The Green Lead Project

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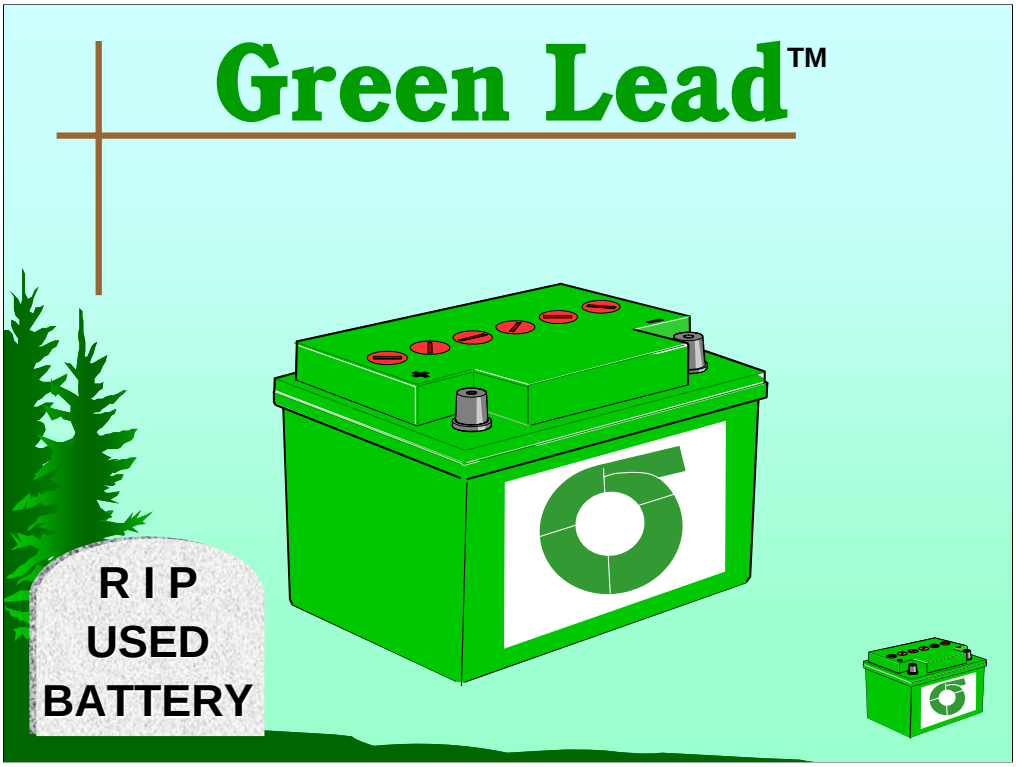
What is Green Lead?

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

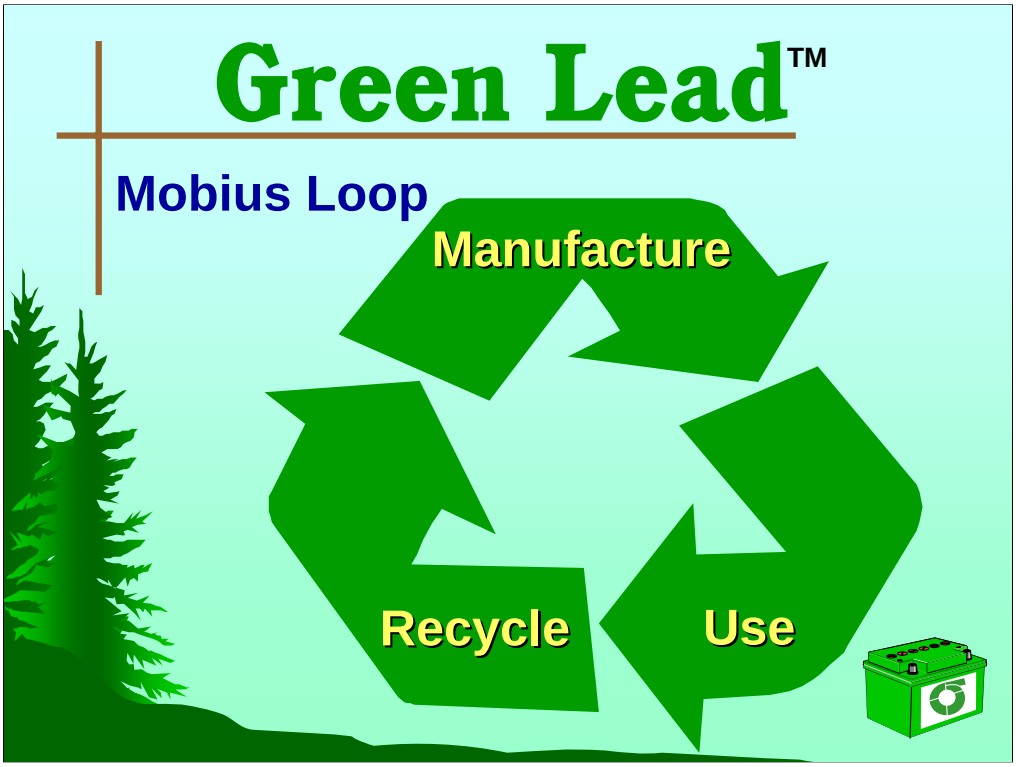
The Lead Industry has to satisfy regulators, NGOs, International Environmental Agencies and local communities that its products can be managed in ways offering the highest levels of personal safety and environmental protection from cradle to grave and then beyond.

To address the issue of changing and improving practices associated with lead, the Green Lead Project has been 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)



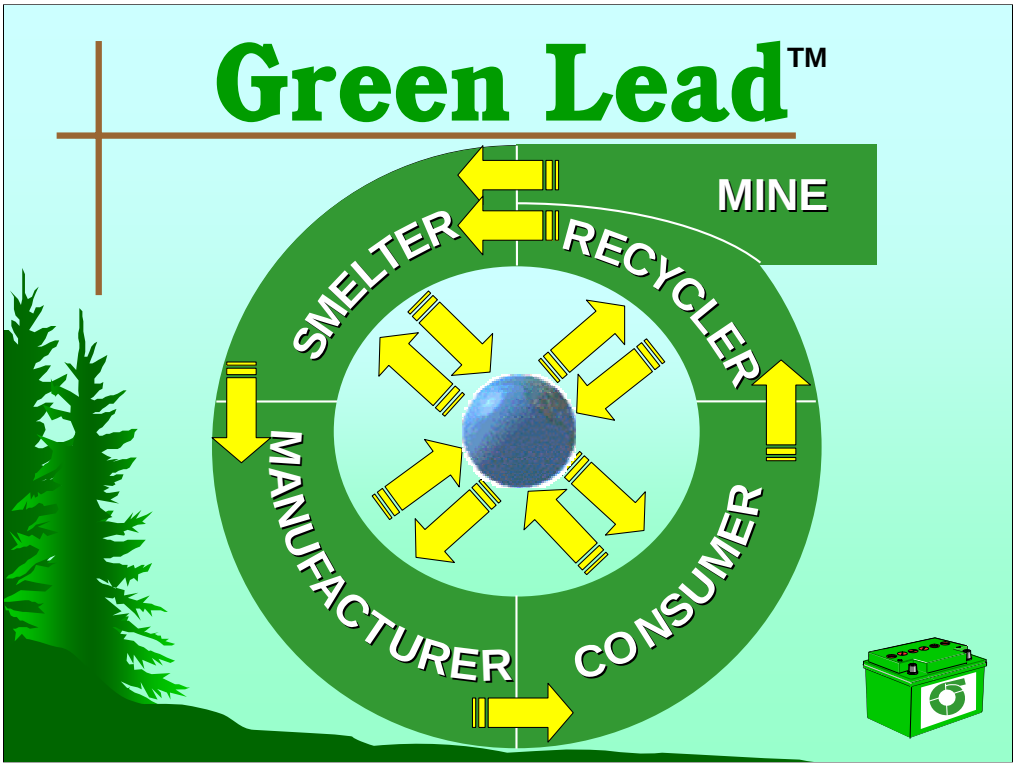
Product Stewardship

You are all very 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 we all know that 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. However, 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 single site 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.

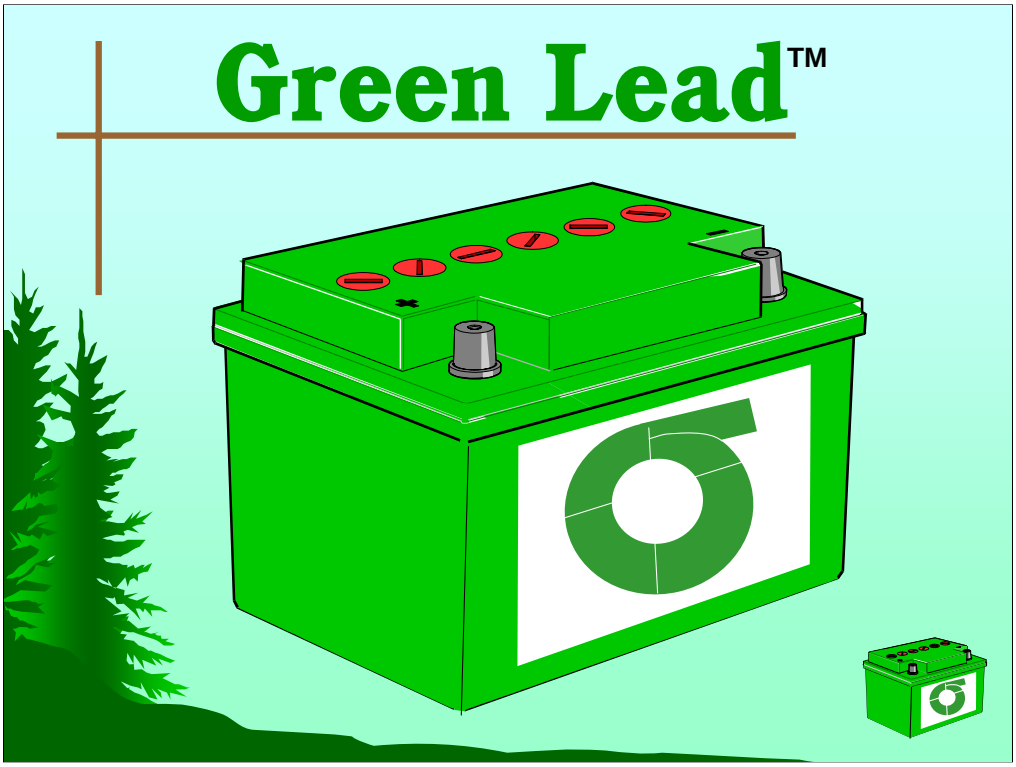


The Green Lead Sigma

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.



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.

!n 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.

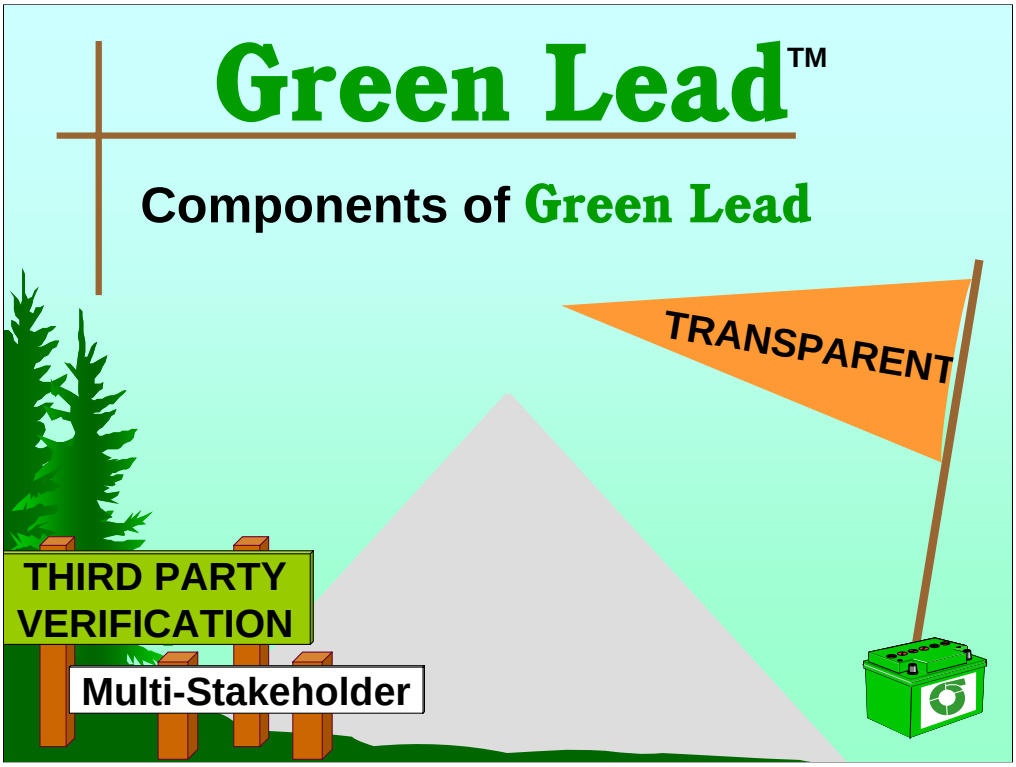
Nonetheless, such an undertaking would require the participation of the relevant industry sectors, certain government agencies, international non governmental bodies, consumer groups and environmental NGOs.

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.



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

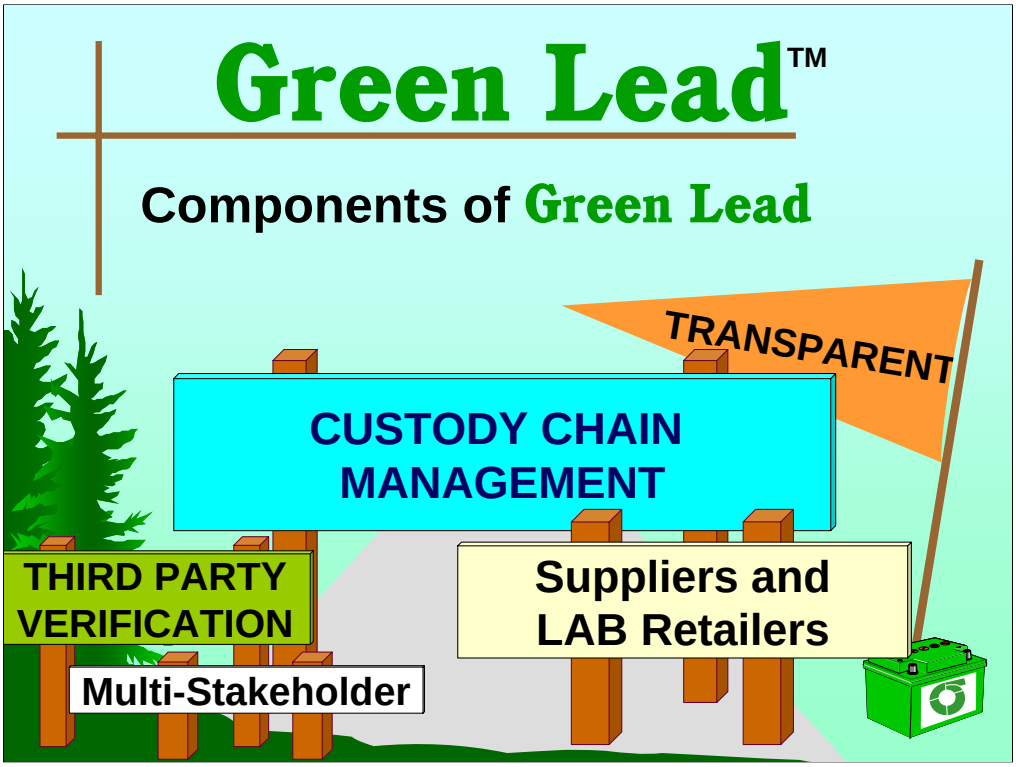
Step 2- Establish Green Lead Performance Standards/Criteria

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 14001and 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.

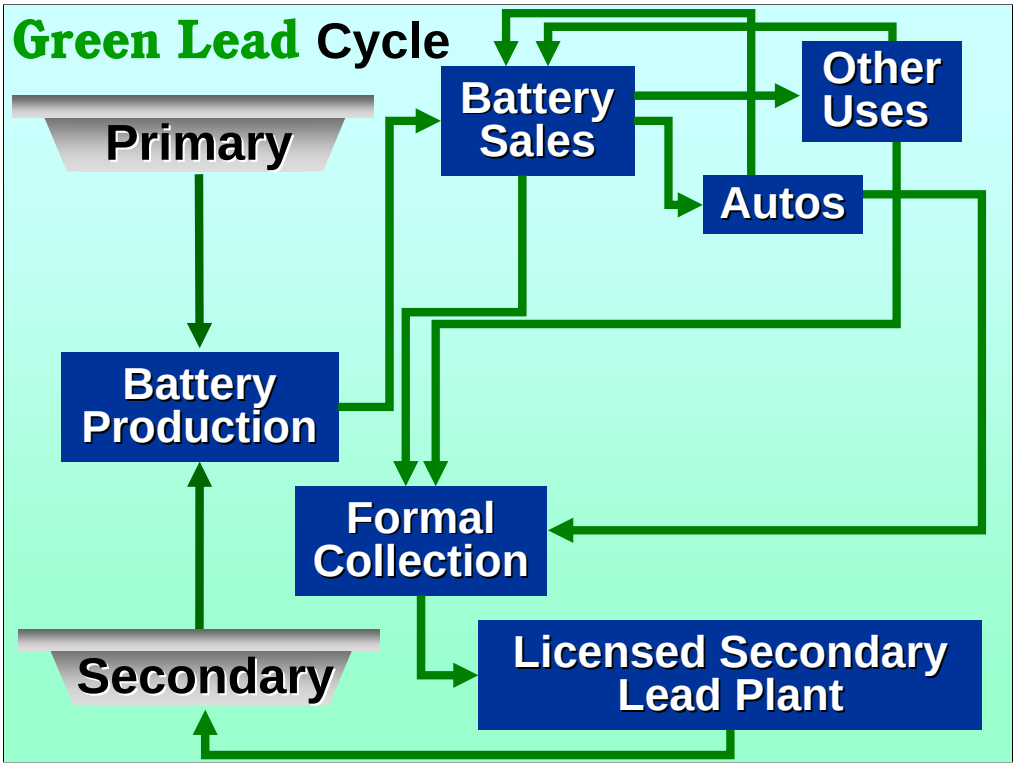
Organizations with ISO 14001or OHSAS 18001 or equivalent certification will be exempt from certain sections of the Green Lead audit, but the internal and external dynamics of the LAB life cycle will be thoroughly checked for the sound management of the custody chain.

Process Components of Green Lead

Step 6 - 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



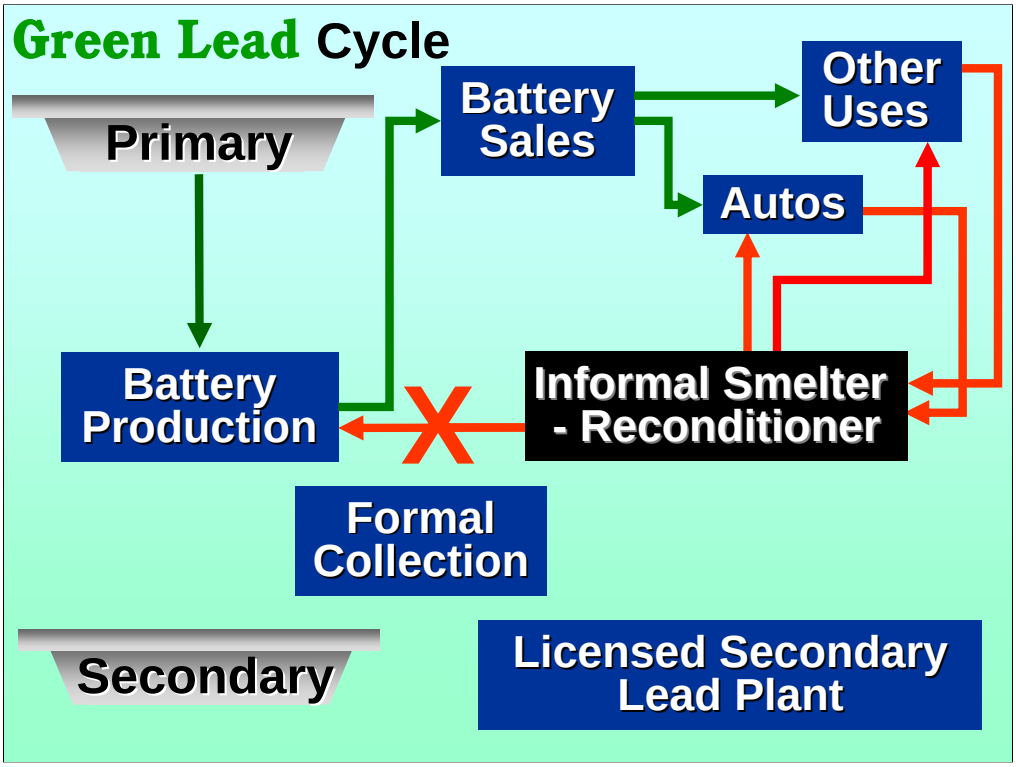
Green Lead Cycle

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.



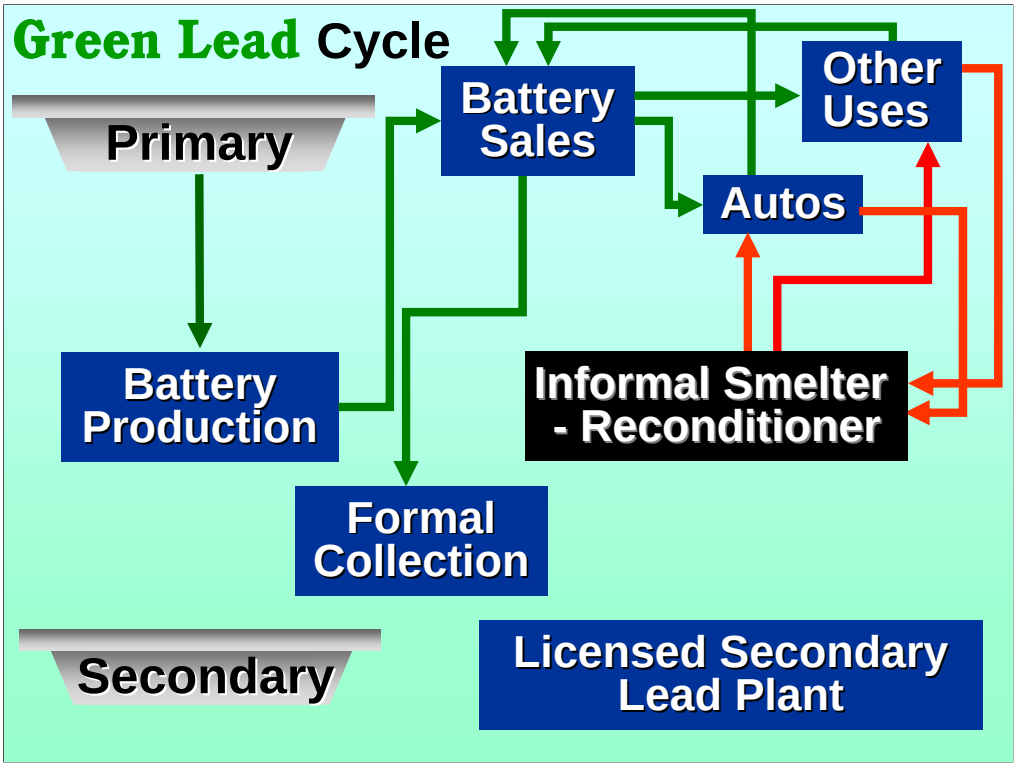
Green Lead Cycle

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.

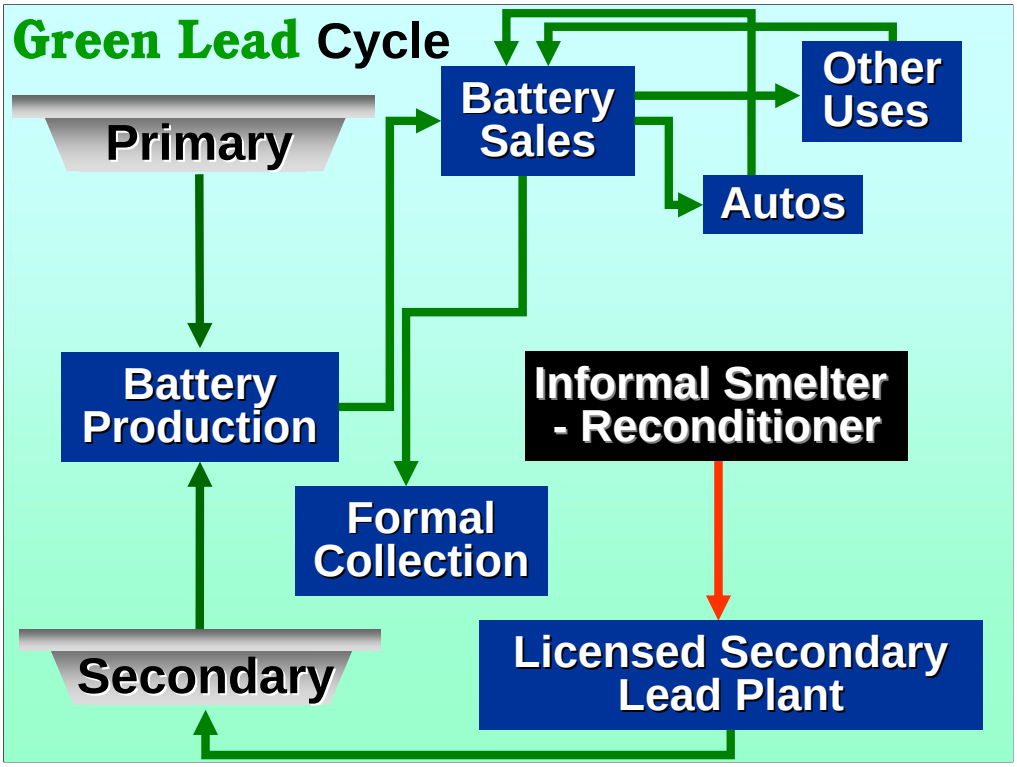
Used battery plates and those ULAB deemed beyond repair will be recycled without much recourse to environmental and health controls. In many cases the lead bullion produced is often marketed to battery manufacturers for use as terminal posts.

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.

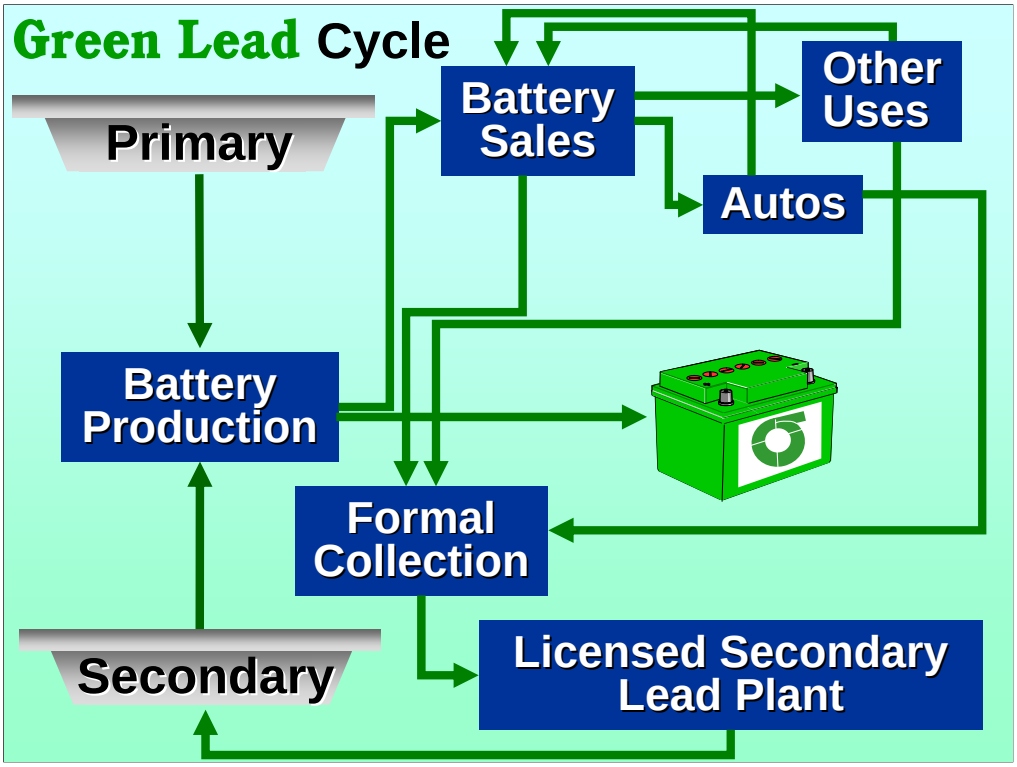


Green Lead Cycle

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.

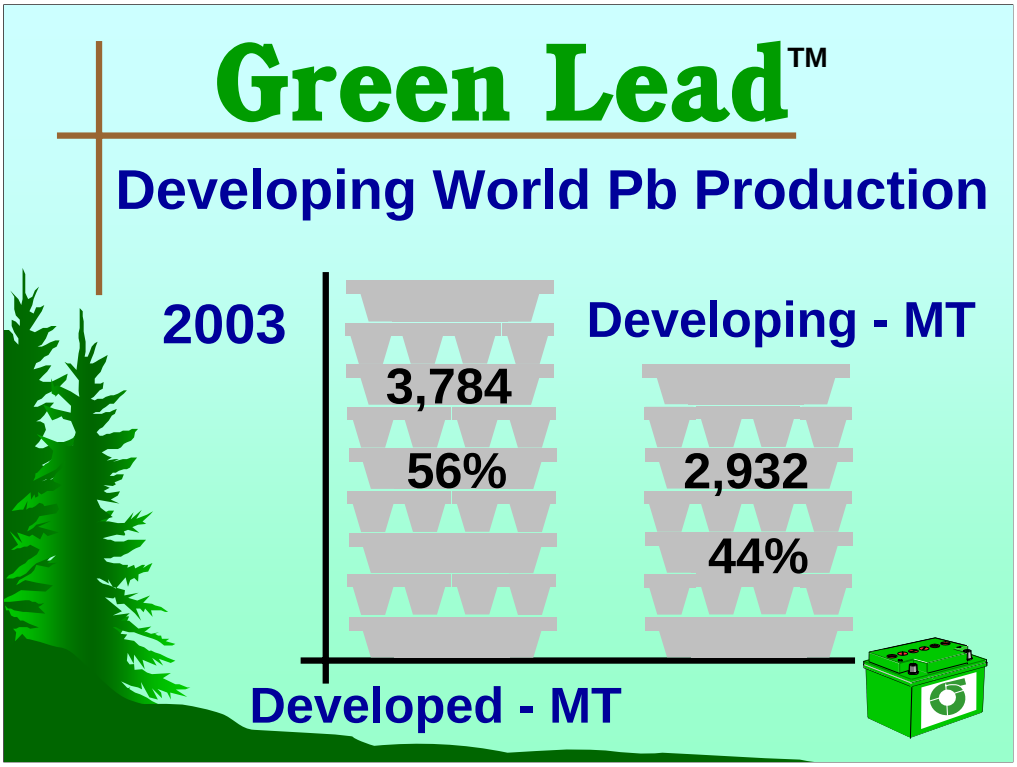
It is anticipated that in this way those working in the informal sector will either get out of the ULAB business or become legitimate collectors of ULAB.



Green Lead Cycle

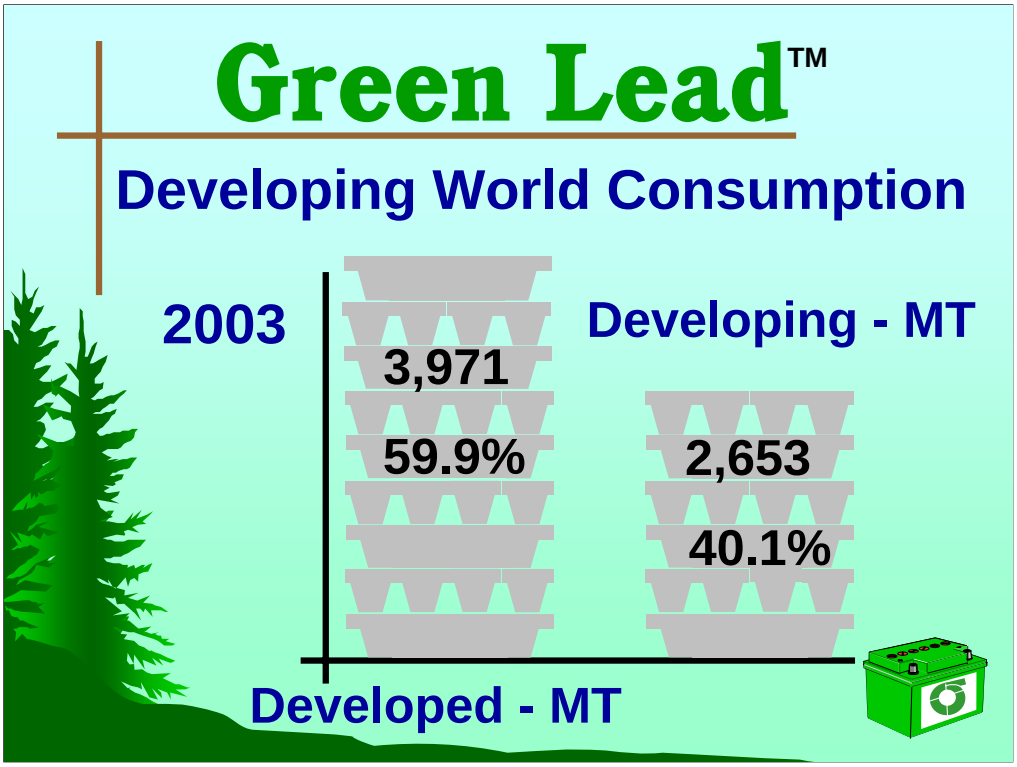
So a Green Lead regime has tremendous potential in the developing world as model to assist in the elimination of poor recovery practices, unsafe working conditions and even illicit transboundary movements of ULAB.

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.



Green Lead and the Developing World

Much of the work undertaken by the ILMC and the Secretariat of the Basel Convention has been, and continues to be, in the developing world, which is often regarded as a minor player in the global economy. What surprises many people 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?

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 few would doubt our ability to test the Green Lead concept in any of the OECD countries, some people may wonder how we might prosper if a Pilot Scheme was set up in the Developing World. Well, that is precisely what the Green Lead Working Group are planning to do as a result of the second Green Lead Workshop held in London last week.

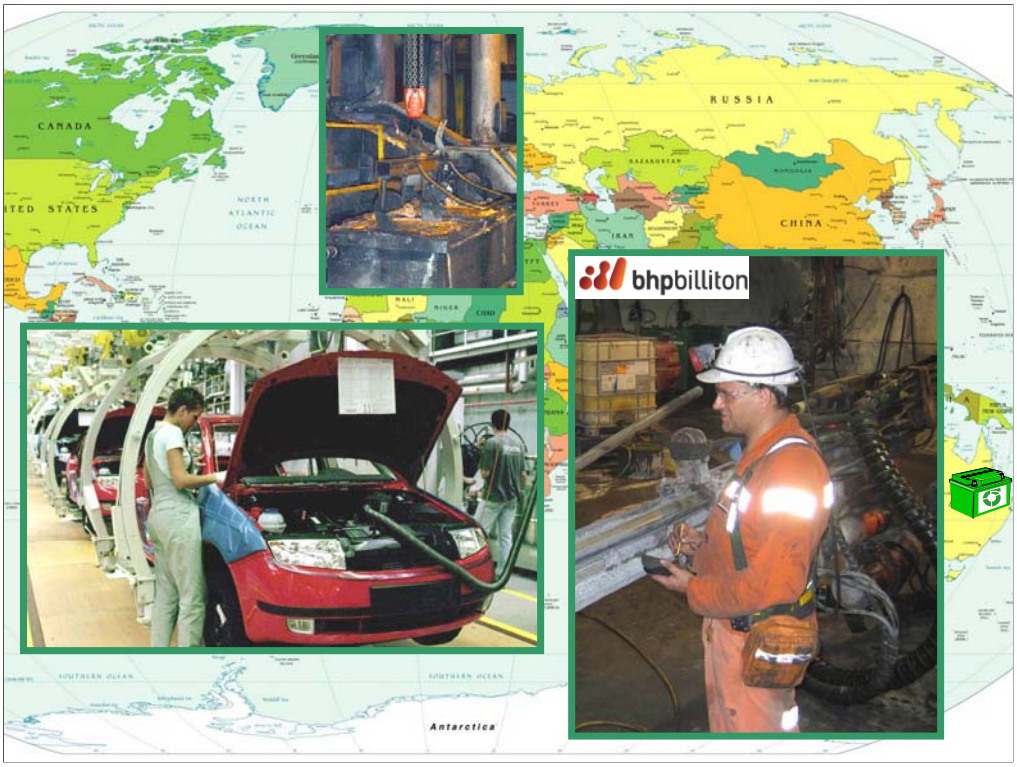
Two Companies that have been working on environmental improvement projects over the last few years with the ILMC in conjunction with UNCTAD and the SBC have agreed to participate in the Green Lead Pilot Program. They are:

RAMCAR, in the Republic of the Philippines:

The RAMCAR Group is a fully integrated organization with ISO 14001 at the core of its environmental management system. Philippine Recyclers is the major secondary smelter in the Republic and supplies all the refined lead for the Group's Oriental and Motolite Battery Manufacturing Company.

The Record Group in El Salvador

Although this Company is not ISO 14001 Certified, it has a comprehensive environmental management policy and is fully integrated with the Record Battery Manufacturing Plant on the same site as the battery recycler, Baterias de El Salvador.



Green Lead and the Developed World

Amongst the OECD countries, the BHP Billiton Lead Mine at Cannington in Queensland, Australia has asked to participate in the Pilot scheme to represent the mining sector, but the Green Lead Working Group are still looking for a Primary Smelter and a major battery user such as one of the multi-national car manufacturers.

We are optimistic that we will find the additional partners we seek to complete the life cycle for the Pilot Programs.

Note: The photograph of the car assembly plant is reproduced with the permission of the European Commission (Epa Photo/Ctk/Libor Zavoral)

Green Lead and the Developing World

At the London Workshop last week the Green Lead Working Group presented to the delegates and the participants in the Pilot Programs the Green Lead Manual containing the draft Standards, the Audit Procedures and the methodologies to be adopted to maintain continuous improvement.

The delegates also set out and agreed a series of Targets and Milestones for those participating in the Pilot Programs. The targets included establishing communication links in the product chain and determining deficiencies in the recycling loop. Notable milestones were the allocations for the initial site assessments and the commencement of the training schedules for the application of Green Lead standards.

As you would expect in a multi-stakeholder initiative, environmental and community groups from the Philippines and El Salvador, and international NGOs, including representation from the World Wildlife Fund for Nature, were present at the London Workshop. Terms of reference for their participation in the Pilot Programs were agreed in principle and also for a wider public engagement initiative.

Green Lead Standards

Now despite all this good news, no doubt some might be thinking, "What is the difference between Green Lead and other Standards?"

Well, Green Lead is comprehensive and holistic, embracing all that ISO 14001 and OHSAS 18001 measures so that it covers not only:

- Environmental Management Systems
- Safety……and
- Hygiene

But also:

- Recycling Procedures
- Sustainable Resource Strategies that includes Site Abatement
- Employment Practices……and
- Outreach Activities, including Customer Education and Advice

Where limit values are required, for say, occupational lead restriction, lead in air levels and so on, the Green Lead Standards have adopted either the prevailing national legislation or international agreed protocols or conventions, which ever is the most appropriate. Whilst this may appear somewhat vague, it has to be borne in mind that in the Product Chain there may be a series of differing national regulations applicable to the Lead Industry and one of the tasks for the Pilot Studies will be to decide how common values will be determined.

Green Lead Standards – Benefits

Unlike other standards, Green Lead not only sets out the criteria for each element, but also provides helpful guidance to meet the standards. In many instances within the body of the text there will be a number of options or examples of best practice that can be considered by potential Green Lead partners in order to achieve compliance.

The way the Green Lead Standards are applied and monitored throughout the product chain also promotes:

- The sharing of good ideas through use of the Corrective Action Model,
- Battery recycling through better understanding by users

and

- Raises the levels of social awareness.

Adherence to the Green Lead Standards and keeping used lead acid batteries within the Green Lead Certified community severely restricts the availability of used lead acid batteries to the informal sector, thereby reducing their activity levels and the adverse impacts on population health and the environment.

Green Lead Standards – Currently Available

Until the completion of the Pilot Programs all Green Lead Standards will be in a draft format and subject to reviews, revisions and additions.

Currently available for use in the Pilot Programs are the following draft standards:

1. *Medical surveillance – Blood Leads*
2. *Solid Waste Management*
3. *Effluent treatment and discharges*
4. *Emission Control Systems*
5. *ULAB Collection, transport and shipping*
6. *Battery Labels*
7. *Public Communications and awareness*
8. *Site Sustainability*
9. *Community Outreach*

All of these Standards are available in English and Spanish and can be downloaded from the Green Lead web site. During the course of the Pilot Programs more draft Standards will be added to the Green Lead Manual and uploaded to the Green Lead web site for use, discussion and comments.

Green Lead and the EPA

The Green Lead Working Group believe that management of the chain of custody for lead acid batteries will improve recovery rates for ULAB and considerably reduce the supply of ULAB to the informal sector. The environmental and health benefits to many countries in the world without a developed infrastructure for LAB management are potentially enormous.

The Green Lead Working Group shares the aims and objectives of the EPA in their desire to manage ULAB in an environmentally sound manner in order to minimize risks to the environment and populations.

The Green Lead Working Group would like to work in partnership with the EPA in the development of a “holistic” approach to lead acid battery management and the environmentally sound management of ULAB.

The Green Lead Working Group feel that the concept and benefits of managing the Chain of Custody through the Green Lead program can be demonstrated through selected Pilot Programs with partners such as RAMCAR in the Philippines and the Record Group in El Salvador and possibly one or two companies amongst the G7 nations. The BHP Billiton Lead Mine at Cannington in Australia has already offered to participate in a Pilot Scheme and the Ford Motor Company has shown considerable interest in adding Green Lead to its new developments.

The Green Lead Working Group trust that the EPA will see an opportunity to work in partnership with a multi-stakeholder group that includes leading NGOs, multi-national corporations and the lead industry to develop a concept of Product Stewardship that will lead the way for other commodities and products.