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The Belgium Used Battery Recycling Program

Recycling Council of British Columbia
Vancouver, June 2008

Rob Sinclair



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Presentation

- EU battery directive
- Belgium battery history
- The Belgian program
 - Funding
 - Collection
 - Communications
 - Sorting
 - Recycling
 - Monitoring, performance & costs
 - Lessons learned





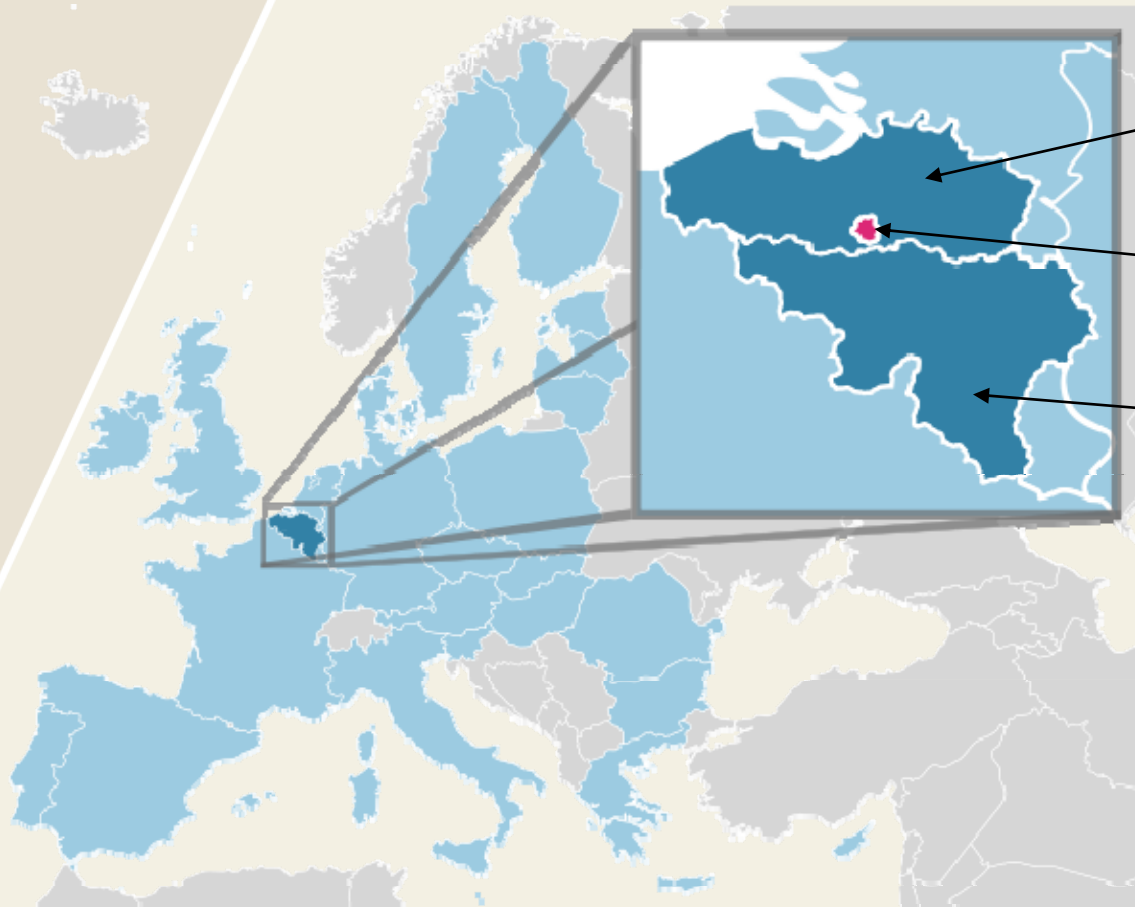
EU Battery Directive

- 1991 – EU battery directive developed
- 2006 – Directive came into force with binding targets
 - Collection rates: 25% by 2012; then 45% by 2016
 - Recycling rates: 50% for general consumer batteries; 65% for lead acid, 75% for Ni-Cd
- 2008 – Member states transpose directive into national laws or establish voluntary and enforceable agreements with industry
- 2009 – collection and recycling schemes must be launched





Belgium, European Union



Flanders

Brussels

Wallonia

10.3 M pop.
30,528 km²
344 inhab/km²



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Belgian Battery History

- 1993 – EcoTax identified as an option for batteries (and other products)
 - 0.50 EUR tax on each battery unit
 - Equivalent to 20-30% of unit value
- 1995 – BEBAT formed to negotiate with govt.; deposit system considered = impractical
- 1996 – five year agreement reached between industry and government.
 - BEBAT assumes full producer responsibility
 - All portable batteries included
 - Collection target: 40% in year 1 and 50% in year 2





Fees and Program Funding

- Program costs passed onto consumer
- Following industry/govt. consultation, the visible point of sale fee set at 0.10€ or 4 BEF per battery (20% of the proposed EcoTax)
- 3 years later, fee increased to 0.1239€ or 5 BEF
- Now considered to be too high, likely to drop to 0.07-0.08€ per battery
- In 2006, sales = 147 M units = 18.2 M€ funds for program to service 10.3 M people





Collection

- 3 months after 1996 launch, BEBAT had established 10,000 collection points; by 2008 this no. had doubled to 20,000
 - Specialized shops, supermarkets, schools, municipal container parks, hospitals, some industrial facilities
 - 20% of the locations collect 80% of the batteries





Battery collection network

Venue types, number and weight of batteries collected, 2006

Venue types	Tonnes	No. venues	Kg/venue
Heavy ind. users	683	1,600	427
Container parks	585	550	1,064
Schools	610	2,600	235
Shops	439	12,850	34
Other	122	250	488
Totals	2,439	17,850	137





Collection boxes



Retailer or institutional box rack



Municipal container park



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Other collection containers

- Full 15 litre boxes; 60 L drums; 650 L pallet boxes



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Collection vans

- SITA collects the batteries on behalf of BEBAT
- 6 vans, 1000 kg per load
- 25 service pickups per day
- Auto-routing establishes service frequency
 - Once every 2, 4 or 6 wks
 - Or upon request





Communication campaign

- 5 M€ annual budget
- 6 staff check all 20,000 collection points constantly (placement, cleanliness, Q&A's)
- Lotteries, games, contests, program branding with cartoons, videos, ads, etc.
- 1 small box and 3 small plastic collection bags mailed to each household once/year
 - On each bag is room for a name and address to be entered into lotteries for prizes such as hybrid cars, digital cameras or laptops



Promotional materials

INFORMATIONS GENERALES POUR POINTS DE COLLECTE
PILES COLLECTEES **NATURE RESPECTEE**

LA BOÎTE MAGIQUE II
 Version 2002
 Collecte, tri et recyclage des piles usagées en Belgique
 Madame, Monsieur

Info RECYCLAGE & winnaars/gagnants TOMBOLA
Hoog tijd om uw lege batterijen terug te brengen.
BEBAT zorgt voor recyclage.
Il est grand temps de rapporter vos piles hors d'usage.
BEBAT se charge de les recycler.

2 TOYOTA PRIUS HYBRID TE WINNEN
60 DIGITALE FOTOSTELLEN HP PHOTOSMART
2 TOYOTA PRIUS HYBRID A GAGNER
60 APPARELS PHOTO NUMERIQUES HP PHOTOSMART



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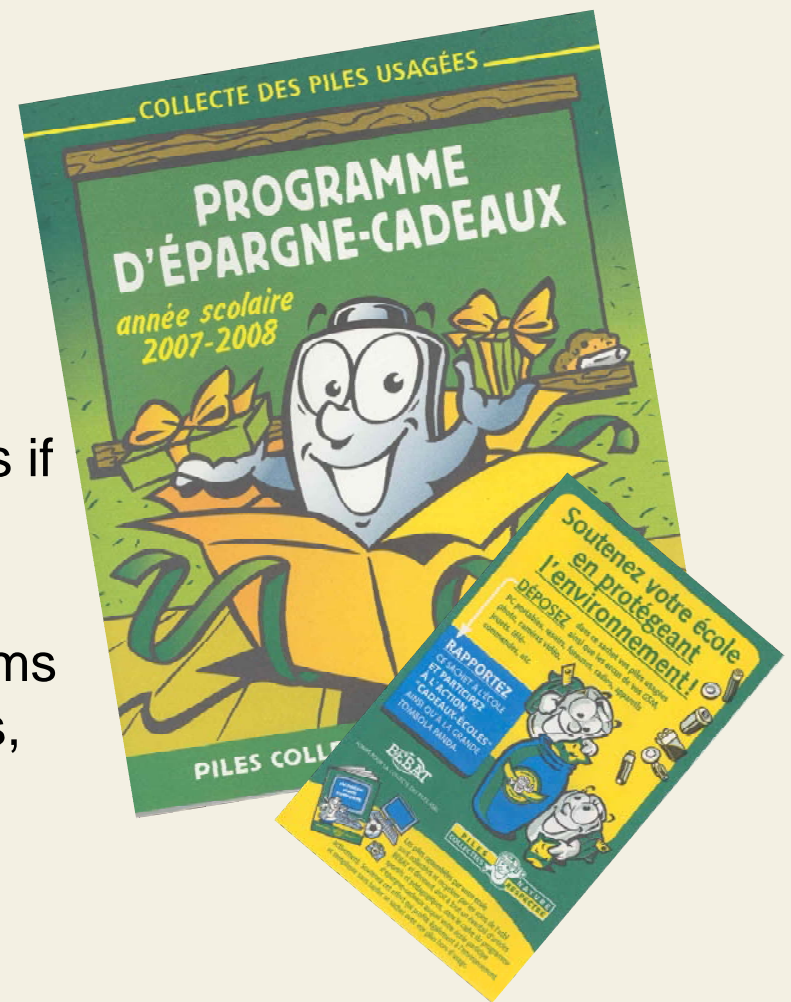
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School program

- 4 staff are dedicated towards deliver of battery recycling education in the schools
- Incentives at work
 - 1 kg of batteries = 1 pt (20 pt bonus if service call made via BEBAT web site)
 - Catalogue of educative or sport items (computer equipment, microscopes, soccer balls, etc.)





Battery sorting

- 3 consolidation depots in Belgium including the main sorting facility in Beerse (Flanders)



The SITA facility





SITA sorting facility

Manual



The future?



Automated



info@eurobatri.com



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Batteries (1)

Alkaline



Small sealed lead



Button cell



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Batteries (2)

Lithium ion
Nickel cadmium

Metal hydride
(no image)



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Recycling options

- BEBAT decides where the collected/sorted batteries are sent for recycling:
 - Rechargeable units go to S.N.A.M. (France)
 - <http://www.snam.com/>
 - Button cells go to INDAVER, (Antwerp, B)
 - <http://www.indaver.be>
 - SSL units go to CAMPINE (Beerse, B)
 - <http://www.campine.be>
- 80% =
 - Alkaline & Zn-C go to REVABAT (Liege, B)
 - <http://www.revatech.be/>
 - Lithium-ion go to UMICORE (Hoboken, B)
 - <http://www.umicore.com/>





REVABAT facility



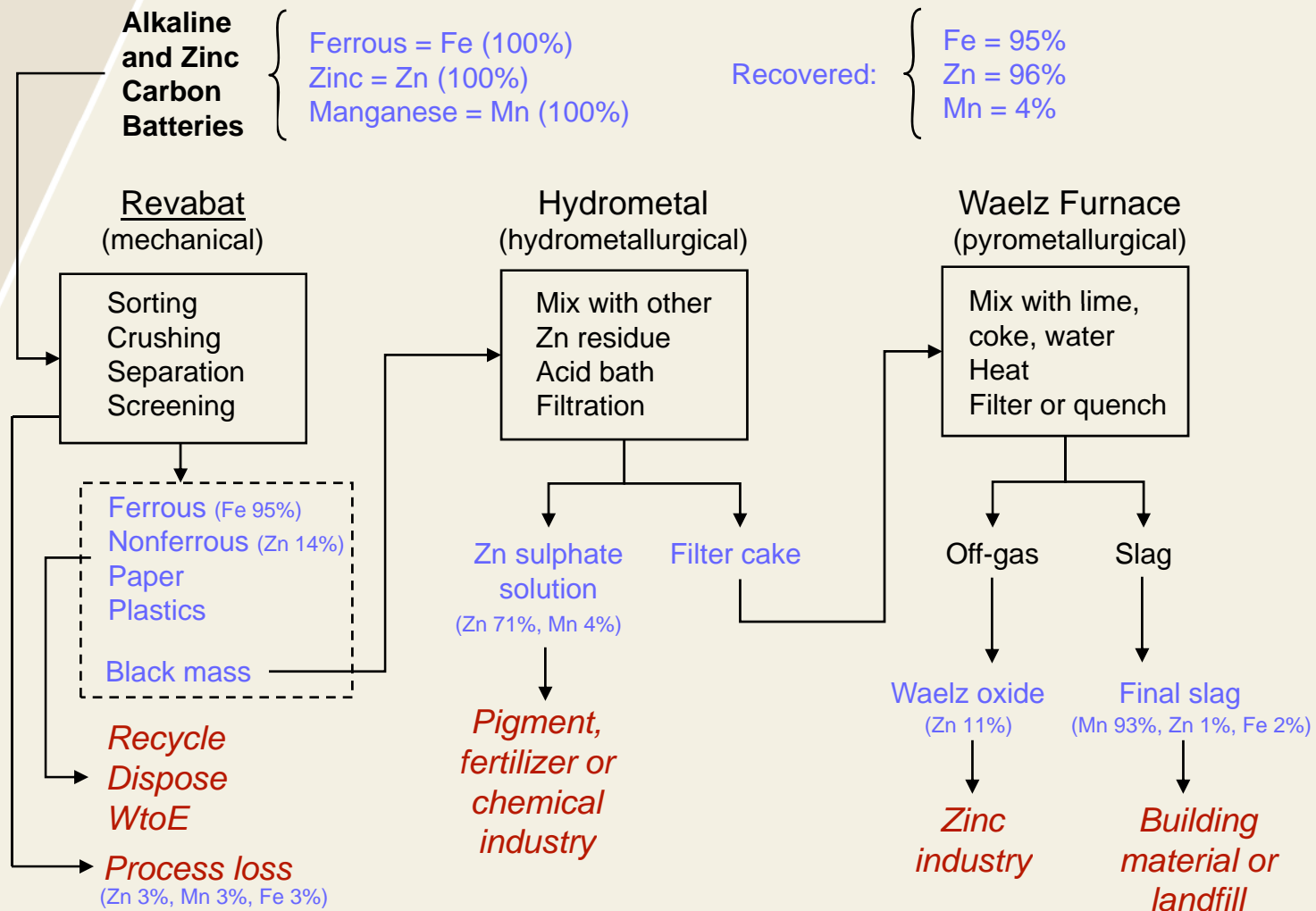
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Process flow for alkaline and zinc carbon batteries





Recycling alkaline batteries

EU directive – 50% recycling rate target

LCA study conducted by VITO (Flemish consultants)

Facility	Process/Metals	Recycling Rates*
REVATECH	Hydro / Zn, Fe, Mn	55% - 59%
REVABAT	Hydro / Zn, Fe	37% - 59%
BATREC	Pyro / Zn, Fe, Mn, Hg	53% - 59%
VALDI	Pyro / Zn, Fe, Mn	50% - 61%

*Recycling rates increase if the slag by-product is counted when used as construction material at landfill facilities.





Program performance and monitoring

- BEBAT's 1,000 battery producers and distributors report monthly sales by chemistry, battery type and weight via web based system (adopted by NL, L & N, so far)
- Allows for calculation of fees and reporting of collection rate
 - In 2006, BEBAT reports 49% collection rate but 2000-2006 average is 54% (see next slide)
 - EU directive collection target of 45% for 2016 already surpassed





Battery sales and collection

Year	Portable Battery Sales (tonnes)			Collection	
	Primary	Rechargeable	Total	Tonnes	Percent
1997	2,572	422	2,994	1,389	46%
1998	2,535	497	3,032	1,562	52%
1999	2,926	714	3,640	1,835	50%
2000	2,891	982	3,873	2,105	54%
2001	2,895	1,196	4,091	2,325	57%
2002	2,903	1,052	3,955	2,378	60%
2003	2,916	1,423	4,339	2,476	57%
2004	3,059	1,729	4,788	2,466	52%
2005	3,128	1,710	4,838	2,496	52%
2006	3,078	1,864	4,942	2,439	49%

147,000,000 batteries

236 grams/cap/year



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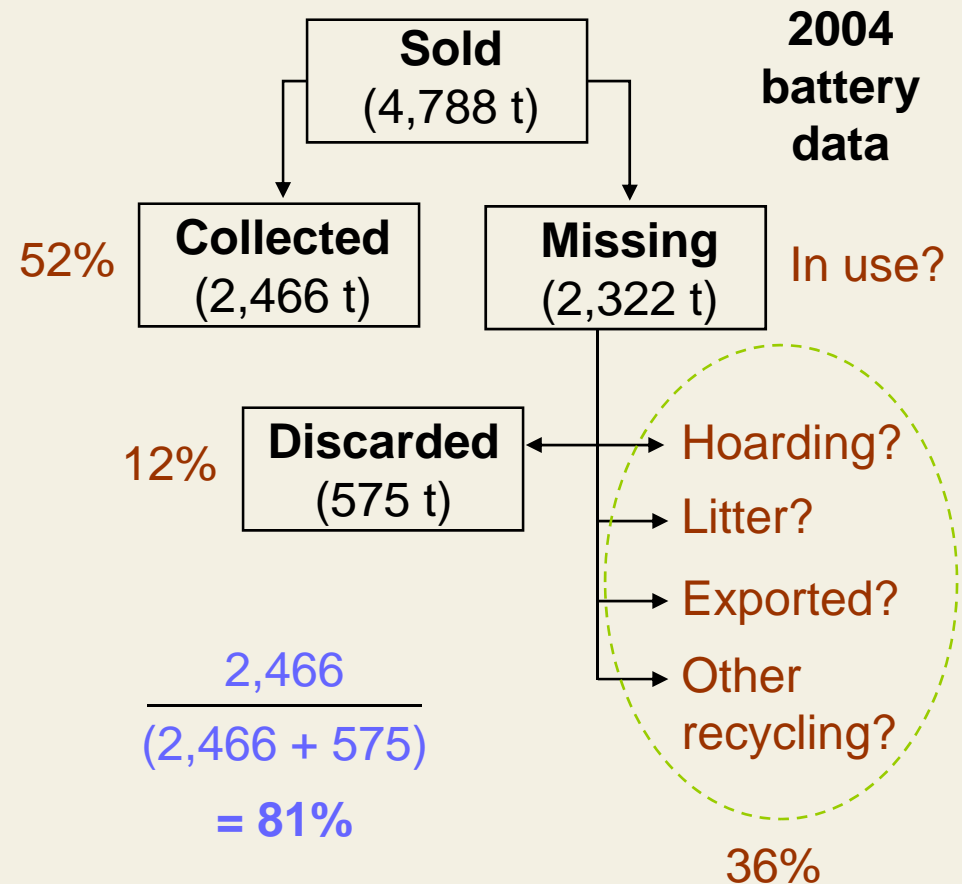
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Waste audit / Battery flow

- BEBAT analyzed 132.9 tonnes of household waste in 2004
 - 10 truck loads
 - Discarded portable batteries = 32.97 kg or 0.0248%
- If 2.3 Mt of waste disposed of in Belgium,
- then 575 t batteries are discarded annually





Program Costs

Program Element	Euro per battery
■ Promotion	0.046
■ Administrative costs	0.024
■ Collection equipment	0.002
■ Collection (logistics)	0.007
■ Sorting	0.007
■ Transportation	
■ Recycling	0.015
■ Provision/Contingency	0.003

31%

0.105 (total) or 15¢

Source: EU Commission, COM(2003)723 final



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BEBAT “Lessons Learned”

1. Complete and coherent legislation (back drop or otherwise)
2. Sufficient and sustainable program financing
3. Extensive marketing and communications strategy
4. Significant focus on schools for future program sustainability
5. One collection system for all portable batteries
6. Maximize public convenience
7. Sincere and open relation with authorities
8. Control of “free riders” by authorities





BEBAT contact details

- *Fonds Ophaling Batterijen*
- *Fonds pour la Collecte des Piles*

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Thank you

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