain for their environmental performance, and is obligated to benchmark and demonstrate best environmental practice, resulting in business restrictions based on environmental and social performance.

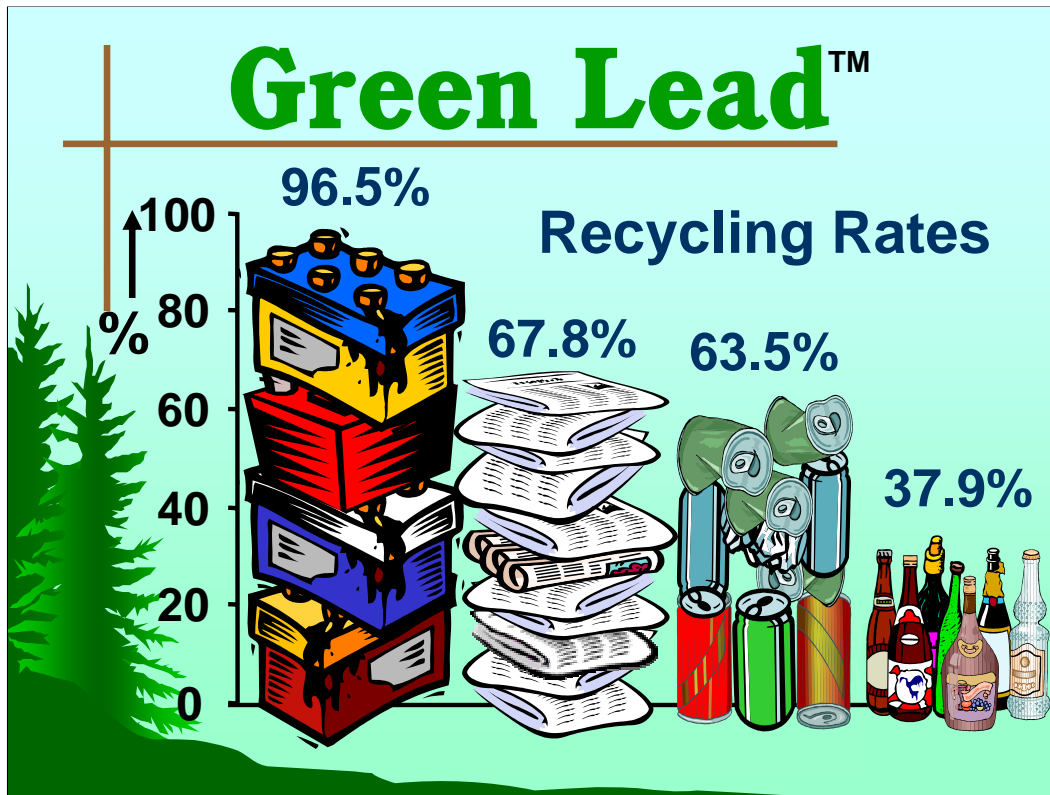


The **Green Lead** Sigma

Product Stewardship under the Green Lead concept starts with the Greek Letter Sigma. Sigma permits input from the miners and primary smelters and reflects precisely the current life cycle of the lead acid battery. Once primary lead enters the loop, it stays there, whether the products are sold locally or all over the world, Green Lead agents and recyclers will maintain sound environmental processes, safe working and healthy environments.

Traditional environmental management focuses upon mitigating and controlling environmental impacts within a particular company or at a particular site. Green Lead seeks to extend the responsibility for a product throughout the product chain.

The interactive requirements of the Green Lead process allows opportunities for the identification and reduction of environmental impacts that is not possible with traditional environmental management. Green Lead also means that each player in the Sigma will set supplier and contractor obligations, which may result in the restriction of whom they will do business with based on environmental and social performance.



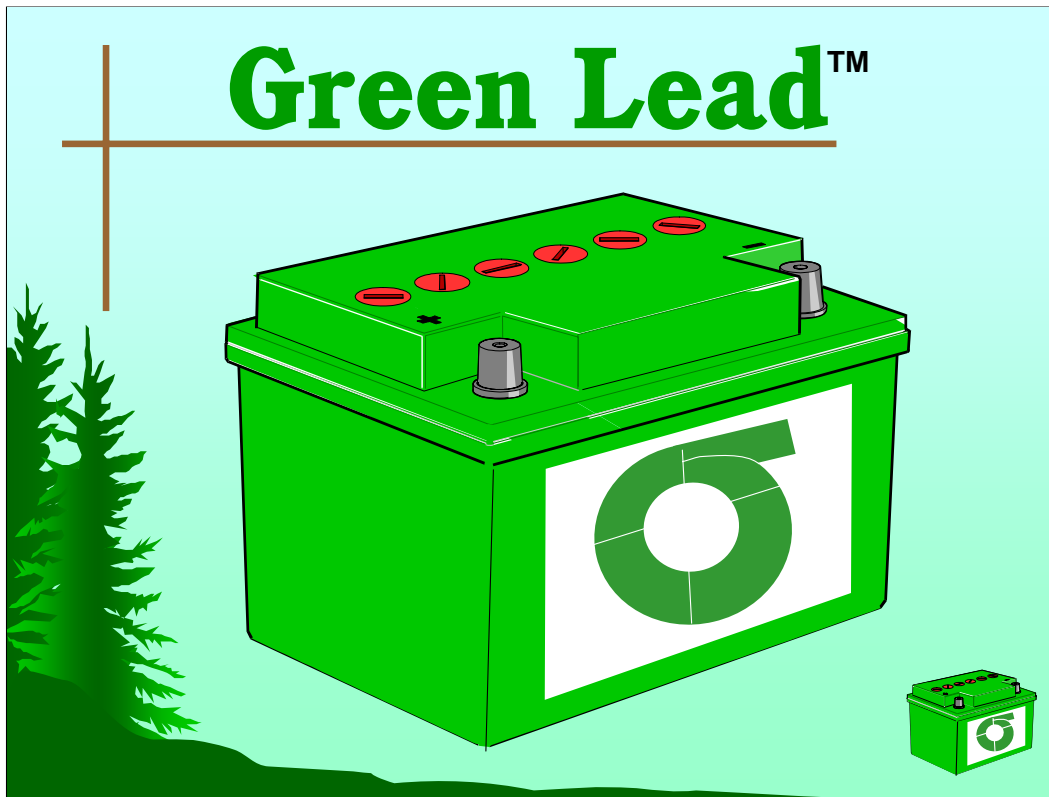
Recycling Rates

All the components of the modern lead acid battery are recyclable and from an Industry perspective lead-acid batteries are an environmental success story because in most of the G7 nations upwards of 95% of ULAB are recycled.

In the USA, compared to the usual “flagship” recycled products such as glass bottles at only 38%, aluminum cans at nearly 64% and newsprint at about 68%, lead acid batteries are the clear leaders in the field. In fact, used lead-acid batteries have topped the list of the most highly recycled consumer products for over a decade.

However, the measurement of “Recycling Rates” is a concept known only in the OECD and well developed countries. In the developing world any waste material with any monetary value will be recovered and recycled. This is certainly the case with ULAB and studies by the SBC in Latin America, the Caribbean and Cambodia confirm that recovery rates approach 100%. The problem in the developing world is that in far too many cases the recovery processes are most unsatisfactory. Environmental controls are often minimal, there is little regard for safety and the health of the workers and local populations living close to such operations are exposed to toxic emissions.

However, such efforts at recycling should not be dismissed, albeit they are most unsatisfactory. What is needed is a means to direct those involved in such activities towards environmentally sound practices.



The Green Lead Initiative

As lead acid batteries account for about 75% of lead consumption, it seemed logical to initially focus on the stewardship of lead acid batteries.

Traditional environmental management focuses upon minimising environmental impacts within a particular company or at a specific site. Product Stewardship seeks to extend the responsibility for a product throughout the product chain. For example, a producer may assume responsibility for the facilitation of product take-back and recycling in cooperation with a recycler, or a miner may change reagents used in the flotation process to reduce carbon disulfide (CS₂) emissions from the smelter downstream.

In principle, this means that a Green Lead Program would direct all sectors in the life cycle of a Lead Acid Battery, that is, the Mines, the Smelters, the Battery manufacturers, Consumers and the Recyclers in practices and procedures that minimize or negate any potential adverse impacts on either the environment or the population.

Such a Program on a global scale would be a huge undertaking and beyond current resources. However, a couple of well chosen Pilot schemes to roll out the initiative would be a real test of the scheme and provide valuable feedback for the development of Green Lead.

Nonetheless, such an undertaking would require the participation of the relevant industry sectors, certain government agencies, international non governmental bodies, consumer groups and environmental NGOs.

Green Lead™

Life Cycle Analysis

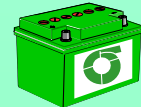
1. Inventory

- *Materials*
- *Recyclables/Waste*



2. Impact Analysis

- *Environmental*
- *Economic*
- *Health*
- *Social*



Life Cycle Analysis

Life Cycle Analysis (LCA) involves a comprehensive examination of a product's inventory at each stage of the cycle and the environmental, health, and economic impacts throughout its lifetime, including, in the case of the Green Lead Sigma Cycle, new material extraction, as well as transportation, manufacturing, use, recycling and social aspects.

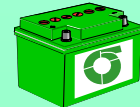
Much of the input for the Green Lead process will be based on the findings and recommendations arising from the current Dutch Chaired European Lead Risk Assessment, which is due to be published in full at the end of this year.

Life Cycle Analysis (LCA) is one of the tools that will be utilized to identify all potential exposure pathways. It is anticipated that to achieve a LCA for the entire lead life cycle, each sector, and in some cases certain mining operations and recycling plants, will be required to conduct a LCA.

Green Lead™

ISO 14001 Certification....Checks

- ✓ Written operating procedures
- ✓ Environmental monitoring
- ✓ Statutory compliance
- ✓ Supply chain management



ISO 14001 Certification

You might be thinking, well why don't we all accept ISO 14001 Certification for Environmental Performance as the measure of environmental compliance. Well let us examine what the ISO 14001 audit checks:

- Written Operating Procedures and makes sure that the records show that employees are properly trained to use them.
- Environmental monitoring records and the sources for the data.
- Compliance with the statutory regulations for environmental management and employee safety.
- The material supply chain for environmental compliance. However, this aspect of the audit rarely features as a part of the initial certification process and is normally left for a couple of years, or more in some cases, before an audit trail is established.

Green Lead™

ISO 14001/OHSAS 18001...Drives

- ✓ Environment & Safety standards
- ✓ Statutory compliance
- ✓ Improved in-house training
- ✓ Awareness of environmental and personal needs



ISO 14001/OHSAS 18001...Drives

Experience has shown that adopting the procedures necessary for ISO 14001 Certification for Sound Environmental performance and implementing the Occupational Health and Safety Management Systems required for OHSAS 18001 Certification, have proven to be positive “drivers” for change themselves.

There is no doubt that companies and organizations certified to ISO 14001 and OHSAS 18001 will be leaders in environmentally sound practices and health and safety programs.

Companies certified to ISO 14001 and BSI OHSAS 18001 will invariably have:

- High standards for environmental performance, safety procedures and health care.
- Attained compliance with statutory regulations and international conventions.
- Raised the levels of operational and supervisory training
- Created a greater awareness of personal responsibility for environmental compliance, safety and good health.

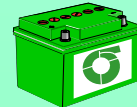
Such companies will have a head start in any Green Lead audit and eliminate the need to check many of the elements of Environmentally Sound Management.

Green Lead™

ISO 14001 and OHSAS 18001

.....Does not check

- ✗ Operating practices!!**
- ✗ Sustainability**
- ✗ Life Cycle Management**
- ✗ Product recycling**
- ✗ Public/community issues**



ISO 14001 and OHSAS 18001 Certification

However, what ISO 14001 and, to an extent, OHSAS 18001 does not check is:

- ✗ The day to day operating practices adopted by employees, that is observing whether the employees follow the written procedures correctly.
- ✗ The sustainable management of resources and raw materials, such as water, power, feedstock and reagents. Neither does the audit check that all the recyclable materials in the ULAB are recovered.
- ✗ How the ULAB recovery process fits into the life cycle of the LAB. There are few checks, if any, on the environmental, health and safety performance of suppliers and none on customer behaviour.
- ✗ That the ULAB are designed to be recycled and are labeled in a way that promotes sound recovery.
- ✗ The way the public contribution to the life cycle is influenced and community responses to the life cycle performance.

Despite these shortcomings, the ISO 14001 and OHSAS 18001 Certification Processes provide the best available independent guides to environmental, occupational health and safety performance. However, for most secondary smelters in the developing world the ISO and OHSAS audits are too expensive.



Process Components of **Green Lead**

Whilst the ISO 14001 and OHSAS 18001 certification procedures are demanding, Green Lead is not just an environmental and safety audit; it is a Stewardship Process with principles, objectives, rules and components not found in ISO 14001 or OHSAS 18001, such as a social dimension. Let us examine the Green Lead process starting with the Ground Rules:

There are three core ground rules fundamental to a Green Lead product stewardship scheme.

1. Firstly the whole process must be open, honest and transparent. All relevant information, data and audit reports must be available in the public domain for inspection.
2. Secondly, to guarantee the credibility of Green Lead Certification there must be independent third party verification. In the case of Green Lead, the Working Group would like the World Wildlife Fund to undertake this role, subject to the adoption of suitable standards, and audit and certification procedures.
3. Finally, to take Green Lead from conception to implementation will require collaboration and cooperation between the lead industry, governments, NGOs and community groups throughout the product chain. It is essential therefore, that from the outset, the Green Lead project has to be a multi-stakeholder joint venture.



Process Components of **Green Lead**

Step 1- Impact Identification and Quantification

The first step is to identify and quantify the environmental, safety, health and social impacts associated with lead exposure throughout the lead life cycle. As part of this process, current performance will need to be quantified and historical impacts identified.

To ensure the use of a uniform methodology, the Life Cycle Analysis (LCA) arising from the results of the current European Lead Risk Assessment exercise under the Chairmanship of the Dutch Government will be used to assist with the completion of this first step and identify all potential exposure problems.

As the exposure risks and critical elements in the Product Stewardship Life Cycle vary, each sector, and in many cases some of the plants, will have to conduct their own analysis and determine site or operation specific environmental threats and health risks.



Process Components of Green Lead

Step 2- Establish Green Lead Performance Standards/Criteria

The next step is the development of performance standards/criteria based on the results of LCA and other tools utilized for impact identification. The standards/criteria will cover areas of environmental protection, workplace health and safety and community issues associated with lead exposure.

Performance standards for “Green Lead” will reflect international best practice, including the World Wildlife Fund’s Certification of facilities for mine sites; the Basel Technical Guidelines for the Environmentally Sound Management (ESM) of ULAB; the environmental management systems advocated under ISO 14001 and guidelines outlined for the Occupational Safety, Health Assurance System (OHSAS) 18001 for safety and health management systems.

Where possible, common criteria, such as lead in blood levels, will be applied across all sectors as will international protocols such as the transboundary movement of ULAB.

Common to all sectors will also be the need to demonstrate a social responsibility for the industry’s workers and local communities. The criteria will be in line with the conventions and recommendations of the UN Office of the International Labour Organization (ILO) in respect of workers rights and social development.



Process Components of **Green Lead**

Step 3 - Establish Green Lead Custody Chain Management

Whilst many Environmental Management Systems emphasis the need for Supply Chain Management, and in some cases such as the management of Forestry Resources, it is the control of the sourcing of wood that is the critical element in moving towards sustainable forestry management.

However, in the case of Lead Acid Batteries (LAB), the sourcing of refined lead and bullion from environmentally sound smelters ranks with equal importance to the downstream management of the finished product. This is Custody Chain Management and it means that LAB must only be sold by wholesalers and retailers that participate in schemes to collect ULAB in exchange for new sales to ensure that the lead in batteries remains in the closed sigma loop.

The emphasis on Custody Chain Management is NOT a feature of ISO 14001.



Process Components of **Green Lead**

Step 4 – Site Remediation Planning

A number of companies applying for Green Lead certification may have facilities with legacy issues resulting from unsatisfactory past practices. Indeed, it is anticipated that certain operations currently regarded as part of the “informal sector” will apply for Green Lead Certification when they improve their environmental performance in order to demonstrate their “formal sector” credentials.

Steps 1 and 2 will identify and quantify any remediation issues and if a Remedial Site Management Program is required, it must be set up through consultation with local Communities, government agencies and be in place ready for implementation at the appropriate time.

Progress towards achieving agreed milestones in the remediation plan will be a critical factor in Green Lead certification.



Process Components of **Green Lead**

Step 5 - Green Lead Audit and Certification

Environmental, Occupational Health and Safety Management Systems based on these standards will be subject to site inspection and audit for Green Lead certification.

Organizations with ISO 14001 or OHSAS 18001 or equivalent certification will be exempt from certain sections of the Green Lead audit, but the internal and external dynamics of the LAB life cycle will be thoroughly checked for the sound management of the custody chain.



Process Components of Green Lead

Step 5 - Green Lead Audit and Certification

The criteria, depending on the nature of the operation, will include:

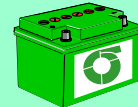
- ✓ Comprehensive risk assessment and the implementation of safe working procedures
- ✓ Control & mitigation measures for any fugitive emissions, discharges or legacy problems
- ✓ The identification and management of environmental and health impacts
- ✓ Compliance with prevailing national and international environmental, health and safety legislation, conventions and protocols.
- ✓ Emergency response and evacuation plans
- ✓ Environmental and safety monitoring programs and health surveillance regime
- ✓ Chain of custody scrutinized, audited and recorded.
- ✓ Continuous improvement and employee development programs
- ✓ Community engagement agenda
- ✓ Open reporting procedures

Green Lead™

London Workshop

Objectives:

1. *Shared vision*
2. *GL development*
3. *GL Management*
4. *Secure funding*
5. *Identify partners*



London Workshop

In order to promote and structure such any Pilot Schemes and to broaden the participation in any proposal, a Workshop was held in London in April this year.

The aims of the Workshop were:

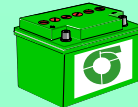
1. To achieve a shared vision of Green Lead and secure widespread support for the concept.
2. To agree to a program to fully develop the methodology, structure and standards for Green Lead.
3. To agree a management mechanism for the development phases of Green Lead.
4. To secure funding for the key development phases of Green Lead and a mechanism for managing the funds.
5. To identify at least one company in the mining, smelting, battery manufacturing and battery recycling sectors willing to participate in pilot audits as part of the development phase.

Green Lead™

London Workshop

Outcomes:

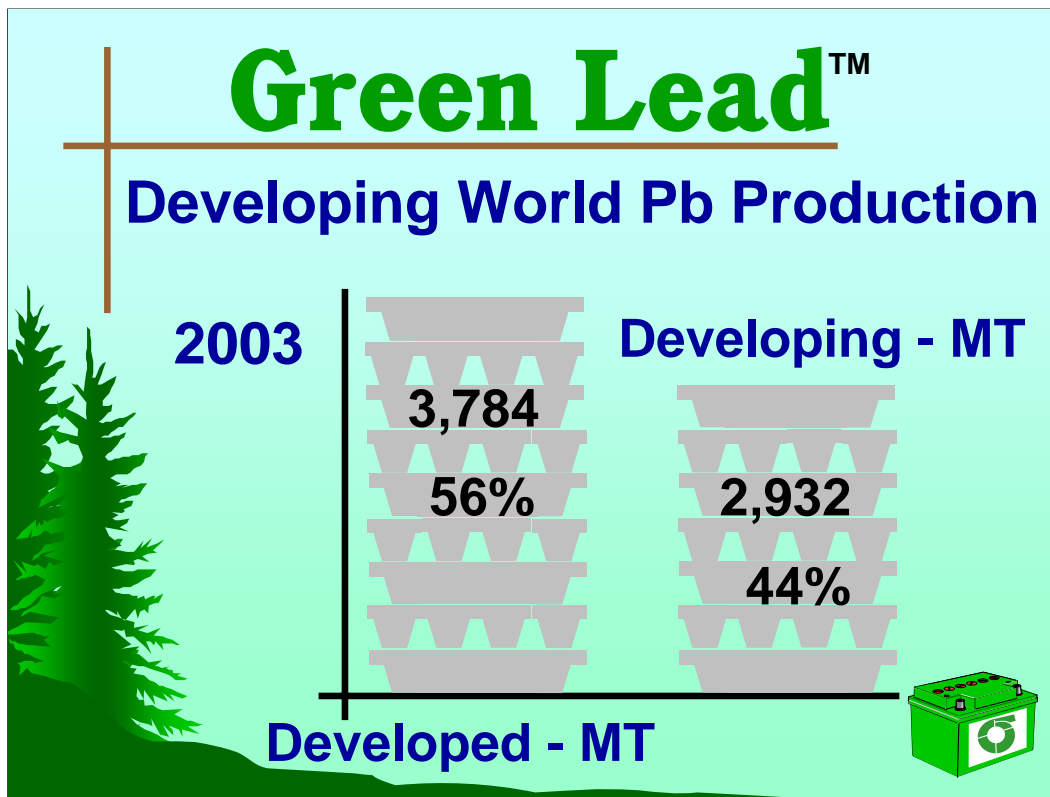
1. *Work program*
2. *Steering committee*
3. *Working group*
4. *Secured funding*
5. *October Workshop
- Vienna*



London Workshop

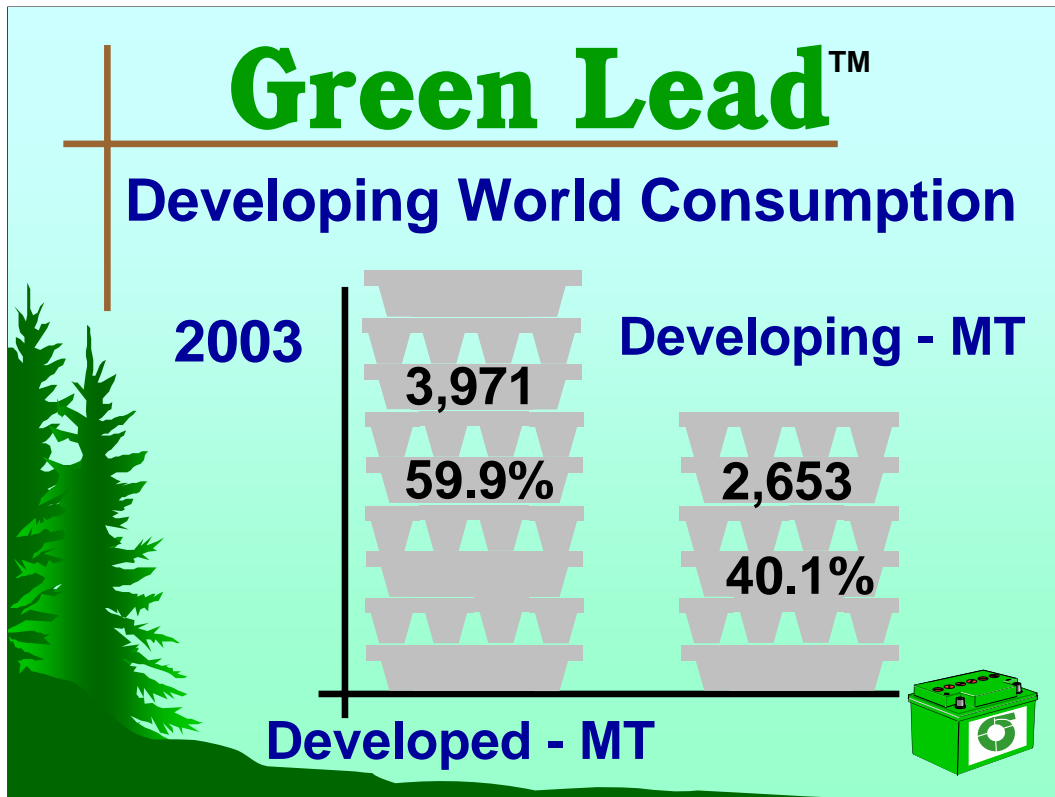
At the conclusion of the Workshop, consensus was reached on:

1. A work program to engage additional stakeholders, in particular, battery manufacturers, car makers, and NGOs;
2. A Project Steering Committee to oversee the ongoing work program. Representation would come from ICMM, ILZSG, UNEP, the LDAI, WWF, SBC and several producer companies, such as BHP-Billiton.
3. A number of working groups were examined and subsequently a small team was established comprising of representation from EcoFutures, ILMC and Environmental Resources Management Certification and Verification Services (ERM CVS). This team would be tasked to design a Green Lead standard, identify Pilot Program opportunities and develop certification options.
4. Funds were pledged for the initial phases by companies and industry associations with an interest in Green Lead and included, the LDAI, the LZSG, BHP-Billiton, and Anglo American. It was agreed that the funds would be administered by the ILZSG.
5. It was also agreed to convene a second Workshop in Vienna in October to review progress and fast track the development of the certification and audit procedures. Subsequently, the venue was moved to London and the workshop postponed until next year.



Green Lead and the Developing World

Much of the work undertaken by the ILMC and the SBC has been, and continues to be, in the developing world, which is often regarded as a minor player in the global economy. What may surprise some then; is that according to the statistics published by the International Lead Zinc Study Group (ILZSG) World Refined Lead production for the year 2003 was 6.716 million tons and of this tonnage 56% was produced in developed countries and 44% in the developing world.



Lead Consumption in the Developing World

Forecasts for this year are that developing world consumption will grow another 7%, while the OECD consumption will remain about the same.

Again the developing world is not only a major player, but will become increasingly important, especially South East Asia.

So the developing world is a major contributor to the global lead market.

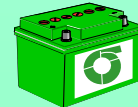
So would the Developing World have any interest in Green Lead?

Would there be any tangible benefits for organizations from the developing world applying for Green Lead certification?

Green Lead™

How is ESM determined?

- By membership of the OECD?
- By membership of the EU?
- Through ISO 14001 Certification?
- Green Lead?**



How is ESM Determined?

When smelter managers in the developing world look at the criteria for the determination of ESM in the developed world they are puzzled.....ULAB are classified as hazardous waste under the Basel Convention and can only be recycled in an environmentally sound manner.

However, the qualification for receiving ULAB would appear to be based on more than just ESM and they struggle to understand why ULAB can be shipped to the OECD and the EU from any country in the world, while Developing World Smelter managers find it hard to source much needed ULAB, even when they have been ISO 14001 certified.

Indeed, many think that it is not worth the expense of attaining ISO 14001 certification if it is not going to increase their prospects of sourcing ULAB.

In these instances, Green Lead certification may be attractive. Green Lead encompasses every sector in the product cycle and operates a closed loop for ULAB. This means that Green Lead retailers and ULAB collectors can only send the ULAB they collect to Green Lead certified recyclers. Green Lead Certified Smelters will therefore be better placed to increase the prospects of increasing the sources of ULAB, because they will be on the approved smelter lists for Green Lead recycling.



Green Lead™

Developing World Smelters.....

- ✓ Recognizable
- ✓ Credible
- ✓ Transparent
- ✓ Inexpensive
- ✓ An Industry Standard
- ✓ Restricts access to ULAB

The Developing World Secondary Industry Wants...

For G7 nation smelters and battery manufacturers ISO 14001 and OHSAS 18001 certification is essential to conduct business.

The Developing World battery manufactures and secondary smelters would like to be ISO 14001 and OHSAS 18001 Certified so that they can sell their products in more G7 markets. However, ISO certification is not feasible for some small operations, so companies may look at Green Lead as a Seal of Approval that is:

- Recognizable and a world renowned symbol of care and quality
- Credible with independent audits and inspections
- Transparent with audit reports available in the public domain
- Less expensive than ISO 14001 Certification
- An Industry Standard throughout the world with all battery manufactures and secondary lead plants making every effort to keep LAB inside the recycling loop

And.....

- An effective tool for Government Environment and Trade Ministries to direct ULAB to the formal sector and restrict the supply of ULAB to the informal sector, thereby giving those smelters with Green Lead Certification a return on the cost of investing in Green Lead.

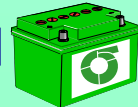
Green Lead™

Developing World Battery Plants



Seal of Approval..... that is:

- ✓ Marketable
- ✓ **Credible**
- ✓ **Transparent**
- ✓ **Inexpensive**
- ✓ **An Industry Standard**



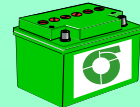
The Developing World Battery Industry Wants...

All the plus points listed for the secondary smelters, but in particular and at the top of their list they would like Green Lead Certification to be Marketable, thereby increasing battery sales because motor manufacturers, vehicle owners and domestic customers choose a “green” product that represents sustainability, sound environmental management and social responsibility.

Green Lead™

The Global Lead Industry Needs...

1. A scheme embracing the developed and developing worlds.
2. Strategies that deprive the “informal sector” of ULAB.



The Global Industry Needs...

The Global Lead Industry will include Developing Countries in any product stewardship scheme because of the huge impact their contribution makes to the world's lead market and the potential environmental and health impacts.

So Green Lead will be a scheme that embraces both the developed and the developing worlds.

However, to be completely successful Green Lead strategies must be devised and controlled in a way that deprives the “informal sector” and any other companies that pollute the environment or endanger the health of its workers, from supplies of ULAB.



Green Lead and the Developing World

Whilst none of you will doubt our ability to test the Green Lead concept in any of the OECD countries, some people may wonder how we might set up a Pilot Scheme in the Developing World. Well, there are a number of potential candidates that have been identified as a result of the work undertaken by the ILMC in conjunction with UNCTAD and the SBC:

PRI in the Republic of the Philippines

Part of the RAMCAR Group, ISO 14001 certified and fully integrated with the Motolite Battery Manufacturing Company with over 300 retail outlets.

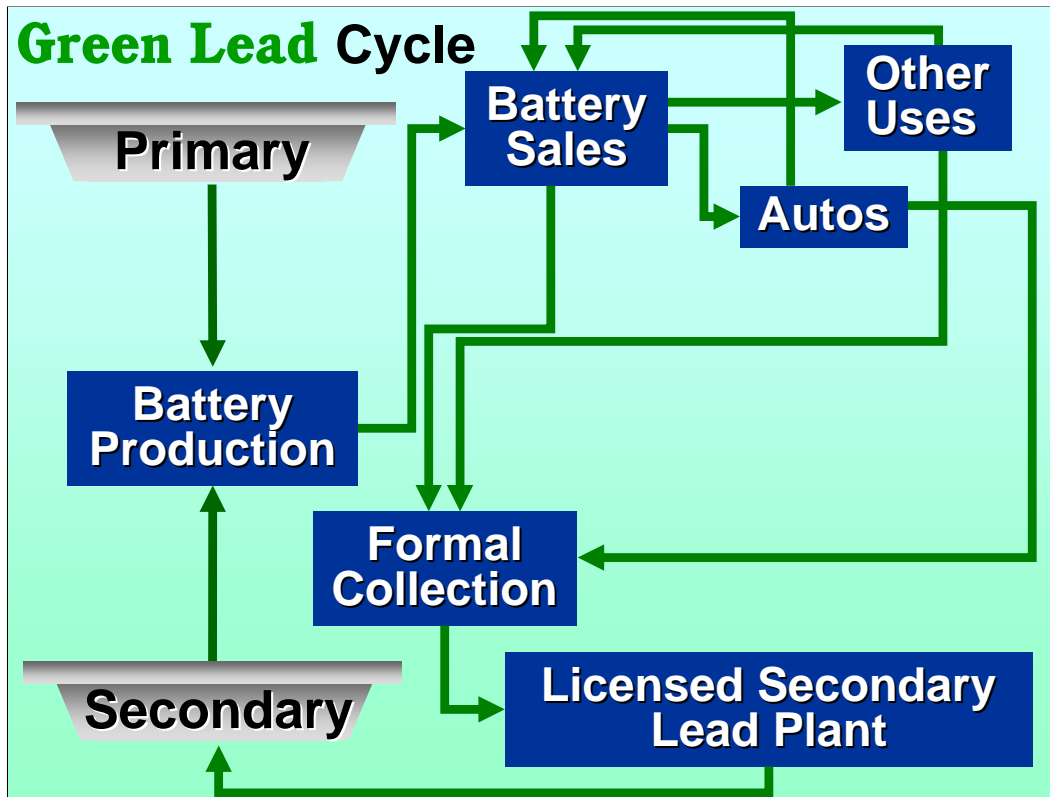
Fundicion del Centro – Venezuela

Fundicion del Centro is part of the Duncan Battery Group and is an outstanding example of ESM. ULAB are already delivered to the plant from Duncan's 33 retail outlets in accordance with the Basel Technical Guidelines.

Baterias de El Salvador – El Salvador

This Company is not ISO 14001 Certified, but is Environmentally Sound and integrated with the Record Battery Manufacturing Plant.

PRI has already agreed to be considered a candidate for a Pilot Program and their Vice President will be joining us next April in London.



Green Lead Cycle

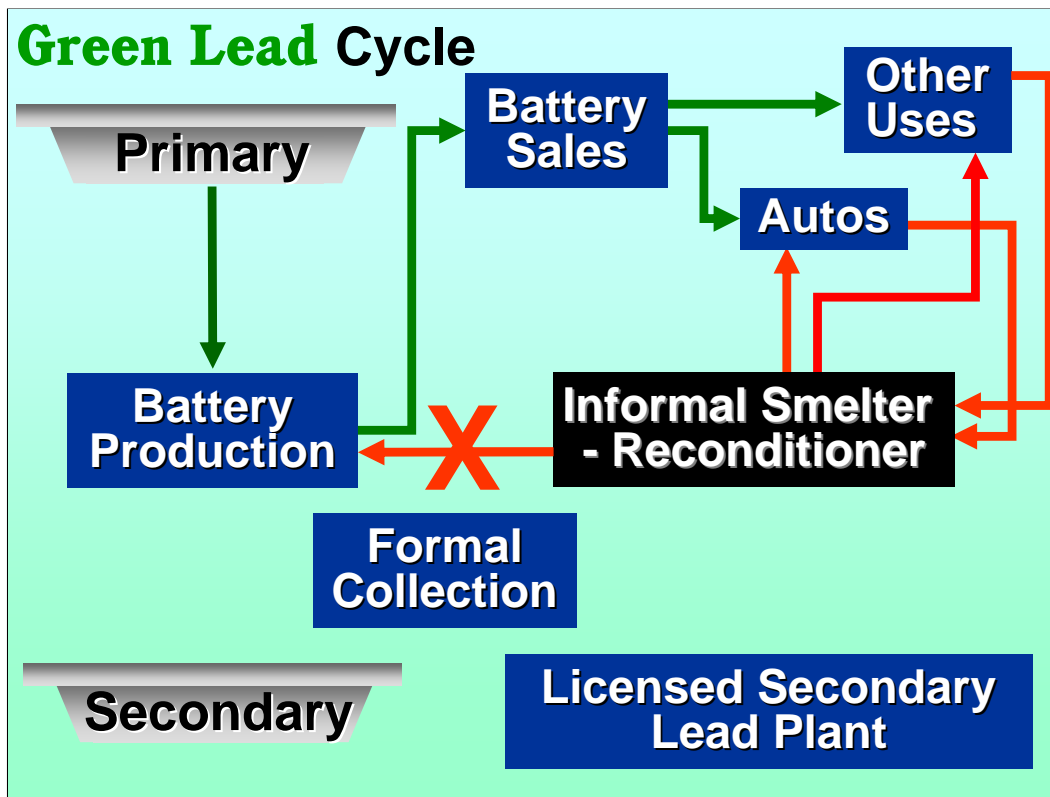
We appreciate that carefully selecting integrated companies already environmentally sound will not answer the questions raised by the environmentally unfriendly activities of the “informal smelters and battery reconditioners”.

Nevertheless, an examination of the Green Lead battery cycle will help to explain how the Green Lead code of conduct and management of the “Chain of Custody” works in practice and eventually eliminates the threats posed by the “informal” sector.

Firstly, primary lead is despatched to the battery manufacturer and subsequently Lead Acid Batteries are delivered to the retailer. As we know, the bulk of battery sales are to the automobile sector, but some will be sold for other uses.

Used batteries are usually returned to the retailer for either a refund or a purchase discount and in turn the retailer will send the ULAB to a collection center for sorting and packaging. Some consumers will also send their ULAB directly to a collection center.

The collection center ships ULAB in bulk to a secondary smelter for recycling and the refined ingots will be sold to the battery manufacturer for the cycle to begin again.



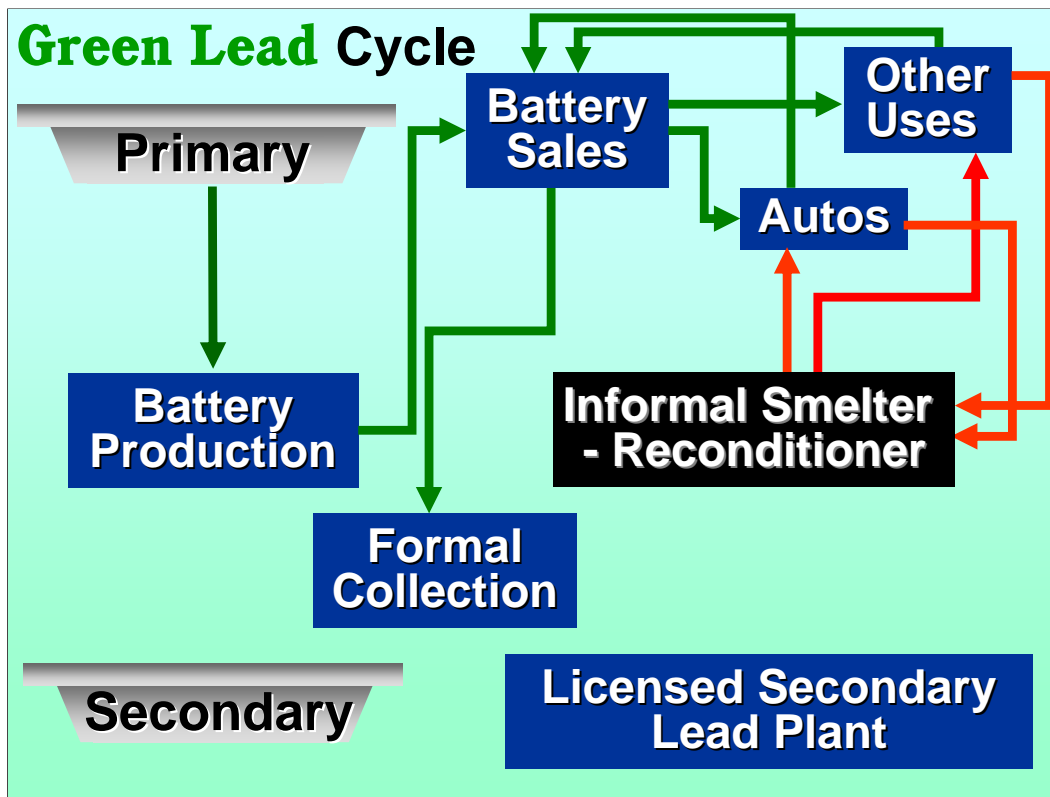
Green Lead Cycle

In those instances where there are unregulated smelters or “informal” battery reconditioners operating, there is the distinct possibility that by offering a premium for a ULAB above that offered under a deposit/refund scheme, that ULAB will find there way into the “informal” sector.

In the informal sector, where possible the ULAB will be reconditioned and returned to customers looking for a cheap battery.

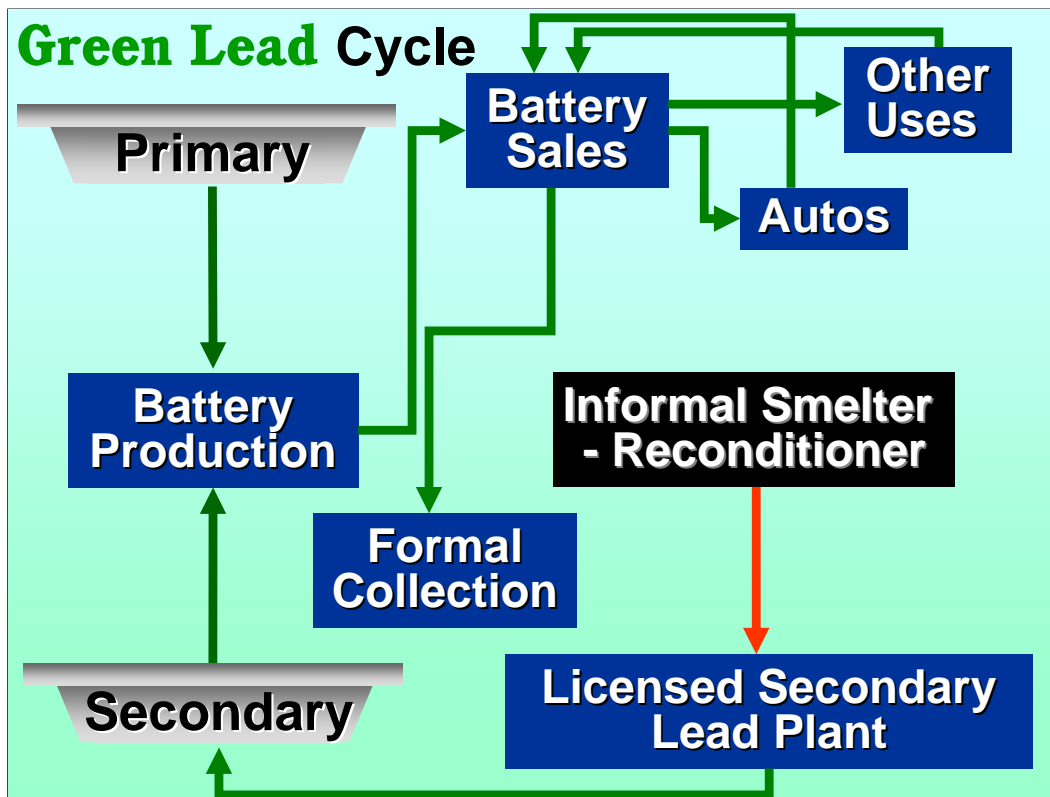
Used battery plates and those ULAB deemed beyond repair will be recycled without much recourse to environmental and health controls. In many cases the lead bullion produced is often marketed to battery manufacturers for use as terminal posts.

It is envisaged that under a Green Lead license, battery manufacturers will only be able to purchase lead ingots from a primary or secondary Green Lead supplier and an outlet for the informal sector will be eliminated.



Green Lead Cycle

Furthermore, under a Green Lead regime, battery retailers should be administering a stringent government supported deposit/refund scheme which will ensure that the opportunities for the informal sector to obtain ULAB are drastically reduced, and eventually eliminated.

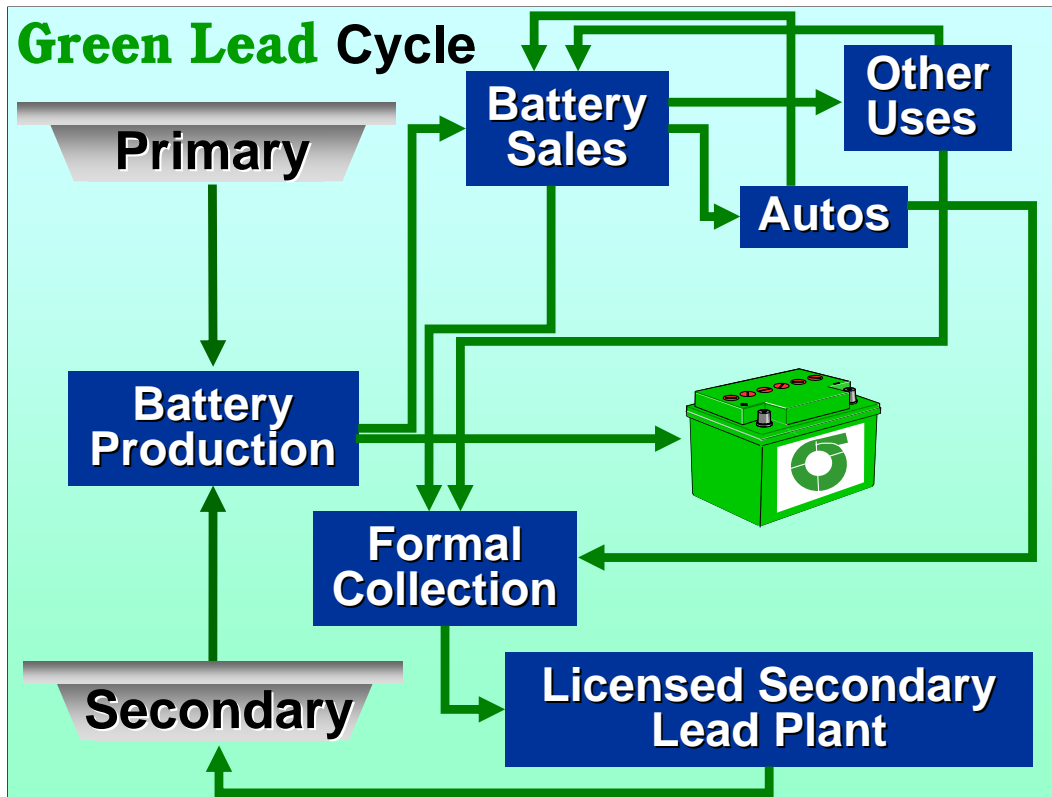


Green Lead Cycle

One exception to the principle of not accepting ULAB or reconditioned components from the informal sector will be a Green Lead licensed secondary smelter.

Any leaded waste materials offloaded by the informal sector will be accepted as feedstock at a GL secondary plant. The material will be recycled in an ESM and designated as a GL approved product. In this way, ULAB and leaded waste in the informal sector can be recovered in the most environmentally desirable way.

It is anticipated that in this way those working in the informal sector will either get out of the ULAB business or become legitimate collectors of ULAB.



Green Lead Cycle

So a Green Lead regime has tremendous potential in the developing world as model to assist in the elimination of poor recovery practices, unsafe working conditions and even illicit transboundary movements of ULAB.

The Green Lead initiative, once in place, will facilitate the development of environmentally sound practices, safe working conditions and create a level of product stewardship at the forefront of any commodity.