


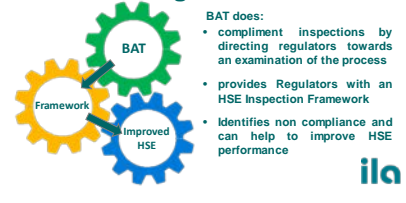



BAT Training Webinar Workshop

Notes for the Use and Application of the Benchmarking Assessment Tool

Slide	Slide	Notes
2		<p>The Use and Application of the Benchmarking Assessment Tool</p> <p>Known as the BAT</p>
3		<p>When you read the title of the presentation you will undoubtedly be asking yourself:</p> <ul style="list-style-type: none">• “Why do we want a Benchmarking Assessment Tool?”• “What is a Benchmarking Assessment Tool?”• “What is the relevance of the Benchmarking Assessment Tool to the Environmentally Sound Management of Used Lead Acid Batteries?” <p>These are perfectly valid questions.</p>
4	<p>Benchmarking Assessment Tool</p>  <p>ila</p>	<p>First, and in response, let me state what BAT is not.</p> <ul style="list-style-type: none">• BAT is not a substitute for Quantitative Sampling of emissions, discharges and occupational exposure.
5	<p>Benchmarking Assessment Tool</p>  <p>ila</p>	<p>However, BAT does:</p> <ul style="list-style-type: none">• compliment regulatory inspections by directing the regulators towards an examination of the process rather than just the outputs.• provide an Inspection Framework for Regulators and the HSE criteria necessary for a sustainable Lead Industry.• improve HSE performance by regulators and Industry in a constructive manner based on process deficiencies and not output irregularities.
6	<p>Benchmarking Assessment Tool</p>  <p>ila</p>	<p>I want to say that I do sympathise with regulators who are expected to be experts in 4,000 or even 6,000 different industrial processes and have the budgets necessary to purchase monitoring equipment for every circumstance. The BAT process assists regulators by taking them through an inspection process that acts as an “expert eye” for HSE.</p>

7 -10

ESM Matrix for ULAB Recycling...		
Activity	Process	ESM
ULAB Collection	Closed Loop	ULAB Undrained
Transportation	Plastic Container	Leak Proof
Temporary Storage	Under Cover	No Leakage
ULAB Breaking	Saw/Hammer Mill	Not Manual
Electrolyte	Neutralisation	No Discharge
Recycling	Ventilated Smelting	Emission Control
By- Products	Inert Products	No Hazardous Waste

ila

Nevertheless, before I explain how the BAT process can be applied, let us just summarise the main criteria for ESM.

- For ULAB Collection, we want a closed loop system with all the batteries returned to a smelter complete with electrolyte
- Ideally for the transport of ULAB, a leak proof container or at least shrink wrapped and palletised
- Any temporary storage should be under cover to minimise leaking issues
- Breaking must never be manual, but can be undertaken using a semi-automated battery saw or a hammer mill breaker
- Electrolyte must be collected, neutralised and converted to a saleable product to eliminate any effluent discharge
- Any smelting operations must be ventilated to a filter plant
- Any by-products produced should be converted to inert saleable products

11,12 **Observation and Measurement**

Does the regulator just Observe and Measure?



ila

The next question for us in the 21st century is, “Does the regulator just observe and measure?”

13 **Assessing ESM**

The questions for the regulators are :

- Can you evaluate performance?
- Can you identify problems?
- Can you make recommendations to improve the ESM of ULAB?

ila

Well the answer is in so many emerging economies that the regulator does neither at present..... But, surely for effective regulation the questions for the regulators are:

- Can you evaluate performance?
- Can you identify problems?
- Can you make recommendations to improve the ESM of ULAB recycling?

14 **Observation and Measurement**

Does the regulator just Observe and Measure?



What if the Regulator could identify problems and help to resolve them?

ila

What would be the outcome be if regulators could not only identify problems, but help to resolve them?

This is where the BAT process opens a new chapter for regulators monitoring the Lead Industry.

15 **Benchmarking Assessment Tool**

✓ *Comprehensive and easy to use*



The BAT is particularly suitable because it is:

✓ Comprehensive and easy to use

16 **Benchmarking Assessment Tool**

These are the only assessment aids required:



✓ The only items of equipment necessary to complete a BAT inspection is a pH test kit and a hand-held anemometer, and both items are normally given to delegates attending an ILA benchmarking training workshop, although this is not possible with a Webinar

17,18 **Basel Convention**



✓ Consistent with the Basel Convention Technical Guidelines and the accompanying Training Manual

19,20 **Benchmarking Assessment Tool**

2 of 5 - ULAB Collection and Supply Points

No.	ULAB Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Most drained	A few drained	Complete
4	How are the ULAB stored?	Site	Plastic case	Automotive	Industrial
5	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Packaged & stored
7	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Packaged in the open	Under cover	Packaged & under cover
8	How are ULAB collected transported to the recycling plant?	Bicyclist/cart	Open truck	Closed truck/van	Licensed truck/van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Puffball/wrapped	As C with any broken ULAB in a leak proof container

✓ In the form of a questionnaire

21.22 **Benchmarking Assessment Tool**

2 of 5 - ULAB Collection and Supply Points

No.	ULAB Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Most drained	A few drained	Complete
4	How are the ULAB stored?	Site	Plastic case	Automotive	Industrial
5	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Packaged & stored
7	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Packaged in the open	Under cover	Packaged & under cover
8	How are ULAB collected transported to the recycling plant?	Bicyclist/cart	Open truck	Closed truck/van	Licensed truck/van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Puffball/wrapped	As C with any broken ULAB in a leak proof container

✓ Identifies good practices and those that are not so good by highlighting the good practises in Green

23 **Benchmarking Assessment Tool**

- ✓ *Comprehensive and easy to use*
- ✓ *Consistent with the Basel Technical Guidelines*
- ✓ *In the form of a questionnaire*
- ✓ *Identifies Good Practices and Not So Good*
- ✓ *Applicable to the whole Life Cycle*



✓ Applicable to the whole life cycle

24,26 **Benchmarking Assessment Tool**

Regulatory vs Benchmarking
Specific - Holistic



Let's examine the differences between a regulatory and a BAT inspection.

- A regulatory inspection is specific targeting emissions or discharges, but a BAT inspection is holistic covering all aspects of HSE performance.

27,28 **Benchmarking Assessment Tool**

<u>Regulatory</u>	vs	<u>Benchmarking</u>
Specific	-	Holistic
Single Location -		Supply Chain

- A regulator normally visits only one location, but the BAT inspection will include the whole ULAB supply chain.



29,30 **Benchmarking Assessment Tool**

<u>Regulatory</u>	vs	<u>Benchmarking</u>
Specific	-	Holistic
Single Location -		Supply Chain
Quantitative	-	Qualitative

- Regulatory inspections involve quantitative sampling and analysis, whereas the BAT inspection is qualitative.



31,33 **Benchmarking Assessment Tool**

<u>Regulatory</u>	vs	<u>Benchmarking</u>
Specific	-	Holistic
Single Location -		Supply Chain
Quantitative	-	Qualitative

- Finally, the regulatory inspection is reactive, because samples are taken, analysed and then a decision taken about any action to be imposed if one or more of the samples is outside the specification. On the other hand, the Benchmarking inspection is pro-active, because if a poor operation is observed, it can be rectified immediately.



34 **Benchmarking Assessment Tool Questions**

1. Is this an acceptable practice?
2. How would you monitor that situation?
3. Is the task or operation necessary?
4. What recommendation could improve performance?

When applying the BAT process the questions regulators must ask themselves are:

1. Is this an acceptable practice?
2. How would you monitor that situation?
3. Is the task or operation necessary?
4. What recommendations can be suggested to improve HSE performance?



35 **Benchmarking Assessment Tool**

- Benchmark Phases for ULAB Recycling
- ❖ *ULAB Collection*
 - ❖ *Temporary Storage*
 - ❖ *Packaging*
 - ❖ *Transportation*
 - ❖ *Recycling*

As I stated earlier the BAT process examines:

- ❖ ULAB Collection
- ❖ Temporary Storage
- ❖ Packaging
- ❖ Transportation
- ❖ Recycling



36 **Benchmarking Assessment Tool**

- Use of the Benchmarking Tool
- ❖ *Practical Application*
 - ✓ *Complete the Assessment Form*

Now it might seem obvious, but we need to complete the BAT form that has a series of questions in the left-hand margin and in the four columns to the right, a series of pre-determined answers that embrace the full range of practices from poor to good.



37,38 **Benchmarking Assessment Tool**

Use of the Benchmarking Tool

Practical Application

- Complete the Assessment Form
- Identify the Key Benchmarks



We also need to identify the Key Benchmarks that are in columns A, B, C and D

39,40 **Benchmarking Assessment Tool**

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
5	What happens to the ULAB collected?	Tested and recycled	Reconditioned	Sold	Package & shipped
6	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Package in the open	Under cover	Package & shipped
7	How are ULAB collected transported to the recycling plant?	@cyclekart	Open truck	Closed truck	PA C with heavy duty in a leak proof container
8	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Palleted & wrapped	Heavy ULAB in a leak proof container

2 of 5 - ULAB Collection and Supply Points



Let us select one of the questions in the section for ULAB collection and supply points.... Let us choose question 3. Now I know you might not be able to read the text, so I will enlarge it for you.

41 **Benchmarking Assessment Tool**

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
5	What happens to the ULAB collected?	Tested and recycled	Reconditioned	Sold	Package & shipped
6	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Package in the open	Under cover	Package & shipped
7	How are ULAB collected transported to the recycling plant?	@cyclekart	Open truck	Closed truck	PA C with heavy duty in a leak proof container
8	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Palleted & wrapped	Heavy ULAB in a leak proof container

2 of 5 - ULAB Collection and Supply Points



Question 3 reads, "How are the ULAB delivered? Drained of Acid or complete with Acid?"

Benchmarking Assessment Tool

Use of the Benchmarking Tool

Practical Application

- 42
- Complete the Assessment Form
 - Identify the Key Benchmarks
 - Determine Compliance with Benchmarks



Next step is to determine at what level of compliance the operation is compared to the benchmarks.

43 **Benchmarking Assessment Tool**

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
5	What happens to the ULAB collected?	Tested and recycled	Reconditioned	Sold	Package & shipped
6	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Package in the open	Under cover	Package & shipped
7	How are ULAB collected transported to the recycling plant?	@cyclekart	Open truck	Closed truck	PA C with heavy duty in a leak proof container
8	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Palleted & wrapped	Heavy ULAB in a leak proof container

2 of 5 - ULAB Collection and Supply Points



The four choices offered are, drained, some drained, a few drained or complete. For our purposes today, let us assume that the operation is good and the ULABs arrive at the smelter complete with electrolyte. So, let us place a red circle in the appropriate box.

44 **Benchmarking Assessment Tool**

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
5	What happens to the ULAB collected?	Tested and recycled	Reconditioned	Sold	Package & shipped
6	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Package in the open	Under cover	Package & shipped
7	How are ULAB collected transported to the recycling plant?	@cyclekart	Open truck	Closed truck	PA C with heavy duty in a leak proof container
8	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Palleted & wrapped	Heavy ULAB in a leak proof container

2 of 5 - ULAB Collection and Supply Points



Normally during the training workshop, I would go through every question and every possible answer, but for today we will choose just one more in this section.

Let us consider question number 8.

45 **Benchmarking Assessment Tool**

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	Are ULAB that leak separated and packed in plastic containers?	No	Sometimes	Drained first	Always
5	What happens to the ULAB collected?	Tested and recycled	Reconditioned	Sold	Package & shipped
6	How are ULAB stored while waiting for dispatch to the recycler?	In the open	Package in the open	Under cover	Package & shipped
7	How are ULAB collected transported to the recycling plant?	@cyclekart	Open truck	Closed truck	PA C with heavy duty in a leak proof container
8	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Palleted & wrapped	Heavy ULAB in a leak proof container

2 of 5 - ULAB Collection and Supply Points



"How are the ULAB collected and transported to the recycling plant?"

46

Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are ULAB delivered? Drained of acid or complete with acid?	Drained	Some drained	A few drained	Complete
4	How are the ULAB sorted?	None	Sometimes	Occasionally	Always
5	Are ULAB that has separated and packed in plastic containers?	No	Sometimes	Occasionally	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped

2 of 5 - ULAB Collection and Supply Points

The four pre-selected options are, by bicycle or hand cart, open truck, closed truck or van, or a closed licensed truck or van. For our purposes, let us assume that in keeping with the previous assessment, deliveries are also HSE compliant and the ULAB are delivered by a licensed truck or van.

47

Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are ULAB delivered? Drained of acid or complete with acid?	Drained	Some drained	A few drained	Complete
4	How are the ULAB sorted?	None	Sometimes	Occasionally	Always
5	Are ULAB that has separated and packed in plastic containers?	No	Sometimes	Occasionally	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
7	How are ULAB stored while waiting for transport to the recycler?	In the open	Package in the open	Under cover	Package & shipped
8	How are ULAB transported to the recycling plant?	Bicycle/cart	Open truck	Closed truck/van	Licensed Truck/Van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Upright	Upright with a leak proof container

2 of 5 - ULAB Collection and Supply Points

A completed BAT form for this section of the assessment, that is, collection and supply points, might look like this if all the practices observed are good.

48

Benchmarking Assessment Tool

- [Use of the Benchmarking Tool](#)
- Practical Application
 - Complete the Assessment Form
 - Identify the Key Benchmarks
 - Determine Compliance with Benchmarks
 - Repeat for each section of the Form

Having completed the first section, we move to the next section.

49

Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
2	How close is the general population to the Recycling Plant?	Next to the Plant	1 Mile	5 Kilometres	Industrial Zone
3	Is process effluent discharged from the site?	Always and untreated	Sometimes untreated	After treatment	Never
4	What happens to the battery acid drained from the ULAB?	Discharged	Treated and discharged	Collected, treated and sent to the recycling process	Collected to produce hydrogen
5	How are fumes emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	All C with full recovery
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make bricks/tiles
9	Is the site clean, tidy and free of dust, sludge and acid residues?	No	Dust and Slag only	Accepted residues only	Yes

3 of 5 - Environmental Status

Environmental Status.

50

Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
2	How close is the general population to the Recycling Plant?	Next to the Plant	1 Mile	5 Kilometres	Industrial Zone
3	Is process effluent discharged from the site?	Always and untreated	Sometimes untreated	After treatment	Never
4	What happens to the battery acid drained from the ULAB?	Discharged	Treated and discharged	Collected, treated and sent to the recycling process	Collected to produce hydrogen
5	How are fumes emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	All C with full recovery
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make bricks/tiles
9	Is the site clean, tidy and free of dust, sludge and acid residues?	No	Dust and Slag only	Accepted residues only	Yes

3 of 5 - Environmental Status

So, let us take one example, say number 3 again.

51

Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
2	How close is the general population to the Recycling Plant?	Next to the Plant	1 Mile	5 Kilometres	Industrial Zone
3	Is process effluent discharged from the site?	Always and untreated	Sometimes untreated	After treatment	Never
4	What happens to the battery acid drained from the ULAB?	Discharged	Treated and discharged	Collected, treated and sent to the recycling process	Collected to produce hydrogen
5	How are fumes emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	All C with full recovery
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make bricks/tiles
9	Is the site clean, tidy and free of dust, sludge and acid residues?	No	Dust and Slag only	Accepted residues only	Yes

3 of 5 - Environmental Status

“Is process effluent discharged from the site?”

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Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
2	How close is the general population to the Recycling Plant?	Next to the Plant	1 Mile	5 Kilometres	Industrial Zone
3	Is process effluent discharged from the site?	Always and untreated	Sometimes untreated	After treatment	Never
4	What happens to the battery acid drained from the ULAB?	Discharged	Treated and discharged	Collected, treated and sent to the recycling process	Collected to produce hydrogen
5	How are fumes emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	All C with full recovery
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make bricks/tiles
9	Is the site clean, tidy and free of dust, sludge and acid residues?	No	Dust and Slag only	Accepted residues only	Yes

3 of 5 - Environmental Status

The four options are, always and untreated, sometimes untreated, after treatment and never. Let us assume for now that effluent is never discharged from the site.

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Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What permits allow your environmental and operating licenses?	Health	Environment	Business	Other
2	Are you open to the general population in the Recycling Plant?	Always and forward	Sometimes	After treatment	Never
3	Is process effluent discharged from the site?	Checked and	Treated and	Collected, treated	Not used
4	What happens to the battery acid drained from the LEAB?	Forward to	Forward to	Forward to	Forward to
5	How are furnace emissions from the plant controlled?	No control	Forward to	Forward to	Forward to
6	If your plant is using a Blast Furnace – Do you have a Blast Filter?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace – Do you and iron to the charge material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a	Treat and dispose	Treated and sold	Used to make
9	Is the site clean, tidy and free of dust, slag and ash residues?	No	Dust and Slag	Yes	Yes

3 of 5 – Environmental Status



A completed assessment form for a good operation in this section would look like this.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	All personnel
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with works clothing?	No	Overalls	Overalls, but	Overalls, but
7	If so, how often are the clothes washed and changed?	Never	Every month	Every week	Every shift
8	Are eating and process areas segregated?	No	Eating on site is not permitted	Yes, but not ventilated	Yes with HEPA Air Conditioning
9	Are there showers on site for use by the operators?	No, but there is a washroom	Yes, one shower	Yes, but it is not compulsory	Yes and it is compulsory

4 of 5 – Occupational Lead Exposure



Moving onto the next section, Occupational Lead Exposure.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	All personnel
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with works clothing?	No	Overalls	Overalls, but	Overalls, but
7	If so, how often are the clothes washed and changed?	Never	Every month	Every week	Every shift
8	Are eating and process areas segregated?	No	Eating on site is not permitted	Yes, but not ventilated	Yes with HEPA Air Conditioning
9	Are there showers on site for use by the operators?	No, but there is a washroom	Yes, one shower	Yes, but it is not compulsory	Yes and it is compulsory

4 of 5 – Occupational Lead Exposure



Let us examine the options for question number 8.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	All personnel
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with works clothing?	No	Overalls	Overalls, but	Overalls, but
7	If so, how often are the clothes washed and changed?	Never	Every month	Every week	Every shift
8	Are eating and process areas segregated?	No	Eating on site is not permitted	Yes, but not ventilated	Yes with HEPA Air Conditioning
9	Are there showers on site for use by the operators?	No, but there is a washroom	Yes, one shower	Yes, but it is not compulsory	Yes and it is compulsory

4 of 5 – Occupational Lead Exposure



“Are the eating and process areas segregated?”

57

Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	All personnel
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with works clothing?	No	Overalls	Overalls, but	Overalls, but
7	If so, how often are the clothes washed and changed?	Never	Every month	Every week	Every shift
8	Are eating and process areas segregated?	No	Eating on site is not permitted	Yes, but not ventilated	Yes with HEPA Air Conditioning
9	Are there showers on site for use by the operators?	No, but there is a washroom	Yes, one shower	Yes, but it is not compulsory	Yes and it is compulsory

4 of 5 – Occupational Lead Exposure



The choices are, no, eating on site is not permitted, yes but the canteen is not ventilated or, yes with a HEPA filtered air-conditioned canteen or mess room. For our purposes today, I am going to circle the option with the HEPA filtered A/C Canteen.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	All personnel
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with works clothing?	No	Overalls	Overalls, but	Overalls, but
7	If so, how often are the clothes washed and changed?	Never	Every month	Every week	Every shift
8	Are eating and process areas segregated?	No	Eating on site is not permitted	Yes, but not ventilated	Yes with HEPA Air Conditioning
9	Are there showers on site for use by the operators?	No, but there is a washroom	Yes, one shower	Yes, but it is not compulsory	Yes and it is compulsory

4 of 5 – Occupational Lead Exposure



Again, for our purposes now, let us assume there is full compliance with the best practices.

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and available to all
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspections but not audits	Annually
3	Does every employee & contractor undergo a Safety Induction?	No	Employees only	Contractors only	Everybody
4	Have fall interventions been carried out for each operator?	No	Only for the site	Only for the site	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are recorded	Yes
6	Is every accident investigated?	No	Yes by the plant manager	Yes by the plant manager	Yes by the plant manager
7	Is there a Permit to Work and LockOut system for maintenance?	No	Permit to work only	Lock-off only	Yes
8	What are the Procedures & Protocols are in place?	None	There are no extinguishers	There are extinguishers	Extinguishers & buckets
9	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and available to all

5 of 5 – Safety



Finally, we move to Safety. Whilst the focus with Lead plants is environmental and occupational exposure, plants must operate in a safe manner and the holistic approach of the BAT process takes full account of the main aspects of safe working associated with pyrometallurgical recycling.

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety Induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the EA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are recorded	Yes in the accident book
6	Is every accident investigated?	No	Yes, by the plant manager	Yes, by the insurance company	Yes in the investigation & report
7	Is there a Permit to Work and LockOff system for maintenance?	No	Permit to work only	Lock-off only	Yes with keys and locks
8	What fire Procedures & Procedures are in place?	None	There are fire extinguishers	There are sand buckets	There are extinguishers & sand buckets
9	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website

5 of 5 – Safety

Taking one example, say number 7.

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety Induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the EA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are recorded	Yes in the accident book
7	Is there a Permit to Work and LockOff system for maintenance?	No	Permit to work only	Lock-off only	Yes with keys and locks
8	What fire Procedures & Procedures are in place?	None	There are fire extinguishers	There are sand buckets	There are extinguishers & sand buckets
9	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website

5 of 5 – Safety

“Is there a permit to work and lock off system for maintenance?”

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety Induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the EA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are recorded	Yes in the accident book
7	Is there a Permit to Work and LockOff system for maintenance?	No	Permit to work only	Lock-Off only	Yes with keys & locks
8	What fire Procedures & Procedures are in place?	None	There are fire extinguishers	There are sand buckets	There are extinguishers & sand buckets
9	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website

5 of 5 – Safety

The options are, no, a permit to work only, lock-off only, and yes, with locks and keys. For our purposes today, let us circle box number 4.

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety Induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the EA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are recorded	Yes in the accident book
6	Is every accident investigated?	No	Yes, by the plant manager	Yes, by the insurance company	Yes in the investigation & report
7	Is there a Permit to Work and LockOff system for maintenance?	No	Permit to work only	Lock-off only	Yes with keys and locks
8	What fire Procedures & Procedures are in place?	None	There are fire extinguishers	There are sand buckets	There are extinguishers & sand buckets
9	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the website

5 of 5 – Safety

In keeping with good practices, a completed safety assessment would look like this.

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Benchmarking Assessment Tool

Use of the Benchmarking Tool

Practical Application

- ✓ Complete the Assessment Form
- ✓ Identify the Key Benchmarks
- ✓ Determine Compliance with Benchmarks
- ✓ Identify Non-Compliance Issues
- ✓ Prepare recommendations to improve

The final stage of the BAT assessment is to review the answers circled on the form to identify any answers not in a green box, that is, practices that do not comply with the good practices outlined in the Basel Technical Guidelines, the accompanying training manual or the ILA good practice guidelines.

Having identified the non-compliance issues, the next step in the process is to prepare a list of recommendations to improve the HSE performance.

We did not have any in the examples selected, but this is not normally the case. So now we are familiar with the methodology for the BAT inspection, let us return to the form and select different answers to the five questions chosen earlier and answers more typical of the observations we normally make during a BAT site inspection.

65

Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
3	How are the ULAB delivered? Drained of Acid or complete with Acid?				
5	An ULAB that has separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
7	How are ULAB stored while waiting for disposal to the recycler?	In the open	Package in the open	Under cover	Package & shipped
8	How are ULAB collected transported to the recycling plant?	Bicycle/cart	Open truck	Closed truck/van	Licensed truck/van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Trapped & wrapped	As C with heavy-duty & leak proof container

2 of 5 - ULAB Collection and Supply Points

In the section for ULAB collection and supply points.

In response to question 3.

66

Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
	What Used Lead Acid Batteries (ULAB) are being collected?	Drained	Some Drained	A few drained	Complete
5	An ULAB that has separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
7	How are ULAB stored while waiting for disposal to the recycler?	In the open	Package in the open	Under cover	Package & shipped
8	How are ULAB collected transported to the recycling plant?	Bicycle/cart	Open truck	Closed truck/van	Licensed truck/van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Trapped & wrapped	As C with heavy-duty & leak proof container

2 of 5 - ULAB Collection and Supply Points

Let us circle "Some Drained".

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Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
	What Used Lead Acid Batteries (ULAB) are being collected?	Drained	Some Drained	A few drained	Complete
5	An ULAB that has separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
7	How are ULAB stored while waiting for disposal to the recycler?	In the open	Package in the open	Under cover	Package & shipped
8	How are ULAB collected transported to the recycling plant?	Bicycle/cart	Open truck	Closed truck/van	Licensed truck/van
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Trapped & wrapped	As C with heavy-duty & leak proof container

2 of 5 - ULAB Collection and Supply Points

and where we want to be is, "Complete".

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Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	How are the ULAB stored?	Bin	Plastic cover	Acid neutral	Industrial
5	An ULAB that has separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
8	How are ULAB collected transported to the recycling plant?				
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Trapped & wrapped	As C with heavy-duty & leak proof container

2 of 5 - ULAB Collection and Supply Points

Considering question 8 again....

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Benchmarking Assessment Tool

No.	Collection and Supply Points	A	B	C	D
1	What Used Lead Acid Batteries (ULAB) are being collected?	Car	Motorcycle	UPS/Security	Industrial
2	How are ULAB collected?	Citizens	Retailers	Garages	Scrap Dealer
3	How are the ULAB delivered? Drained of Acid or complete with Acid?	Drained	Some drained	A few drained	Complete
4	How are the ULAB stored?	Bin	Plastic cover	Acid neutral	Industrial
5	An ULAB that has separated and packed in plastic containers?	No	Sometimes	Drained first	Always
6	What happens to the ULAB collected?	Tested and recharged	Reconditioned	Sold	Package & shipped
8	How are ULAB collected transported to the recycling plant?				
9	How are the ULAB packed onto or into the vehicle for transport to the recycling plant?	Loose	Loose and upright	Trapped & wrapped	As C with heavy-duty & leak proof container

2 of 5 - ULAB Collection and Supply Points

Let us assume that ULABs were observed arriving in an "Open Truck"..... and we want to be in the Licensed Truck/Van box.

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Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
3	Is process effluent discharged from the site?				
5	How are furnace emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	As C with a leak proof container
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes		
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes		
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make truck/tires
9	Is the site clean, tidy and free of dust, slag and acid residues?	No	Dust and Slag only	As C with a leak proof container	Yes

3 of 5 - Environmental Status

Returning to Question 3 for the Environmental Status....

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Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What agencies issue your environmental and operating licenses?	Health	Environment	Business	Other
3	Is process effluent discharged from the site?	Always untreated	Sometimes untreated	After treatment	Never
5	How are furnace emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All processes are vented to a baghouse	As C with a leak proof container
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes		
7	If your plant is using a Rotary Furnace - Do you add iron to the charge Material?	No	Yes		
8	What do you do with your furnace residues?	Dispose of in a local tip	Treat and dispose of in a local tip	Treated and sold for hard core	Treated and used to make truck/tires
9	Is the site clean, tidy and free of dust, slag and acid residues?	No	Dust and Slag only	As C with a leak proof container	Yes

3 of 5 - Environmental Status

Let us assume that we observed that the effluent from the site is discharged without treatment...

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Benchmarking Assessment Tool

No.	Environmental Status	A	B	C	D
1	What permits do you have your environmental and operating licenses? Have you had the general population in the area notified?	Health	Environment	Business	Other
5	How are furnace emissions from the plant controlled?	No control	Furnace is vented to a baghouse	All permits are verified to a baghouse	As C only, all work inspected
6	If your plant is using a Blast Furnace - Do you have a Scrubber Unit?	No	Yes	Yes	Yes
7	If your plant is using a Rotary Furnace - Do you have a Charge Material?	No	Yes	Yes	Yes
8	What do you do with your furnace residues?	Dispose of in a local pit	Treat and dispose of in a local pit	Treated and sold for road work	Material sent used to make bricks/ tiles
9	Is the site clean, tidy and free of dust, slag and acid residues?	No	Dust and Slag only	Acid residues only	Yes

3 of 5 – Environmental Status

...and as a minimum standard we want the battery acid neutralised prior to discharge.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	Yes
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Occupational Nurse appointed to check the health of the workers? Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with work clothes?	No	Overalls	Overalls, hat	Overalls, hat, boots & gloves

8 Are eating and process areas segregated? operators? washroom compulsory

4 of 5 – Occupational Lead Exposure

Turning now to Occupational Exposure.

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Benchmarking Assessment Tool

No.	Occupational Lead Exposure	A	B	C	D
1	Is there a hygiene and respirator policy?	No	Respirator only	Hygiene only	Yes
2	Are respirators worn by all personnel in the operating areas?	No	Some do	Only operating personnel	All personnel
3	Is there a Medical Officer and/or Occupational Nurse appointed to check the health of the workers?	No	On request	Nurse only	Yes
4	Occupational Nurse appointed to check the health of the workers? Are the occupational Lead in Blood levels checked?	Never	Annually	Twice annually	Every quarter
5	Do you communicate health risks to employees?	Never	If asked	Induction	Regularly
6	Are operating personnel issued with work clothes?	No	Overalls	Overalls, hat	Overalls, hat, boots & gloves

3 Are there showers on site for use by the operators? No, but there is a washroom Yes, one shower Yes, but not compulsory Yes and a shower

4 of 5 – Occupational Lead Exposure

Let us assume that we noted the operators were provided with a canteen, but it was not ventilated.

Ideally, we should be in the HEPA filtered box.

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the web site
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the BSA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are reported	Yes to all

7 Is there a Permit to Work and LockOff system for maintenance? or maintenance? None There are the extinguishers There are sand buckets

5 of 5 – Safety

Finally, we return to Safety and let us assume that....

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Benchmarking Assessment Tool

No.	Safety	A	B	C	D
1	Is there a Safety Policy published and available for inspection?	No	In a safety folder	On display on site	On display and on the web site
2	Are there regular Safety Inspections & Audits?	No	Sometimes after an accident	Inspectors but no audits	Annually
3	Does every employee & contractor undergo a Safety induction?	No	Employees only	Contractors only	Everybody
4	Have risk assessments been carried out for each operation?	No	Only for the BSA	Only for ISO 9001	Yes
5	Is there a record of every accident on site?	No	There is an accident book	Some accidents are reported	Yes to all

9 Are there showers on site for use by the operators? No, but there is a washroom Yes, one shower Yes, but not compulsory Yes and a shower

5 of 5 – Safety

..... the company inspected only had a permit to work system.... and the standard is, full lock-off with keys.

77

BAT Recommendations

- Short Term – Minimum or no cost
- Short/Medium Term – Low Cost
- Long Term – Capital Investment

Once the deviations from the norm for the HSE performance are identified, then recommendations to improve performance can be made and they are best divided into three categories:

- Short Term – where there is minimum or no cost improvements to be made.
- Short to Medium Term – where the improvements can be made with a small investment
- Long Term – where serious planning and capital investment is required to make the improvements

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BAT Recommendations

1. Short Term – Minimum or no cost
 - ❑ Only purchase ULAB complete with electrolyte
 - ❑ License the ULAB collection truck
2. Short/Medium Term – Low Cost
3. Long Term – Capital Investment



In the examples we have examined the recommendations would be as follows:

1. Short Term:
 - a. Only purchase ULAB complete with electrolyte
 - b. License the ULAB collection truck

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BAT Recommendations

1. Short Term – Minimum or no cost
 - ❑ Only purchase ULAB complete with electrolyte
 - ❑ License the ULAB collection truck
2. Short/Medium Term – Low Cost
 - ❑ Neutralise & filter electrolyte prior to discharge
 - ❑ Install a +ve pressure HEPA filter for Canteen
 - ❑ Introduce a Lock-Off system for isolation
3. Long Term – Capital Investment



2. Short to Medium Term:
 - a. Neutralise and filter the electrolyte prior to discharge
 - b. Install a positive pressure HEPA filter system for the Canteen
 - c. Introduce and implement a Lock-Off isolation system for maintenance

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BAT Recommendations

1. Short Term – Minimum or no cost
 - ❑ Only purchase ULAB complete with electrolyte
 - ❑ License the ULAB collection truck
2. Short/Medium Term – Low Cost
 - ❑ Neutralise & filter electrolyte prior to discharge
 - ❑ Install a +ve pressure HEPA filter for Canteen
 - ❑ Introduce a Lock-Off system for isolation
3. Long Term – Capital Investment
 - ❑ Build an ETP and operate a closed loop system



3. Long Term:
 - a. Design and build an ETP to operate a closed loop system such that no effluent is discharged to the environment.

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Now, where has the BAT system been applied?

- ❖ Costa Rica to convince the government that the Lead smelter was HSE sound.

85



- ❖ Indonesia as part of the UNEP global initiative for the ESM of ULAB recycling

86



- ❖ Kenya for the development of an environmentally sound recycling plant for used Lead Acid Batteries

87



- ❖ Ghana, where elements of the BAT process have now been incorporated into the licensing process

88



❖ Colombia, where the regulators required an inspection protocol and tool

89



❖ Nigeria to assess the HSE performance of a new Lead smelter in that absence of any qualified inspectors or specialist monitoring equipment

90



❖ China, where there is also a BAT for Lead Battery manufacturing.

91



❖ Tanzania to assist the regulators with their inspection protocols

92



❖ Three states in India to provide an inspection tool for regulators

93



❖ Fiji, to improve the HSE performance at a Lead Acid Battery manufacturing plant and a ULAB recycling operation

94



❖ Ethiopia, as an integral part of the Government's strategy for Lead Risk Reduction

95 **Benchmarking Assessment Tool**

❖ **Conclusions:**

- ✓ *Easy to use, fast and pro-active*
- ✓ *Can identify HSE issues and problems*
- ✓ *Process is qualitative & based on observation*
- ✓ *Non – confrontational and drives ESM*
- ✓ *Could be a useful indicator of ESM*



The Conclusions of delegates that have been trained in the use and application of the BAT process are that it is:

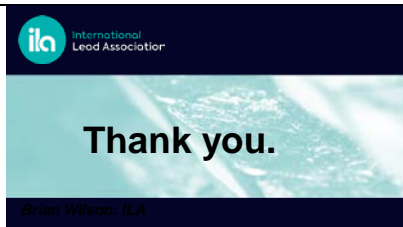
- ✓ Easy to use, fast and pro-active
- ✓ Able to identify HSE issues and problems of non-compliance with good practices.
- ✓ Based on observations and is qualitative
- ✓ Non-confrontational, because no quantitative measurements are taken.
- ✓ A useful indicator of ESM and HSE performance

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This is the Certificate and License to use and apply the BAT process presented to all candidates that attend the practical workshop.

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Thank you