

**CONSULTATION PAPER**

**OF 13 MAY 2004**

**BY THE UK GOVERNMENT, SCOTTISH EXECUTIVE, WELSH  
ASSEMBLY GOVERNMENT, NORTHERN IRELAND ADMINISTRATION**

**ON THE PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN  
PARLIAMENT AND COUNCIL**

**COM (2003) 723 final**

**ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND  
ACCUMULATORS**

Department of Trade and Industry  
Publication number URN 04/1067

This Consultation Document seeks your initial views on a proposal by the European Commission for a new Directive on batteries and accumulators and spent batteries and accumulators. The Document summarises the main provisions in the proposed Directive, whose full text can be found at Annex C.

The Government invites comments on the proposal, both in general terms and also in response to specific questions we pose on main implementation issues. These will help inform our negotiating position.

It is not known when the proposed Directive is likely to come into force in the UK. The earliest is 2007, but it could be later.

Issued: 13 May 2004

Respond by: 5 August 2004

Enquiries to: Paul Creary  
Sustainable Development  
Department of Trade and Industry  
Email: [paul.creary@dti.gsi.gov.uk](mailto:paul.creary@dti.gsi.gov.uk)  
Tel: 020 7215 5824

## **CONTENTS**

EXECUTIVE SUMMARY.....	4
LIST OF QUESTIONS.....	7
<b>INTRODUCTION.....</b>	<b>13</b>
Article 1: SUBJECT MATTER.....	19
Article 2: SCOPE.....	19
Article 3: DEFINITIONS.....	19
Article 4: PREVENTION.....	19
Article 5: INCREASED ENVIRONMENTAL PERFORMANCE.....	19
Article 6: MONITORING OF THE WASTE STREAM.....	19
Article 7: PLACING ON THE MARKET.....	20
Article 8: PROMOTION OF A CLOSED LOOP SYSTEM.....	20
Article 9: COLLECTION SCHEMES.....	20
Article 10: INDIVIDUAL OR COLLECTIVE SCHEMES.....	21
Article 11: PROHIBITION OF FINAL DISPOSAL.....	21
Article 12: ECONOMIC INSTRUMENTS.....	21
Article 13: COLLECTION TARGETS.....	21
Article 14: SPECIFIC EXTENSIONS AND ADAPTATIONS.....	22
Article 15: TREATMENT OPERATIONS.....	22
Article 17: NEW RECYCLING TECHNOLOGIES.....	22
Article 18: RECYCLING TARGETS.....	23
Article 19: RECYCLING EFFICIENCIES.....	23
Article 20, 21 & 23: SCHEMES FOR PORTABLE BATTERIES & SCHEMES FOR INDUSTRIAL AND AUTOMOTIVE BATTERIES AND HISTORIC WASTE... 23	23
<b>ANNEX A</b>	
THE CONSULTATION CODE OF PRACTICE.....	26
<b>ANNEX B</b>	
PARTIAL REGULATORY IMPACT ASSESSMENT ON PROPOSAL FOR A DIRECTIVE (COM (2003) 723) OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND ACCUMULATORS.....	27
<b>ANNEX C</b>	
OFFICIAL COMMISSION TEXT OF PROPOSAL FOR A DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND ACCUMULATORS.....	49

## **Executive Summary of the proposed Directive**

1. The proposed Directive covers all types of batteries and accumulators, regardless of their shape, volume, weight, material composition or use. Accumulators are defined in the Directive as rechargeable batteries. (In this Consultation Document “batteries” is used to indicate both primary and rechargeable types).
2. Batteries which power equipment used for military applications are exempt.

## **Key proposals**

### **Collection**

- Collection targets for all spent portable batteries.
- Separate collection target for spent portable nickel cadmium batteries.
- Monitoring of quantities of spent portable nickel cadmium batteries disposed of in the municipal solid waste stream.
- Producers of industrial batteries, or third parties acting on their behalf, to offer take-back from end - users of spent industrial batteries not covered by schemes established under the requirements of the Waste Electrical and Electronic Equipment (WEEE) Directive.
- Producers of automotive batteries, or third parties acting on their behalf, to set up collection schemes for spent automotive batteries not covered by schemes established under the requirements of the End of Life Vehicles (ELV) Directive.

### **Treatment**

- Producers, or third parties acting on their behalf, to set up schemes using best available treatment and recycling techniques for all separately collected batteries.
- Prescribed standards for storage and treatment of spent batteries.

### **Recycling**

- Recycling target for all collected spent portable batteries.
- Recycling efficiency for all collected spent batteries.
- All collected industrial and automotive batteries to be recycled.
- Prohibition of final disposal of automotive and industrial batteries to landfill or by incineration.

## **Producer Responsibility**

### **Portable**

- Producers, or third parties acting on their behalf, to arrange the financing for at least the treatment, recycling and sound disposal of all separately collected spent portable batteries.
- Producers to be registered and provide a guarantee relating to the financing of the end of life management of spent portable batteries.
- The costs of the end of life management of spent batteries placed on the market prior to the adoption of the Directive, i.e. historic waste, to be financed by producers.

### **Industrial and Automotive**

- Producers, or third parties acting on their behalf, to arrange financing for the collection, treatment and recycling of spent industrial and automotive batteries. However, producers and users of industrial and automotive batteries are also to be allowed to conclude alternative financing arrangements.
- The costs of the end of life management of spent batteries placed on the market prior to the entry into force of the Directive, i.e. historic waste, to be financed by producers.
- For industrial batteries placed on the market prior to the entry into force of the Directive, and being replaced by equivalent products or by products fulfilling the same function, financing of the end of life management costs should be provided by producers, when supplying those new products. Alternatively, end users may be made partially or totally responsible for this financing.
- For industrial batteries placed on the market prior to the Directive coming into force, and which are not being replaced, end of life management to be financed by the end user.

### **Timetable for meeting requirements**

- Directive to be brought into force in the UK no later than 18 months after it is adopted.

### **Portable**

- Schemes to collect portable batteries free of charge to be established within one year of the Directive being adopted.
- Collection targets to be achieved no later than 4 years after the Directive is brought into force in the UK (including target for nickel-cadmium batteries).
- No later than one year after the Directive is brought into force in the UK, a minimum of 90% of separately collected portable batteries and all industrial and automotive batteries collected under the requirements of the Directive to be recycled.
- Recycling efficiencies to be achieved no later than 3 years after Directive brought into force in the UK.

- Reports for monitoring on nickel-cadmium batteries to be passed to the Commission 1 year after the Directive is brought into force in the UK.

#### **Industrial and Automotive**

- No later than 1 year after the Directive is brought into force in the UK, all collected industrial and automotive batteries to be sent for recycling.
- Recycling efficiencies to be achieved no later than 3 years after the Directive is brought into force in the UK.

#### **Regulatory Impact Assessment (RIA)**

3. A partial RIA has been produced for the draft Directive and sets out the expected benefits of the draft legislation along with estimated costs of compliance in comparison with current practice.

4. The partial RIA is attached at Annex B. We would welcome comments on the estimates it contains for both the potential benefits and costs of the draft Directive. Please support your arguments with data wherever possible.

## Questions

- Q1) Is the scope defined with sufficient clarity in Article 2?**
- Q2) Can you suggest any improvements in the proposed definitions and/or any additional definitions that would help to clarify the text of the proposed legislation?**
- Q3) Are there any other types of batteries which you believe should not be marketed? If so, please state why.**
- Q4) How do you think the environmental performance of batteries can be improved?**
- Q5) Do you support this monitoring exercise, and if so how do you believe the monitoring of nickel-cadmium batteries in the municipal waste stream should take place? Do you have any views on the likely cost of this exercise?**
- Q6) What difficulties might there be in ensuring banned batteries do not enter the market? How significant are direct consumer sales on the internet?**
- Q7) Do you agree with this proposal and do you envisage a closed loop system working effectively? What are the important issues to consider in agreeing the detailed text?**
- Q8) What type of collection schemes do you think will best help the UK meet its collection target for portable batteries? How could we build upon collection schemes for automotive and industrial batteries?**
- Q9) Where should collection points for consumer batteries be located? What issues should be taken into account in agreeing such locations?**
- Q10) How should damaged batteries be dealt with?**
- Q11) What do you think would be an effective way of collecting batteries?**
- Q12) Which organisations do you think should be involved in collecting batteries?**
- Q13) Do you think collective schemes for collecting batteries will work best? If so, how should the costs be allocated? By market share, or by weight, units or turnover?**
- Q14) What do you see as the advantages and disadvantages of a visible fee? If you agree with the introduction of a visible fee, who do you suggest should set the fee, at what level should the fee be set, and who should administer and distribute the funds from the fee?**
- Q15) Which process do you favour for meeting the collection obligations and why? Please give an estimate of the costs if possible.**

**Q16) Do you think that a ban on the final disposal of automotive and industrial batteries would cause significant problems? If so, what alternative do you suggest? Should the ban only relate to whole or untreated batteries?**

**Q17) Do you think this is an area where economic instruments could be usefully deployed? Economic instruments can include taxes, charges, tradable permit/evidence schemes, subsidies or tax credits.**

**Q18) What do you think will be the best way of meeting the 160g per inhabitant target, as proposed, an estimated 6 years from now? What timeframe do you think is necessary and why?**

**Q19) Do you support the 160g per inhabitant target? If not, what level do you think it should be based at? Why?**

**Q 20) Do you think a weight based target for consumer batteries is preferable to a percentage based target? Do you foresee any problems?**

**Q21) What would be the best method of ensuring an 80% collection rate for nickel-cadmium batteries?**

**Q22) How would you justify the setting of a separate collection target for nickel-cadmium batteries?**

**Q23) How do you believe the quantity of nickel-cadmium batteries in the municipal solid waste stream could be monitored (bearing in mind that they make up only 0.0055% of this waste stream)? What do you believe would be a reasonable cost, and what sampling method would you propose?**

**Q24) Is there any reason why you think the UK should be allowed more time to meet the collection targets for portable batteries?**

**Q25) Is pre- treatment necessary for all the following battery types. What do you believe are the best available treatment methods prior to recycling for the listed batteries?**

**Q26) What steps do you think the UK can take to promote more battery recycling?**

**Q27) Bearing in mind the collection target for portable batteries is 160 grams per inhabitant per annum, do you think it is realistic for at least 90% of the batteries collected to enter a recycler?**

**Q28) What reporting do you think would be necessary to demonstrate the above targets are met?**

**Q29) Do you think it is technically possible to achieve the above targets according to the definition of recycling i.e. not including energy recovery, 6 years from now? How do you suppose we achieve this whilst maximising the environmental benefits (minimising transportation) at least cost to the UK, in the most equitable manner, and with minimal administrative burden?**

**Q30) Do you think it is necessary to have both a recycling “target” and recycling “efficiency”? Please explain your thoughts.**

**Q31) Who should be responsible for financing the collection of portable batteries i.e. not incorporated in waste electrical and electronic equipment?**

**Q32) What do you believe will be the best way for producers to finance additional collection schemes:**

- a. for industrial batteries?**
- b. for automotive batteries?**
- c. for portable batteries?**

**Q33) What do you think are the best methods for publicising collection schemes and encouraging consumer participation?**

**Q34) How should any publicity campaign be funded and how can its objectives be achieved:**

- a. for industrial batteries?**
- b. for automotive batteries?**
- c. for portable batteries?**

## HOW TO RESPOND TO THIS CONSULTATION

5. You may respond by letter, fax or email to the following:

<p><b><u>For England</u></b></p> <p>Paul Creary Sustainable Development Department of Trade &amp; Industry Bay 430 151 Buckingham Palace Road London SW1W 9SS</p> <p>Email: <a href="mailto:paul.creary@dti.gsi.gov.uk">paul.creary@dti.gsi.gov.uk</a></p> <p>Tel: 020 7215 5824 Fax: 020 7215 5835</p>	<p><b><u>For Wales</u></b></p> <p>Owen Venables Welsh Assembly Government Office of the Chief Technology Officer Crown Buildings Cathays Park Cardiff CF10 3NQ</p> <p>Email: <a href="mailto:owen.venables@wales.gsi.gov.uk">owen.venables@wales.gsi.gov.uk</a></p> <p>Tel: 029 2082 3914 Fax: 029 2082 5137</p>
<p><b><u>For Scotland</u></b></p> <p>Gary Gray Environment Protection Unit The Scottish Executive Mailpoint 11 Victoria Quay Edinburgh EH6 6QQ</p> <p>Email: <a href="mailto:waste.team@scotland.gsi.gov.uk">waste.team@scotland.gsi.gov.uk</a></p> <p>Tel: 0131 244 0363 Fax: 0131 244 0245</p>	<p><b><u>For Northern Ireland</u></b></p> <p>Beth Hodgett Environmental Policy Division Department of the Environment for Northern Ireland 20-24 Donegall Street Belfast BT1 2GP</p> <p>Email: <a href="mailto:beth.hodgett@doeni.gov.uk">beth.hodgett@doeni.gov.uk</a></p> <p>Tel: 028 9054 4536 Fax: 028 9054 4520</p>

6. When responding please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of an organisation, please make it clear whom the organisation represents and, where applicable, how the views of members were assembled.

7. Although your response to this paper would be welcome in any form, it would be helpful if you could relate it to the questions posed, if possible. You do not have to answer all of the questions - any information is useful. Please provide as much evidence as possible to help us represent your views during negotiation.

### **Additional copies**

8. Further printed copies of the consultation paper can be obtained from:  
DTI Publications Orderline

ADMAIL Publications  
London SW1W 8YT  
Tel: 0870 1502 500  
Fax: 0870 1502 333  
Minicom: 0870 1502 100  
[www.dti.gov.uk/publications](http://www.dti.gov.uk/publications)

An electronic version can be found at:  
[www.dti.gov.uk/sustainability/ep/batteries.htm](http://www.dti.gov.uk/sustainability/ep/batteries.htm).

<http://defraweb/environment/waste/topics/batteries.htm>

An electronic version of the proposal can be found at:  
<http://europa.eu.int/comm/environment/waste/batteries/index.htm>

### **Confidentiality**

9. DTI will copy all representations to the devolved administrations, Defra and other interested Departments, who will reciprocate in respect of responses they receive direct. Your response may be made public by the DTI. If you do not want all or part of your response or name made public, please state clearly in the response. Any confidentiality disclaimer that may be generated by your organisation's IT system or included as a general statement in your fax cover sheet will be taken to apply only to information in your response for which confidentiality has been requested.

10. We will handle any personal data you provide appropriately in accordance with the Data Protection Act 1998.

### **Help with queries**

11. Questions about policy issues raised in the document can be addressed to:

Paul Creary  
Sustainable Development  
Department of Trade and Industry  
Bay 430  
151 Buckingham Palace Road  
London SW1W 9SS  
Tel: 020 7215 5824  
Email: [paul.creary@dti.gov.uk](mailto:paul.creary@dti.gov.uk)

12. If you have comments or complaints about the way this consultation has been conducted, these should be sent to:

Philip Martin,  
Consultation Co-ordinator,  
Department of Trade and Industry  
Room 723,  
1 Victoria Street,

London SW1H 0ET  
Email: Philip.Martin@dti.gsi.gov.uk

13. A copy of the Code of Practice on Consultation is at Annex A.

**Output from this consultation paper**

14. We will be producing a summary and analysis of responses and this will be available from DTI or downloadable from our website.

15. The European Parliament took a first vote on the proposal on 20 April 2004, prior to the European elections in June. It is unclear how the new European Parliament will view that first vote. Negotiations on the proposal are likely to move forward under the Dutch EU Presidency, which runs from July- December 2004. The earlier the UK Government and other interested parties make representations in Europe, the more likely they will influence the final outcomes. We would therefore welcome early responses to this document.

## **Introduction**

16. The European Commission has issued a proposal for a new Directive on batteries and accumulators and spent batteries and accumulators (COM (2003) 723). The proposal was sent to Member States on 24 November 2003 and it is expected that negotiations will begin in the second half of 2004. All going well, we anticipate that, if adopted, the Directive would need to be transposed into national law in 2007. Should this be the case, a number of the Directive's requirements will need to be met by 2008 and others, including the collection and recycling efficiency targets for all battery types by 2011.

## **Objectives**

17. The main objectives of the proposal as stated by the European Commission are to contribute to a high level of environmental protection and to contribute to the proper functioning of the internal market.

## **Battery Types – References in the Proposals**

18. Batteries are an essential energy source used in a wide variety of products and appliances. They are usually divided into two groups – **portable batteries**, normally weighing less than 1kg, and **industrial and automotive batteries**, which usually weigh more than 1kg.

## **Portable Batteries**

19. The proposal describes portable batteries as batteries used in household applications (examples below) or other applications by either consumers or professional users. The portable battery sector itself consists of three main types:

- General purpose primary (non rechargeable) batteries. These types of batteries are usually composed of zinc carbon or alkaline manganese (long-life) chemistries, commonly used in items such as toys, clocks, portable audio equipment, torches and cameras.
- Button cells. These are mainly (non rechargeable) zinc air, silver oxide, manganese oxide and lithium batteries; commonly used in items such as hearing aids, watches and calculators.
- Rechargeable batteries (also referred to as accumulators). These include chemistries such as nickel-cadmium, nickel-metal-hydride, lithium-ion and sealed lead-acid batteries typically used in mobile phones, power tools, emergency lighting, laptops and household appliances.

## **Automotive Batteries**

20. Automotive batteries are mainly lead-acid batteries used for starter, lighting and ignition power for vehicles.

## **Industrial Batteries**

21. Industrial batteries are used for applications such as standby or traction power in telecommunications and rail applications. The batteries used in industrial applications, are likely to be lead acid and nickel cadmium chemistries.

## **Other Directives Covering Batteries**

22. Spent batteries also feature in the Waste Electrical and Electronic Equipment (WEEE) and the End of Life Vehicles (ELV) Directives. The Government has recently consulted stakeholders on options for implementing the requirements of both Directives. Details of these consultations are available on the DTI website at:

**<http://www.dti.gov.uk/sustainability/ep/index.htm>**

### Waste Electrical and Electronic Equipment (WEEE) Directive

23. Under treatment requirements for the WEEE Directive, batteries must be removed from all separately collected waste electrical and electronic equipment prior to waste electrical and electronic equipment being recycled and recovered.

### End of Life Vehicles (ELV) Directive

24. The ELV Directive stipulates that batteries must be removed prior to end of life vehicle recycling or recovery. The Directive further prohibits the placing on the market of nickel cadmium batteries for new electric vehicles from 31 December 2005. This provision is under review by the European Commission.

## **How does this proposal fit with UK waste policy?**

25. In the UK, the Government's approach to waste management is set down in its Waste Strategies<sup>1</sup>. Here, the need for a change in the way we manage waste is explained. For example, in England and Wales, industry, commerce and households produce around 100 million tonnes of waste each year, much of which is landfilled. However, landfill is increasingly scarce in some parts of the country. To deliver the vision outlined in the Strategy Unit Report for England 'Waste Not, Want Not' that by 2020 England will have a world class management system, action is needed to reduce the amount of waste going to landfill.

26. Instead of landfilling so much waste, we need to apply the waste hierarchy which as a first point aims to put as much of these waste materials back into productive use as possible. This points to reusing products where possible, recycling more of the waste that arises, or incineration with the recovery of energy, and disposal to landfill where there are no alternative options.

---

<sup>1</sup> Waste Strategy 2000 for England (<http://www.defra.gov.uk/environment/waste/strategy/cm4693/>); National Waste Strategy Scotland, ([http://www.sepa.org.uk/nws/guidance/nws/pdf/national\\_waste\\_strategy.pdf](http://www.sepa.org.uk/nws/guidance/nws/pdf/national_waste_strategy.pdf)); Wise About Waste; The National Waste Strategy for Wales, 2002 (<http://www.wales.gov.uk/subienvironment/content/wstetext-e.pdf>) and The Waste Management Strategy for Northern Ireland, March 2000(<http://www.ehsni.gov.uk/pubs/publications/NIWMS.pdf>).

27. Cost-effective and sustainable management of waste, including a prudent use of natural resources, contributes too to the UK's sustainable development strategy and our climate change objectives. Proposals for improved management of spent batteries are consistent with these objectives of the Waste Strategies, and it is for this reason that the Government supports the objectives of the European Commission's proposals.

28. In 2002, 45.5% of all portable batteries sold in the EU went to final disposal instead of being collected and recycled. The proposed Directive builds upon previous Directives, to divert all untreated batteries collected, including hazardous batteries containing mercury, cadmium and lead, from final disposal to landfill and from being incinerated. Moreover, the proposals aim to improve waste management and to re-incorporate waste into the economic cycle.

29. Environmental and health concerns are linked to the materials batteries contain, especially mercury, cadmium and lead. Waste batteries containing any of these three materials are classified as hazardous to human health and to the environment. Mercury is highly toxic especially to a developing nervous system. Cadmium is a toxic and carcinogenic substance and, above certain concentrations, lead is toxic to humans and can lead to cumulative health problems. If exposed to the aquatic environment, all these substances are considered to be toxic.

### **Timetable**

30. The timetable for adoption (entry into force) of the proposed Directive will depend on whether it is adopted after its first or second reading of the European Parliament or following conciliation. If there is no agreement between the Council and European Parliament after the second reading, a Conciliation Committee is formed consisting of the Council and an equal number of European Parliament representatives with the Commission mediating. The aim would be to approve a joint text, but if there is no agreement, the Directive cannot be adopted.

### **Probable Timeline**

31. The European Parliament voted on the proposal on 20 April 2004 prior to the European elections. Negotiations are likely to move forward under the Dutch EU Presidency, which runs from July- December 2004. The diagram on the next page shows the broad timetable for stages in the co-decision process through which the draft Directive could be adopted.

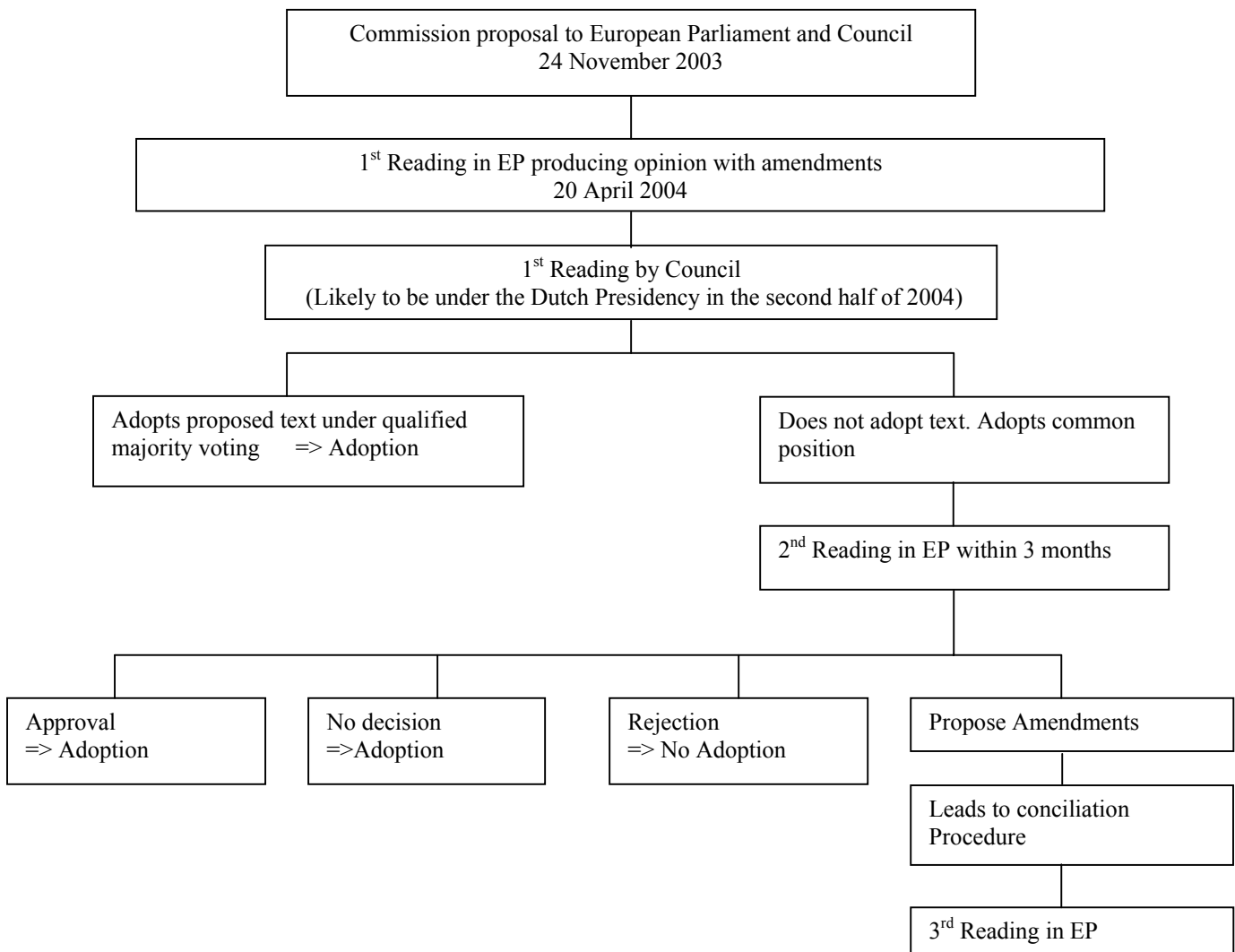
32. Assuming agreement is reached after the first or second reading or after conciliation, the Directive will enter into force on the day it is published in the Official Journal of the European Union.

### **Timelines and Targets Outlined in the Proposals**

33. The UK and other Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with the Directive no later than 18 months after the Directive is adopted.

- One year after the UK has brought the necessary laws, regulations and administrative provisions into place, minimum recycling targets must be achieved including the recycling of all industrial and automotive batteries collected in accordance with article 9, and 90% of all collected portable batteries (see article 18).
- Recycling efficiencies referred to in article 19 must be achieved no later than three years after the UK has brought the necessary laws, regulations and administrative provisions into place.
- Minimum average collection targets of 160 grams per inhabitant per year for portable batteries and a specific collection rate of 80% of spent portable nickel cadmium batteries should be achieved no later than four years after the UK has brought the necessary laws, regulations and administrative provisions into place.

### Co-decision Procedure: Broad Timetable



## How might I be affected by the current proposals?

If adopted in its current form, the Directive would mean:

Your business may fall within the definition of a “producer” for the purposes of the draft Directive. A “producer” is defined as any person who, irrespective of the selling technique used, including by means of distance selling

- (a) manufactures and sells batteries under his own brand;
- (b) resells batteries under his own brand or incorporated into appliances;
- (c) imports or exports batteries or appliances on a professional basis into a Member State.

### **I am a manufacturer of batteries, operating in the UK and other EU markets. What do the proposals require me to do?**

As a manufacturer of **portable batteries** you would need to:

- Register as a producer with the appropriate regulator once arrangements have been finalised.
- Provide financial guarantees in respect of the treatment and recycling of your future products to cover the possibility of your company leaving the market.
- Pay your share of treatment and recycling for separately collected portable batteries.
- Ensure that separately collected batteries are subject to the best available treatment and recycling techniques.
- Products must be marked in line with Article 27 of the Directive (crossed out wheeled bin).
- Mark your products

As a manufacturer of **industrial batteries** you would need to:

- Register as a producer with the appropriate regulator once arrangements have been finalised.
- Provide financial guarantees in respect of the treatment and recycling of your future products to cover the possibility of your company leaving the market.
- Offer a take-back facility for spent industrial batteries.
- Ensure that separately collected batteries are subject to the best available treatment and recycling techniques.
- Pay your share of treatment and recycling cost for separately collected industrial batteries.
- Finance the treatment and recycling costs for batteries placed on the market before the Directive is adopted, i.e. historic waste, if supplying alternatives which provide the same function. However, Member States can make final users partially or totally responsible for financing these costs.
- Mark your products

As a manufacturer of **automotive** batteries you would need to:

- Register as a producer with the appropriate regulator once arrangements have been finalised.
- Provide financial guarantees in respect of the treatment and recycling of your future products to cover the possibility of your company leaving the market.
- Set up individual or collective collection schemes for spent automotive batteries. A third party acting on your behalf could fulfil this requirement.
- Ensure that separately collected batteries are subject to the best available treatment and recycling techniques.
- Pay your share of treatment and recycling cost for separately collected automotive batteries.
- Mark your products

**I resell batteries and accumulators under my own brand and batteries already incorporated into appliances. What do the proposals require me to do?**

Member States to ensure that producers, or third parties acting on their behalf, arrange for the financing for at least the treatment and recycling and sound disposal of all spent portable batteries deposited at collection facilities, set up under the requirements of the draft Directive.

Member States to ensure that producers, or third parties acting on their behalf, arrange for the financing for the collection, treatment and recycling of spent industrial and automotive batteries collected in accordance with the requirements of the draft Directive.

Member States shall allow producers and users of industrial and automotive batteries to conclude agreements under which other financing methods than those referred to in the draft Directive can be used.

**I am a professional importer of batteries and accumulators into the UK and EU. What do the proposals do?**

As a professional importer of batteries you would need to fulfil all the requirements placed on manufacturers depending on the type of batteries and accumulators you import into the UK.

## **Brief description of the key articles in the Proposal and Questions**

### **Article 1 – subject matter**

34. The proposed Directive would establish rules regarding the marketing of batteries as well as the collection, treatment and recycling of spent batteries.

### **Article 2 – scope**

35. The proposed Directive would apply to all types of batteries regardless of their shape, volume, weight, material, composition or use. However batteries used in equipment for military applications and the protection of Member States are exempt from the scope of the Directive.

**Q1) Is the scope defined with sufficient clarity in Article 2?**

### **Article 3 – Definitions.**

36. The proposal contains 14 definitions – see proposal text at Annex C or at: [http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003\\_0723en01.pdf](http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003_0723en01.pdf)

**Q2) Can you suggest any improvements in the proposed definitions and/or any additional definitions that would help to clarify the text of the proposed legislation?**

### **Article 4 – Prevention.**

37. Member States shall prohibit the marketing of batteries containing more than 0.0005% mercury and button cells containing more than 2% mercury by weight.

**Q3) Are there any other types of batteries which you believe should not be marketed? If so, please state why.**

### **Article 5 – Increased environmental performance.**

38. The proposed Directive would require the UK to promote research into the possibility of increasing the environmental performance of batteries and the marketing of batteries which contain substitutes for mercury, cadmium and lead.

**Q4) How do you think the environmental performance of batteries can be improved?**

### **Article 6 – Monitoring of the waste stream.**

39. The proposal would require the UK to monitor spent portable nickel cadmium batteries disposed of in municipal waste and report annually on the results of the monitoring.

**Q5) Do you support this monitoring exercise, and if so how do you believe the monitoring of nickel-cadmium batteries in the municipal waste stream should take place? Do you have any views on the likely cost of this exercise?**

**Article 7 – Placing on the market.**

40. The proposal would require that the UK ensures that batteries that do not meet the requirements of the Directive are not placed on the market, or are withdrawn from it.

**Q6) What difficulties might there be in ensuring banned batteries do not enter the market? How significant are direct consumer sales on the internet?**

**Article 8 – Promotion of a closed loop system.**

41. Under the terms of the draft proposal, the UK would be required to take measures to prevent the final disposal of batteries and to aim to achieve a closed loop system for spent batteries through collecting and recycling spent batteries, banning the land-filling or incineration of all untreated automotive and industrial batteries and monitoring the quantities of portable nickel-cadmium batteries, in the waste stream.

**Q7) Do you agree with this proposal and do you envisage a closed loop system working effectively? What are the important issues to consider in agreeing the detailed text?**

**Article 9 – Collection schemes.**

42. The proposal would require the UK to establish collection schemes for the free return by consumers of spent portable batteries with available and accessible collection facilities.

43. Producers of industrial batteries would be obliged to take industrial batteries back from end-users.

44. Collection schemes for spent automotive batteries not collected under the End of Life Vehicles Directive requirements shall be established by producers of automotive batteries.

**Q8) What type of collection schemes do you think will best help the UK meet its collection target for portable batteries? How could we build upon collection schemes for automotive and industrial batteries?**

**Q9) Where should collection points for consumer batteries be located? What issues should be taken into account in agreeing such locations?**

**Q10) How should damaged batteries be dealt with?**

### **Article 10 – Individual or collective schemes.**

45. This article gives producers the option to set up individual or collective collection schemes.

**Q11) What do you think would be an effective way of collecting batteries?**

**Q12) Which organisations do you think should be involved in collecting batteries?**

**Q13) Do you think collective schemes for collecting batteries will work best? If so, how should the costs be allocated? By market share, or by weight, units or turnover?**

**Q14) What do you see as the advantages and disadvantages of a visible fee? If you agree with the introduction of a visible fee, who should set the fee, at what level should the fee be set, and who should administer and distribute the funds from the fee?**

**Q15) Which process do you favour for meeting the collection obligations and why? Please give an estimate of the costs if possible.**

### **Article 11 – Prohibition of final disposal.**

46. The proposal states that the final disposal of industrial and automotive batteries by land-filling or incineration is banned.

**Q16) Do you think that a ban on the final disposal of automotive and industrial batteries would cause significant problems? If so, what alternative do you suggest? Should the ban only relate to whole or untreated batteries?**

### **Article 12 – Economic Instruments.**

47. The proposal provides a framework for economic instruments to be used by member states in meeting the objectives of the Proposal.

**Q17) Do you think this is an area where economic instruments could be usefully deployed? Economic instruments can include taxes, charges, tradable permit/evidence schemes, subsidies or tax credits.**

### **Article 13 – Collection targets.**

48. The proposal establishes a uniform target of 160 grams per inhabitant per year for the collection of all spent portable batteries. On present estimates this is equivalent to around a 42% collection rate in the UK. Because of their potential hazardousness, an additional target to collect 80% of all spent nickel cadmium batteries generated annually is being proposed. The quantity of nickel cadmium batteries in the municipal waste stream would need to be monitored and recorded.

**Q18) What do you think will be the best way of meeting the 160g per inhabitant target, as proposed, an estimated 6 years from now? What timeframe do you think is necessary and why?**

**Q19) Do you support the 160g per inhabitant target? If not, what level do you think it should be based at? Why?**

**Q 20) Do you think a weight based target for consumer batteries is preferable to a percentage based target? Do you foresee any problems?**

**Q21) What would be the best method of ensuring an 80% collection rate for nickel-cadmium batteries?**

**Q22) How would you justify the setting of a separate collection target for nickel-cadmium batteries?**

**Q23) How do you believe the quantity of nickel-cadmium batteries in the municipal solid waste stream could be monitored (bearing in mind that they make up only 0.0055% of this waste stream)? What do you believe would be a reasonable cost, and what sampling method would you propose?**

#### **Article 14 – specific extensions and adaptations**

49. The proposal allows member states to request an extension of the deadline for achieving collection targets of article 13 of up to 36 months.

**Q24) Is there any reason why you think the UK should be allowed more time to meet the collection targets for portable batteries?**

#### **Article 15 - Treatment operations.**

50. The proposal requires producers to set up schemes to treat collected batteries, taking negative external (environmental) impacts of transport into account.

**Q25) Is pre - treatment necessary for all the following battery types? What do you believe are the best available treatment methods prior to recycling for the following:**

**Automotive batteries?**

**Industrial NiCd batteries?**

**Portable NiCd batteries?**

**Portable lead-acid?**

**Alkali and zinc-carbon batteries?**

**Industrial lithium batteries?**

**Portable lithium batteries?**

#### **Article 17 - New Recycling Technologies.**

51. The UK will be required to promote the development of new recycling and treatment technologies for all types of batteries.

**Q26) What steps do you think the UK can take to promote more battery recycling?**

**Article 18 –Recycling targets.**

52. This proposal requires Member States to recycle 90% of all portable batteries collected, and 100% of industrial and automotive batteries collected to enter a recycling process.

**Q27) Bearing in mind the collection target for portable batteries is 160 grams per inhabitant per annum, do you think it is realistic for at least 90% of the batteries collected to enter a recycler?**

**Q28) What reporting do you think would be necessary to demonstrate the above targets are met?**

**Article 19- Recycling efficiencies.**

53. Recycling efficiencies are in place to demonstrate that the materials contained in batteries are actually recycled. The proposal requires the recycling of the following batteries collected and sent for recycling;

- All the lead and at least 65% by average weight of the materials contained in the collected lead acid batteries
- All the cadmium and a minimum of 75% by weight of the materials contained in collected nickel cadmium batteries
- 55% by average weight of the materials contained in other collected spent batteries.

**Q29) - Do you think it is technically possible to achieve the above targets according to the definition of recycling<sup>2</sup> i.e. not including energy recovery, 6 years from now? How do you suppose we achieve this whilst maximising the environmental benefits (minimising transportation) at least cost to the UK, in the most equitable manner, and with minimal administrative burden?**

**Q30) – Do you think it is necessary to have both a recycling “target” and recycling “efficiency”? Please explain your thoughts.**

**Articles 20,21 & 23 - Schemes for portable batteries & schemes for industrial and automotive batteries and historic waste.**

**Portable**

54. Member States would ensure that producers arrange the financing for at least treatment, recycling and sound disposal of all spent portable batteries. Producers

---

<sup>2</sup> Recycling means the reprocessing in a production process of the waste materials for the original purpose or for other purposes, but excluding energy recovery.

would also be responsible for spent portable batteries placed on the market before the directive entered into force (historic waste). In addition, if a battery is incorporated into waste electrical and electronic equipment it will need to be removed under the treatment requirements of the Waste Electrical and Electronic Equipment (WEEE) Directive. Collection of waste electrical and electronic equipment will be paid for by the producers of such equipment. Once the battery is removed from waste electrical and electronic equipment, battery producers will then be financially responsible for any further treatment and recycling.

**Q31) Who should be responsible for financing the collection of portable batteries i.e. not incorporated in waste electrical and electronic equipment?**

**Industrial and Automotive**

55. For spent industrial and automotive batteries producers should finance both collection and treatment costs but could conclude financial agreements with their users. For industrial batteries placed on the market before the Directive entered into force (historic waste) the financing of the management should be provided by producers when providing new products or alternatively Member states may decide that the final user is partially or totally responsible for this financing.

**Possible Collection Routes from other Directives**

56. The battery producer responsibilities apply without prejudice to the producer responsibility requirements of the End Of Life Vehicles (ELV) Directive or the Waste Electrical and Electronic Equipment (WEEE) Directive, or the regulations which bring them into national law. A battery must be removed from an end of life vehicle once delivered to an authorised treatment facility for dismantling. Under the arrangements that DTI has recently consulted on for implementing the Directive, producers would have responsibility for providing free take-back for end of life vehicles from 2007 onwards, and for achieving an 85% recovery and recycling target from 2006 onwards. Given the value of automotive batteries, compared with other non-metallic materials in end of life vehicles, it is likely that producers will arrange for their recycling, as a contribution toward achieving the target. Similarly if a battery is incorporated into waste electrical and electronic equipment, it will be collected on the basis of the WEEE Directive with collection paid for by waste electrical and electronic equipment producers and battery producers becoming responsible for further treatment once the battery is removed from the waste electrical and electronic equipment.

**Q32) What do you believe will be the best way for producers to finance additional collection schemes:**

- a. for industrial batteries?
- b. for automotive batteries?
- c. for portable batteries?

**Article 25- Consumer information.**

57. The proposal requires that Member States shall ensure that consumers are fully informed of the requirements to collect and recycle spent batteries and to participate in collection schemes.

**Q33) What do you think are the best methods for publicising collection schemes and encouraging consumer participation?**

**Q34) How should a publicity campaign for collection be funded and how can its objectives be achieved:**

- a. for industrial batteries?
- b. for automotive batteries?
- c. for portable batteries?

## ANNEX A

### THE CONSULTATION CODE OF PRACTICE

1. Timing of consultation should be built into the planning process for a policy (including legislation) or service from the start, so that it has the best prospect of improving the proposals concerned, and so that sufficient time is left for it at each stage.
2. It should be clear who is being consulted, about what questions, in what timescale and for what purpose.
3. A consultation document should be as simple and concise as possible. It should include a summary, in two pages at most, of the main questions it seeks views on. It should make it as easy as possible for readers to respond, make contact or complain.
4. Documents should be made widely available, with the fullest use of electronic means (though not to the exclusion of others) and effectively drawn to the attention of all interested groups and individuals.
5. Sufficient time should be allowed for considered responses from all groups with an interest. Twelve weeks should be the standard minimum period for a consultation.
6. Responses should be carefully and open-mindedly analysed, and the results made widely available, with an account of views expressed, and the reasons for decisions finally taken.
7. Departments should monitor and evaluate consultations, designating a consultation co-ordinator who will ensure the lessons are disseminated.
8. The complete code is available on the Cabinet Office's web site, address [www.cabinet-office.gov.uk/servicefirst/index/consultation.htm](http://www.cabinet-office.gov.uk/servicefirst/index/consultation.htm).

#### **Comments or complaints**

If you wish to comment on the conduct of this consultation or make a complaint about the way this consultation has been conducted, please write to Philip Martin, DTI Consultation Co-ordinator, Room 723, 1 Victoria Street, London SW1H 0ET or telephone him on 020 7215 6206 or mail to: [Philip.Martin@dti.gsi.gov.uk](mailto:Philip.Martin@dti.gsi.gov.uk)

## ANNEX B

### **PARTIAL REGULATORY IMPACT ASSESSMENT ON PROPOSAL FOR A DIRECTIVE (COM (2003) 723) OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND ACCUMULATORS**

#### **Executive Summary**

1. The main aim of the proposed Batteries Directive is to increase the collection and recycling of spent batteries and therefore reduce the number of batteries going to landfill or being incinerated. It sets targets for the collection of spent portable batteries, and prohibits the disposal of industrial and automotive batteries in landfill or by incineration. It also stipulates targets for recycling efficiencies.
2. The target in the Directive for the collection of spent portable batteries (defined as under 1kg in weight) is 160g/inhabitant/year, which equates to 9,600 tonnes per year in the UK. By value, 93% of these are either alkaline manganese or zinc batteries, with the remainder made up of button cells and rechargeables. The Directive also requires 80% of spent nickel cadmium rechargeable batteries to be collected.
3. Member States are required to transpose the Directive into national law 18 months after the Directive is published, and then meet the collection targets four years after transposition.
4. Implementation of the Batteries Directive in the UK will result in a reduction in the amount of heavy metals going to landfill, which should result in a reduction in risks to human health and the environment. In addition, disposal of batteries in landfill or through incineration can lead to the loss of resources that could otherwise have been recycled. However it is not easy to quantify these benefits, which are offset to some extent by the environmental impacts of additional transport when collection and recycling rates are high.
5. The costs of the Batteries Directive includes the costs of collecting, sorting, transporting and recycling spent batteries, in addition to the costs of a communication strategy to promote the separation and collection of spent portable batteries. There are also costs associated with administering a scheme to allocate responsibility to producers.
6. The Directive requires Member States to ensure that producers arrange for the financing for *at least* the treatment, recycling and sound disposal of all spent portable batteries deposited at collection facilities. This means that not all the financial responsibility for the collection of portable batteries has been assigned. Financial responsibility for the communication strategy to promote the separation and collection of batteries by consumers has also not yet been assigned. Financial responsibility for the collection of industrial and automotive batteries however clearly lies with producers.

7. Therefore the main financial responsibility lies with battery producers. Financial responsibility for the collection of portable batteries may be shared with retailers or Local Authorities (LAs). However the *New Burdens Rule* states that new burdens cannot be placed on LAs unless financing is arranged for these additional costs.
8. Irrespective of the exact allocation of financial responsibility for the collection of portable batteries, there are various options available to producers for discharging their financial responsibilities for collection, treatment and recycling. One option would be to set up an organisation that would be responsible for collection and recycling, with costs allocated to producers using market share data. Another option would be to set up an organisation that assigns responsibility for battery collection and then leaves producers to arrange collection and recycling, possibly through a system of tradable notes.
9. There are a range of possible options for collecting batteries, including kerbside collection, use of postal systems, in-store retailer take-back, and bring systems to civic amenity sites, local recycling centres or specific facilities at large retail outlets. It is likely that most of these collection routes will need to be used if the targets are to be met.
10. Current estimates of the costs of implementing the Directive, outlined in this partial RIA, range from £7.3m to £28.6m per year, based on data from national schemes that have been implemented in various European countries. However these schemes achieved varying collection rates.
11. The economic model developed in the EC's extended impact assessment, estimates the cost of meeting the 160g/inhabitant/year target to be in the range of £900 to £1100 per tonne of batteries collected. This equates to a total of £8.6m to £10.6m per year for the UK. These costs may vary significantly from year to year. They are likely to peak in the year when the target is required to be met, and then decline as the collection infrastructure becomes established and the consumer awareness of battery recycling grows.
12. There are a number of reasons why the assumptions made in the economic model may not be true for the UK, which makes it difficult to justify predicting the costs to this level of accuracy. The most significant of these assumptions relate to the recycling culture in the UK. The costs of the communications strategy in the European schemes ranged from over £1,000/tonne of batteries collected in Belgium and the Netherlands, to less than £200/tonne in Germany. The cost of the communication strategy to promote separation and collection of batteries is the key variable in assessing the costs of implementing the Directive.
13. Storage of waste is subject to permitting requirements of the Waste Framework Directive and therefore a waste management licence or an exemption from a licence is required. If collection routes such as in-store take-back or collection in schools required a waste management licence, the additional administrative burden would make it significantly less likely that these routes would be used. This would have significant implications both on overall implementation costs

and on the likelihood of the UK meeting the collection target for portable batteries. Defra are currently considering the need for exemptions for batteries.

### **Background**

14. This partial RIA discusses the potential costs and benefits to UK businesses, charities, the voluntary sector and local authorities of the proposal for a Directive of the European Parliament and of the Council on batteries and accumulators and spent batteries and accumulators (2003/0282 - Batteries Directive).

### **Issues and Objective**

15. The European Community Strategy for waste policy outlines the need to reduce the quantities of hazardous substances from household waste. In line with this policy, a number of types of batteries and accumulators are classified as hazardous and we need to prevent these from getting into the environment (particularly those containing cadmium, mercury and lead. There are also requirements under the Landfill Directive to reduce the landfilling of hazardous substances.
16. To avoid consumer confusion on the different waste management requirements for different batteries, the main aim of the Batteries Directive is to increase the collection and recycling of all spent batteries and accumulators (referred to as *batteries* from here on) and therefore reduce the number of batteries going to landfill or being incinerated. It sets targets for the collection of spent portable batteries and prohibits the disposal of industrial and automotive batteries in landfill or by incineration. It also stipulates targets for recycling efficiencies.
17. The target in the Directive for the collection of spent portable batteries (defined as under 1kg in weight) is 160g/inhabitant/year, which equates to 9,600 tonnes per year in the UK. By value, 93% of these are either alkaline manganese or zinc batteries, with the remainder made up of button cells and rechargeables. The Directive also requires 80% of spent nickel cadmium (NiCd) rechargeable batteries to be collected.
18. Member States are required to transpose the Directive into national law 18 months after the Directive is published, and then meet the collection targets four years after the Directive is transposed into UK law.
19. The Directive seeks to promote research into the possibility of increasing the overall environmental performance of batteries throughout their entire lifecycle, although there is no mandatory restriction on the use of cadmium. It also requires Member States to promote the development of new recycling and treatment technologies.

### **Risk Assessment**

20. The main risks from batteries are associated with their current means of disposal. Batteries can contain cadmium, lead, mercury and other metals

including zinc, copper, manganese, lithium and nickel. Therefore untreated batteries disposed of in landfill or through incineration can have a potentially hazardous impact on the environment and on human health, should these substances leach out from landfill sites or be emitted to the atmosphere following incineration. In addition, disposal of batteries in landfill or through incineration can lead to the loss of resources that could otherwise have been recycled. The risks of harm to the environment and human health from the disposal of batteries, and the risks to resource productivity from the loss of potentially recyclable resources in batteries, are real but difficult to quantify.

### **Options**

21. The UK has a range of options by which it could implement the Batteries Directive. These principally relate to the three phases in the recycling process – separation from general waste, collection, and recycling - and the method by which these activities are administered and financed. The options are discussed below, under compliance costs, where they relate to the specific Articles of the Directive.

### **Issues of Equity and Fairness**

22. The environmental benefits of the Batteries Directive are likely to fall fairly equally across different economic and social classes and across different geographical regions in the UK. There may be some more specific local benefits in areas, for example, which have relatively high landfill, and greater benefits to members of society who could be more prone to any potential adverse effects from the current disposal methods of batteries.
23. The Directive states that Member States shall ensure that producers arrange for the financing for *at least* the treatment, recycling and sound disposal of all spent portable batteries deposited at collection facilities. However not all the financial responsibility for the collection of portable batteries has been assigned. Financial responsibility for the communication strategy to promote the separation and collection of batteries by consumers has also not yet been assigned. Financial responsibility for the collection of industrial and automotive batteries clearly lies with producers. Under the draft Directive therefore producers are likely to bear the majority of the costs of treatment and recovery of all batteries, in addition to the majority of the costs of collection of industrial and automotive batteries.
24. Local Authorities may find that they face some costs as a result of the increased separate collection of batteries, though the *New Burdens Rule* states that new burdens cannot be placed on LAs unless financing is arranged for these additional costs. There will be a number of benefits for Local Authorities, including reduced contamination of waste streams, avoidance of the costs associated with the landfill or incineration of these batteries (though this will be relatively small given the weight of batteries in the municipal solid waste stream), and some contribution to meeting their statutory recycling targets.

25. As price increases have a limited effect on consumption of batteries, it is likely that a high proportion of the cost increase will eventually be passed on to consumers. Any detailed distributional impacts would need to be considered for each type of battery. However it is unlikely that there will be any significant distributional impacts, firstly because price increases are likely to be relatively small (compared to both the price of the battery and the device it is used in) and secondly because in general consumption of batteries is fairly evenly spread across income groups.

### **Identifying the Benefits**

26. The Batteries Directive will contribute to the Government's sustainable development objectives, and to its objectives on waste as set out in the various Waste Strategies.<sup>3</sup>
27. These benefits will include reductions in the quantity and toxicity of waste going to landfill, which is consistent with the Government's waste objectives and with the aims of the Landfill Directive. They will also include improvements to water quality and air quality, contributions to reductions in disamenity, contributions to resource productivity, and positive impacts in terms of raising awareness amongst business and consumers in relation to waste more generally.

### **Quantifying and Valuing the Benefits**

28. There is a complex environmental trade-off associated with the collection and recycling of batteries. As collection and recycling rates increase, the heavy metals in batteries are progressively diverted from waste, but other environmental impacts, such as global warming and resource depletion, may also increase. These impacts on global warming and resource depletion are principally associated with the transportation of spent batteries (both by consumers to collection points and then on to recycling facilities) and the provision of collection facilities. They can be offset by the avoided impacts associated with the recovery of materials through recycling, such as those related to the extraction of primary materials.
29. It is not anticipated that separate journeys will be made to recycle batteries, rather that batteries will be taken along with other recyclables to recycling collection points. Nevertheless, the collection network would need to be strategically thought out in order to decrease any possible additional environmental impacts as far as possible.
30. In 2000, DTI commissioned consultants ERM to carry out a comprehensive study of the environmental and financial impacts of battery collection and recycling<sup>4</sup>. This study looked at the cost effectiveness of various scenarios for

---

<sup>3</sup> *Waste Strategy 2000*, Part 1 and Part 2, Cm 4693-1, Cm4693-2; *National Waste Strategy: Scotland*, ISBN 1-901322-13-2; *Northern Ireland Waste Management Strategy*, March 2000, ISBN 0-37-08386-X.

<sup>4</sup> ERM, *Analysis of the Environmental Impact and Financial Costs of a Possible New European Directive on Batteries*, November 2000.

recycling both consumer batteries and industrial and automotive batteries. It used a Life Cycle Analysis (LCA) approach and estimated the quantity of various heavy metals (including cadmium, iron, manganese and zinc) diverted from landfill for various recycling rates. It also quantified the environmental impacts associated with the collection and transportation of spent batteries.

31. By weight, approximately 60% of primary (non-rechargeable) consumer batteries sold in the UK are alkaline manganese and 38% are zinc carbon. The main constituents of alkaline manganese batteries are iron and steel (25%), manganese (22%) and zinc (15%). The main constituents of zinc carbon batteries are iron and steel (17%), manganese (15%) and zinc (20%). By weight approximately 84% of portable rechargeable batteries sold are NiCd batteries. The main constituents of NiCd batteries are iron and steel (35%), nickel (22%) and cadmium (22%). Lead-acid batteries contain 65% lead.
32. ERM estimated that consumer batteries were responsible for the following quantities of metals going to waste (predominantly landfill) each year: 400 tonnes of cadmium, 5,200 tonnes of iron, 3,800 tonnes of manganese, 622 tonnes of nickel and 3200 tonnes of zinc. Therefore if the targets in the Directive were met 80% of this cadmium would be diverted from landfill and over 40% of the other metals.
33. The environmental benefits of diverting these metals away from landfill or incineration are associated with the reduced risks of them either leaching out from landfill or being emitted to the air following incineration. A full discussion of the environmental implications of heavy metals in waste is given in section 7.4 of the ERM report<sup>4</sup>. The Belgian government has commissioned a Targeted Risk Assessment on the use of cadmium in batteries; this report is currently under peer-review by the European Commission's Scientific Committee on Toxicity, Eco-toxicity and the Environment (SCTEE)<sup>5</sup>.
34. In terms of additional benefits, such as helping to raise general awareness of waste and recycling or reducing disamenity through for example, less fly-tipping, the Batteries Directive should make a positive contribution, but valuing these benefits is not straightforward.

### **Business Sectors Affected**

35. The main business sectors affected will be those concerned with the collection and recycling of portable batteries, as a large proportion of industrial and automotive batteries are already recycled. The main sectors that are likely to be affected will include:
  - Battery producers (manufacturers) – including importers and exporters;
  - Battery Distributors (retailers and wholesalers);
  - Suppliers of primary materials to battery producers;
  - Recyclers who deal with batteries;

---

<sup>5</sup> European Commission, *Directive of the European Parliament and of the Council on batteries and accumulators and spent batteries and accumulators: Extended Impact Assessment*, 24.11.2003

- Companies involved in the transportation, sorting or treatment of batteries prior to recycling;
  - Landfill operators.
36. There are a limited number of UK manufacturers of portable batteries: the bulk of UK sales are imported. There are 18 major producers; of these Accentus, Duracell, Energiser, Panasonic, Rayovac and Uniross are members of the British Battery Manufacturers' Association (BBMA). Portable rechargeable batteries for sale in the UK are principally manufactured by a number of manufacturers outside of the UK. Around 10% of batteries sold in the UK are *own brand* batteries sold by large retailers.
37. The automotive battery industry is distinct from the portable battery industry in that a large proportion of the UK sales of automotive batteries are manufactured in the UK; there are approximately 40 suppliers of lead acid batteries in the UK, of which approximately 20 are domestic manufacturers.
38. Lead acid batteries account for 95% of the sales of industrial batteries by weight. The remainder is made up of mostly industrial NiCd batteries, the majority of which are imported.
39. There is only one recycler of lead acid batteries in the UK, H.J. Enthoven, based near Matlock in Derbyshire. A facility to recycle lithium-ion batteries, using advanced technology, is under development by AEA Technology in Golspie, North East Scotland. Silver oxide batteries, which are commonly used in watches and calculators, are also recycled in the UK.

### **Compliance costs**

40. This section begins with an overview of the performance of several battery-recycling schemes in Europe and a number of trial schemes in the UK. It then moves on to look at the potential costs for the UK of implementing the Directive - for each article of the Directive with a potential cost - and concludes with estimates for the total costs to the UK. Generally the costs refer to the portable batteries only; the costs of recycling automotive and industrial batteries are considered separately.

### **Costs of schemes in Europe and worldwide**

41. Nationwide consumer-battery recycling schemes are operating in seven European Union countries. Detailed data is available for five of these countries. Outside the EU, Switzerland and the USA are reported to run collection and recycling systems based on maximum costs of between £1740 and £1950 per tonne of batteries recycled.
42. The costs of the schemes in the EU are shown in Table 1. These costs vary significantly; Germany and Austria appear to have achieved higher recycling rates at a much lower cost than Belgium, the Netherlands and France. There are a number of potential explanations for this including: inconsistencies in

reporting of cost data; the maturity of the scheme; and the percentage of collected batteries going for recycling.

43. Whilst the Austrian scheme has been running since 1991 and achieved a collection rate of over 160g/inhabitant/year at relatively low cost, the German system has only been running since 1998 and has achieved nearly 140g/inhabitant/year at a very similar cost. In addition the scheme costs for Germany have not fallen since the scheme began, and have in fact risen slightly (a similar cost history is not available for Austria). This suggests that the maturity of the scheme is not a primary reason why costs differ.

*Table 1 – Breakdown of costs in 2002 for a selection of European schemes*

	<b>Austria</b>	<b>Belgium</b>	<b>France</b>	<b>Germany</b>	<b>Netherlands</b>
<b>Cost data</b>					
Variable Costs* (£/tonne)	n/a	840	1122	417	1081
Fixed Costs <sup>+</sup> (£/tonne)	n/a	1763	551	360	1372
Total (£ per tonne)	776	2602	1673	777	2452
<b>Performance data</b>					
Collection rates (g/inhab/year)	179	228	69	137	116
Start date	1991	1996	2001	1998	1995
Recycling plant input	100%	100%	96%	67%	100%
Number of inhabitants/collection point	1110	500	2000- 2500	410	1500

\* includes collection, sorting, transport and treatment

<sup>+</sup> includes communication and administration

n/a – not available

44. Germany is the only country that did not send all, or nearly all of its collected spent batteries for recycling, with only 67% going for recycling. However Austria has achieved similar collection rates at similar costs and has sent 100% of its spent batteries for recycling.
45. A study by the European Portable Battery Association<sup>6</sup> suggests that the reason for these costs differences is the degree of responsibility placed on producers and mandatory collection targets. In Belgium where producers are responsible for collection, sorting, recycling, awareness raising programmes, and high mandatory targets, costs are relatively high. In the Netherlands, producers share responsibility with municipalities, though they still have high mandatory targets. In Austria and Germany where costs are relatively low, producers share responsibility with municipalities and retailers and have no mandatory targets.

### **Costs from UK trial schemes**

46. Battery collection and recycling has been trialled in various parts of the UK. The most high profile of these, the Bristol Battery Recycling campaign, ran

<sup>6</sup> European Portable Battery Association, *A Discussion Document and Studies from the European Portable Battery Industry in view of the revision of the Battery Directive 91/157/EEC*, November 2001.

from September 2002 until September 2003<sup>7</sup> and is now continuing into a second year. During the first year, just over 12 tonnes of batteries were collected for recycling through kerbside collection. The costs of this project are shown in table 2 below. There are however several factors which make the costs of this trial unrepresentative of the ongoing costs of a recycling scheme, including:

- The scheme set-up costs would not be incurred year on year;
- Industrial action by the collection organisation during the trial;
- Closure of a battery recycling facility (the Britannia Zinc Smelter) near Bristol five months into the trial, which lead to increased costs for transporting and recycling spent batteries;
- The difficulty in obtaining clearance to collect batteries from schools or retail outlets due to requirements of waste management licensing.

*Table 2 – Costs of the Bristol battery-recycling scheme*

	£/tonne
<b>Collection</b>	1,980
<b>Communication Strategy:</b>	
Promotional work	3,789
Educational programme	578
Retail promotion	185
<b>Recycling</b>	896
<b>Total</b>	<b>7,428</b>

47. Suffolk County Council began to collect batteries for recycling, at their own cost, in response to interest from householders. Since August 2003, 18 civic amenity (CA) sites have collected 1.6 tonnes of batteries without any publicity, just good signage. The basis for collecting the batteries was a survey where customers stated that they would like to see batteries recycled. A wheeled bin is placed at each site for collecting and then taken to a transfer station, alongside fridges and other waste electrical and electronic equipment (WEEE). When the skip is full it is collected for sorting and recycling. The total cost of collection and recycling was around £1000 (£625/tonne).

#### Costs of implementing the Directive in the UK

##### *Article 6 - Costs of monitoring of the waste stream*

48. The Directive requires the recycling of 80% of total spent NiCd batteries. To demonstrate this, the municipal solid waste stream must be monitored to calculate the quantity of cadmium batteries going to landfill. The costs associated with this activity depend on the volume of waste monitored, the frequency and the method of monitoring, and the number of landfill sites to be monitored. As the protocol for monitoring the waste stream is not yet fixed, it is difficult to estimate the cost.

<sup>7</sup> *Battery Recycling campaign in Bristol: Report on Pilot campaign in preparation for forthcoming European Directive*, November 2003.

49. Several European countries have monitored the amount of portable NiCd batteries found in the Municipal Waste Stream. The monitoring exercise reportedly cost £21,000 in France, £70,000 in Belgium and £105,000 in Germany. Industry has also apparently reported that the total costs will be no more than 1% of the annual budget of the national battery collection associations<sup>5</sup>. These costs correspond to the following costs per tonne of spent battery collected: £5/tonne in France, £30/tonne in Belgium and £9/tonne in Germany<sup>8</sup>.

### ***Article 9 - Collection***

50. There are a range of possible options for collecting batteries, including kerbside collection, use of postal systems, in-store retailer take-back, and bring systems to civic amenity sites, local recycling centres or specific facilities at large retail outlets. Batteries could also be collected with (and removed from) waste electrical and electronic equipment (WEEE) or be collected in schools. In-store retailer take-back is effectively a type of *bring* system, in that consumers will bring their spent batteries to the retailer and put them in specific containers. They will not necessarily bring back batteries that they bought in that particular shop.

#### *Kerbside collection*

51. There are two options for kerbside collection of batteries:
- Collection of batteries alongside other recyclables as part of kerbside collection schemes. In this case additional costs may be incurred providing consumers with bags, in which they would put their spent batteries, and specific containers for batteries at municipal sites. Collection bags for batteries reduce the time spent sorting waste at the kerbside and therefore overall operational costs. Other capital and operating costs of the collection scheme would be allocated to batteries on a *pro rata* basis.
  - Separate kerbside collection system of batteries. In this case the costs would include capital and running costs for the whole collection system.
52. The proportion of households served by kerbside collection schemes including voluntary schemes has increased from 51% in 2000/01 to 58% in 2001/02<sup>9</sup>. The Household Waste Recycling Act 2003 requires local authorities to collect at least two recyclables separate from other household waste by the end of 2010. It will be up to local authorities themselves to determine which waste streams they will collect in kerbside systems but since batteries can easily be collected with other recyclables, particularly WEEE, it may be that battery kerbside collection will expand and provide a collection option by the time the UK is required to meet the collection rate targets in the Directive (five and half years after the publication of the Directive). However, even if kerbside collection

---

<sup>8</sup> Monitoring NiCd batteries in the MSW stream will not necessarily be dependent on the weight of batteries collected, as there will be a fixed cost associated with a monitoring system, but it gives an indication of the relative costs in each country.

<sup>9</sup> Defra, *Section 2.12 of the Municipal Waste Management Survey 2001/02*, August 2003.

systems are available, it will continue to be important to ensure that consumers are aware of the collection options and encouraged to participate and keep participation rates high. In the Bristol trial the participation rate was approximately 40%.

#### *Postal systems*

53. Systems to collect batteries through the postal network have been set up in a number of countries. In the USA, one scheme offers companies, consumers, municipalities, and other generators of waste, a way to recycle batteries and portable electronic devices through the postal system<sup>10</sup>. Batteries that can be recycled include all lithium, alkaline, mercury, nickel-cadmium, nickel metal-hydride, magnesium, silver, zinc and lead batteries. Mobile phones, laptops, personal digital assistants (PDAs), cameras, calculators and cordless tools can also be recycled through this scheme.
54. Users of the scheme buy a container at a price that includes shipping to the recycling facility, and all recycling fees. There are various product options for consumers, industry and government departments. The cost of a container for consumers is \$58 (£31) with a maximum weight of 40 pounds (18kg). Therefore if the box were fully filled with batteries only, this would equate to £1,720/tonne of spent batteries. The scheme was made possible after the US Environmental Protection Agency relaxed requirements on the transport of hazardous waste in an effort to promote recycling.
55. Various organisations collect mobile phones, including their rechargeable batteries, for recycling through the post. Phones can be sent to several charities (including Scope, the Red Cross, Child Advocacy International and Action Aid) free of charge for recycling. Plastic envelopes for sending mobile phones away free of charge are also available from Tesco stores and from companies that participate in the Fonebak scheme such as PC World, Dixons and Virgin Megastores.
56. The use of postal systems to collect batteries in the USA may be particularly appropriate and cost-effective due to the density of the population and remoteness of some of the consumers. It may not be as appropriate in the UK, though it could be cost-effective in some remote areas or for particular types of batteries.

#### *In-store retailer take-back*

57. In-store retailer take-back has been used extensively in the schemes in Europe; Germany obtains over 40% of its batteries from this route. The costs associated with this method of battery collection primarily relate to the containers that would be needed in shops to store collected batteries, in addition to any logistical costs incurred by the retailer. There are however benefits for retailers in terms of raising their profile on environmental issues in the eyes of the consumers. Unlike most bring systems, batteries would be collected in smaller

---

<sup>10</sup> [www.biggreenbox.com/](http://www.biggreenbox.com/)

amounts and may need to be bulked-up centrally before they are sent on for recycling.

#### *Bring systems*

58. In 2001/2002 about 68% of the total household waste collected for recycling by local authorities was collected at civic amenity and bring sites<sup>11</sup>. Specific facilities for collecting batteries can be installed relatively simply at civic amenity sites, local recycling centres or large retail outlets (such as supermarkets or local retailer). Again the costs associated with this option relate to the provision of additional facilities for collecting batteries, such as wheeled bins. In addition there would be costs for training staff to handle spent batteries and other operational costs.

#### *Collection routes in Europe*

59. The battery collection and recycling organisation in Belgium, known as BEBAT, installed 20,000 collection points. 20% of collection points are located in super and hypermarkets as well as schools, the rest are at municipal collection points. About 80% of the total quantity collected is collected from 20% of collection points. Three plastic bags per year are posted by BEBAT to households, so they can use them to store batteries and bring them to collection points. There are three bulking-up depots in Belgium, one of which has a sorting plant<sup>12</sup>.
60. In France, of all the portable batteries collected, 50% came from the retailers 10,000-15,000 collection points in super and hypermarkets and 50% came from about 13,000 municipal collection points.
61. Each household in the Netherlands is given a container in which to collect batteries and other items of chemical waste. They then return this box to one of about 10,000 collection points. The collection points consist of 500-600 municipal collection points and facilities at 4,000 schools, with the remainder largely at retail outlets.
62. In Germany, 44% of collected portable batteries were from retail outlets in 2002<sup>13</sup>, 29% were collected by industry, 26% by municipalities and 1% by the armed forces. There were 160,000 collection points in retail outlets and between 30,000 and 50,000 at municipal collection points.

#### *Costs of collection*

63. Table 3 below shows estimates for the costs of collection in four European countries.

---

<sup>11</sup> *Municipal Waste Management Survey 2001/02*, National Statistics publication produced by Defra.

<sup>12</sup> BioIntelligence Service, *Impact assessment on selected policy options for revision of the Battery Directive*, Final Report, July 2003.

<sup>13</sup> GRS Batterien, *Success Monitor: Back to the Future*, March 2003.

64. Batteries will also be collected as part of waste electrical and electronic equipment (WEEE). The WEEE Directive requires each Member State to collect 4kg of WEEE per inhabitant per year by 31 December 2006. It is likely a significant number of rechargeable batteries will be collected from WEEE, as the WEEE Directive requires all batteries to be removed from the equipment prior to further treatment. These batteries are normally discarded with EEE and usually have a similar lifetime to the equipment they provide power for. The quantity of primary batteries collected through this route is harder to predict as they are not always discarded at the same time as EEE and the lifetime of primary batteries is usually much shorter than the equipment they power.

*Table 3- Costs of collection in Europe (£/tonne)*

	Belgium	France	Germany	Netherlands
Collection (equipment and logistics)	213	319	105	314
of which equipment	39	n/a	n/a	n/a

65. It is likely that a combination of all of the above collection routes would need to be used to achieve the collection rates required for portable consumer batteries.

***Article 11 - Prohibition of final disposal of industrial and automotive batteries in landfill or by incineration***

66. The Directive prohibits the final disposal of any industrial or automotive batteries in landfill or by incineration. Lead acid batteries account for nearly 95% by weight of all industrial batteries, with the remainder made up largely of NiCd.
67. Approximately 90% of lead acid automotive batteries are already collected and recycled. This is primarily because the revenue from sales of recovered materials (mostly lead but some plastics) is generally sufficient to cover the costs of collection and recycling. Studies have shown that the recycling rate is dependent on the price of lead<sup>4</sup>. It is estimated that the cost of recycling lead acid batteries is £160/tonne and collection costs range from £28/tonne to £84/tonne<sup>12</sup>. Revenues from the sale of lead ranged between £185/tonne and £250/tonne<sup>14</sup>. Therefore, depending on the cost of collection systems, net revenues may be negative in some years.
68. Currently one lead smelter in the UK pays suppliers for lead acid batteries. If the lead price (which is controlled by the London Metals Exchange) falls, the price offered to suppliers of collected batteries would also fall. At some point the price paid to suppliers may be too low to encourage some suppliers (particularly small scale suppliers) to provide batteries to the smelter. If the price falls far enough, the smelters may be forced into making a charge to receive batteries. Despite this, most responsible waste producers are still likely to send their batteries to smelters, as the cost of landfill is still higher and automotive batteries count towards the discharge of the recovery/reuse targets in the End of Life Vehicles (ELV) Directive. However the numbers of collectors

<sup>14</sup> Data collected between 1995 and 1999.

of automotive batteries (particularly those collecting batteries which are not in ELVs) could drop and this could lead to concerns about increased fly-tipping.

69. The Directive requires Member States to ensure that producers arrange financing for the collection, treatment and recycling of spent industrial and automotive batteries. Therefore if the price for spent lead-acid batteries does not cover the collection costs of the suppliers, the producers will be responsible for the additional cost.
70. The collection and recycling of NiCd industrial batteries has net costs ranging from £0-200 per tonne<sup>4</sup>. These costs are expected to decrease due to increases in the efficiency of nickel recovery. These costs are currently met by industry, though some producers, such as Saft, have contracts with industry whereby their batteries are returned to them at the end of their life.

### *Article 13 - Collection targets*

71. The Directive sets a collection target of 160g/inhabitant/year<sup>15</sup> for all spent portable batteries including NiCd batteries and specific minimum collection rate equivalent to 80% of the total quantity of spent NiCd batteries. In the UK this equates to some 9,600 tonnes of spent portable batteries. This means that collection rates in the UK will have to increase from around 2% to over 40% of all spent batteries no later than four years after the date of transposition, so approximately mid 2011 (assuming entry into force of a Directive by end 2005 and transposition required by mid 2007) or seven years from now.
72. There are various ways consumers can be encouraged to separate batteries from general municipal waste. These range from a voluntary approach to awareness raising, to providing economic incentives using deposit schemes through to legislation to prohibit the disposal of batteries in the waste stream<sup>16</sup>. In practice, it would be very difficult to enforce regulations prohibiting the disposal of consumer batteries in the household waste.

### *Awareness-raising*

73. Any voluntary approach would be accompanied by a communication strategy. Awareness-raising and information campaigns can consist of media advertising, distributing leaflets, campaigns in schools or launch events. Experiences from trials in the UK and from Europe have demonstrated awareness-raising in schools can be very effective: by 2001 the BEBAT scheme in Belgium was collecting 30% of its batteries from schools. Information campaigns in schools also have knock-on effects in influencing household behaviour.
74. The costs of promoting these battery collection systems in Europe were highest in Belgium at £1,156/tonne and the Netherlands at £1,093/tonne and lowest in France and Germany at £202/tonne and £186/tonne respectively. This level of

---

<sup>15</sup> In terms of the number of batteries, the approximate weight of an AA battery is 20g, therefore each inhabitant would need to collect eight AA batteries, for example.

<sup>16</sup> In Germany the consumer is "obliged" by the German Battery Decree to return batteries to a collection point.

cost detail was not available for Austria. The high communication costs in Belgium are reported to be as a result of a legal threat of an eco-tax if the high collection rates fixed by the Belgian law were not met.

75. Promotional work is more cost effective if it is carried out by a central organisation, possibly reflecting regional differences as appropriate, as the incentive for a firm to invest in promotional work will be limited if they are competing with another firm who will gain from their promotional work. A view has also been expressed that promotional campaigns have more credibility, and are therefore likely to have more impact, if they originate from a public body rather than a private organisation. This is due to the perceived consumers' belief that private companies are acting only to increase profits<sup>7</sup>.

#### *Deposit scheme*

76. The primary benefit of a deposit scheme is that it provides a very clear incentive for returning batteries. For the deposit system to be economically efficient, the scale of the deposit should match the total costs of collection and recycling. However for portable consumer batteries with a low retail value, the deposit may need to be significantly higher, if the deposit is to provide a large enough incentive for consumers to return the battery. This price increase may significantly distort the market for portable consumer batteries.
77. If the deposit is high, it may also provide incentives for fraud and abuse of the system, such as counterfeit batteries or the import of batteries from outside the EU<sup>6</sup>. The administrative costs of the deposit scheme would be large and would fall mainly on the retailers. There are also administrative costs related to the management of the deposit fund and funds from unreturned batteries. One study estimated the cost of a deposit system to cover all portable consumer batteries would be £19.4m (at 1991 prices)<sup>17</sup>.
78. Deposit systems may also have distortionary impacts on trade within Europe if only selected countries implement them.
79. The option of a deposit scheme for portable batteries at EU level was analysed and discarded by the Commission at an early stage for economic reasons. However deposit systems may be appropriate for higher value batteries, such as automotive batteries. Germany currently operates a deposit system for starter batteries, where consumers pay a deposit of €7.50 (£5.23) when not returning a starter battery<sup>18</sup>. Other countries operating deposit schemes for automotive batteries include New Zealand and the USA. The need for a deposit scheme to act as an incentive to return automotive batteries is questionable however, as the disposal of these batteries to landfill will be prohibited and recycling rates are already high.

#### ***Article 18 and 19 – Sorting, Transport and Recycling***

---

<sup>17</sup> Environmental Resources Limited, *Deposit/Refund Systems for Beverage Containers and Batteries*, a study for DTI and DoE, 1991.

<sup>18</sup> *Decree Regarding the Collection and Disposal of Used Batteries and Accumulators (German Battery Decree – BattV)*, Federal Law Gazette: Volume 1 No 33, 2001.

80. Before portable batteries can be sent for recycling they are sorted by chemical composition. The average price of automatic sorting is estimated to be below €200 (£140)<sup>5</sup>. Dedicated automotive sorting plants exist in all countries where separate collection is developed (one to three plants according to the size of the country and the development of separate collection). The main sorting categories for portable batteries are alkaline manganese, zinc carbon, NiCd, nickel metal hydride, button cells, lithium, lithium ion and portable lead acid.
81. The economics of battery recycling is highly dependent on the price of the metals that are recovered, and these prices tend to vary significantly. In addition if the weight of batteries collected increases, the industry will be able to take advantage of economies of scale. This variability makes it difficult to predict the costs of recycling in the future.

*Table 4 - Costs for sorting, transport and recycling in Europe (£/tonne)*

	Belgium	France	Germany	Netherlands
<b>Sorting and Transport</b>	171	106	105	139
<b>Recycling</b>	376	697	187	627

82. Batteries are currently recycled in dedicated plants, or as part of operations that are not battery specific, such as smelting plants (zinc smelters) or electric arc furnaces. The recycling processes use either heat or liquid reagents to break down the batteries into their constituent parts. There are a limited number of recycling facilities in the UK (these include a plant for recycling silver-oxide batteries, one for recycling lead acid batteries and one under development for recycling lithium batteries). Therefore at present most batteries are sent to facilities in Europe for recycling, adding significant transport costs to the total costs.
83. Recycling costs vary by battery chemistry. Lithium batteries are significantly more expensive to recycle, although these make up a very small proportion of spent batteries by weight. Silver-oxide button cells are the only batteries that contain commercially valuable materials.
84. Electric Arc Furnaces (EAF) are used in the manufacture of steel. These furnaces can be used to recover iron or steel from general-purpose batteries. The use of this technology is however restricted to batteries with less than 5 parts per million (ppm) of mercury. The marketing of batteries with mercury content above this level has been prohibited since 1 January 2000. The European Portable Battery Association believes that a four-year period will be sufficient to reach a mercury concentration in the collected primary battery fraction to be lower than 5ppm. The European Battery Recycling Association however considers that a ten-year period is a more realistic estimate.
85. The costs of recycling batteries are likely to fall in the future as more batteries are collected and more recycling facilities are constructed. It is estimated that an annual supply of around 400 tonnes of spent batteries are required before it may become economically attractive to construct a battery recycling facility in

the UK. As transport costs to Europe add up to 20% to the costs of recycling, this should have a fairly immediate impact on overall costs.

86. The Batteries Directive lays down efficiencies for the recycling process. It is not yet clear on what basis these efficiencies will be measured and whether hot processes, such as the recycling of alkaline manganese and zinc carbon batteries through smelting plant or EAFs, will meet these targets.

#### ***Articles 20 to 24 – Financing***

87. As already noted the Directive requires Member States to ensure that producers arrange for the financing for *at least* the treatment, recycling and sound disposal of all spent portable batteries deposited at collection facilities. Financial responsibility for the collection of portable batteries has not yet been assigned in the draft Directive, although it is likely that producers will be responsible for collection of these batteries as they are for industrial and automotive batteries. Financial responsibility for the communication strategy to promote the separation and collection of batteries by consumers has also not yet been assigned.
88. Therefore the main financial responsibility lies with battery producers. Financial responsibility for the collection of portable batteries may be shared with retailers or Local Authorities (LAs). However the *New Burdens Rule* states that new burdens cannot be placed on LAs unless financing is arranged for these additional costs.
89. Irrespective of the exact allocation of financial responsibility for the collection of portable batteries, there are various options available to producers for discharging their financial responsibilities for collection, treatment and recycling.
90. One option would be for producers to collect and recycle their own batteries. However if the target for portable batteries were to be met over 250 million batteries<sup>19</sup> would need to be sorted individually, which with current technology would need to be done largely by hand.
91. The alternative to this is a system where producers would be allocated a share of collected batteries for recycling. As the target for battery collection is in terms of g/inhabitant/year, each producer would be assigned a proportion of the quantity that they would be obliged to recycle. Ideally the method for determining a producer's obligations would be based on the quantity of their batteries in the waste stream, but in practice this would be difficult to measure. Another option would be to base the obligation on the quantity of batteries they put on the market (i.e. their market share). Though the lifetime of batteries

---

<sup>19</sup> 638.9 million portable primary consumer batteries were sold in 1999. Therefore approximately 275 million spent batteries would need to be collected to reach the target of 160g/inhabitant/yr.

means that market share may not be a particularly accurate indicator of actual responsibility in the short term<sup>20</sup>, this may be a viable approach.

92. Producers could then discharge their obligations through several methods including the setting up of an organisation that is responsible for discharging their collection and recycling obligations. Another option would be to set up an organisation that assigns responsibility for battery collection and then leaves producers to arrange collection and recycling.
93. In the first option a single organisation is responsible for collection and recycling of all batteries. This approach has been adopted in all of the European schemes. With producer responsibility, producers would pay a fee to the organisation based on their market share.
94. In the second option, an organisation would allocate shares of spent batteries to individual producers. Each producer would pay a fee to this organisation. The producers would then be responsible for collecting and recycling the share of spent batteries that has been allocated to them. They would therefore have the freedom to carry out the collection and recycling in-house, employ a contractor directly or pay a compliance organisation a fee to carry out the collection and recycling activities on their behalf. This approach is currently being considered for the implementation of the WEEE Directive<sup>21</sup>. There would be potential economies of scale if this approach were adopted for managing both the recycling of WEEE and batteries.
95. A variation on the second option would be to set up a system of battery recovery notes. Once the producers were allocated their share of spent batteries, they would meet their obligations by purchasing recycling notes from recycling companies. The main benefit of this system is that it provides a transparent mechanism through which battery-recycling companies compete to supply recycling notes to producers at lowest cost.
96. Table 5 below shows the reported administration costs for various schemes in Europe.

*Table 5 – Administration costs for schemes in Europe (£/tonne)*

	<b>Belgium</b>	<b>France</b>	<b>Germany</b>	<b>Netherlands</b>
<b>Administration</b>	606	349	174	279

### ***Article 25 – Consumer information***

97. The Directive requires Member States to ensure that consumers are fully informed of the following

<sup>20</sup> Research shows that 50% of primary portable batteries are disposed of within 2.5 years and 95% within 7 years. Typical battery lifetimes for rechargeable batteries range from 3 to 8 years depending on the application.

<sup>21</sup> See [www.dti.gov.uk/sustainability/weee/index.htm](http://www.dti.gov.uk/sustainability/weee/index.htm)

- The potential effects of spent batteries on the environment and human health;
  - The requirement to collect batteries separately and not dispose of them in unsorted municipal waste;
  - The collection and recycling schemes available to them;
  - Their role in contributing to the recycling of spent batteries;
  - The meaning of the crossed-out wheeled bin and the chemical symbols Hg, Cd and Pb.
98. There will be a cost associated with providing all of the above consumer information. For the purposes of this assessment, it is assumed that all of the above information will be covered by producers for the associated costs of the awareness raising campaign (article 13).

### ***Article 27 – Labelling***

99. Directive 98/101/EC amended the original Directive (91/157/EEC) relating to marketing for batteries: from 2000, all batteries containing lead, mercury or cadmium have to carry the symbol of a crossed-out wheeled-bin, in addition to the relevant metal symbol. Under this Directive other types of batteries also have to carry the crossed-out wheeled-bin symbol. However this symbol is already commonly used on packaging for single use batteries to meet the requirements of various European countries and any additional costs related to labelling are not considered to be significant.

### **Estimates of total costs for the UK**

100. The range of costs incurred by the European schemes is given in Table 6 below. Based on the European data, the total costs for the UK to recycle spent portable batteries would be between £7.3m and £28.6m<sup>22</sup> per year. It should be noted that not all of the European countries have met the targets required by the Directive, though one of the countries at the lower end of the range, Austria, has surpassed it. The country at the top end of the range, Belgium has already significantly exceeded the target.

*Table 6 - Cost Ranges for existing schemes to recycle portable batteries in 2002*

		<b>£/tonne</b>
Article 7	Monitoring waste stream	5 - 30
Article 9	Collection points (equipment and logistics)	105 - 319
Article 13	Public relations and communication	186 - 1156
Article 18	Sorting	105 - 171
Articles 18 and 19	Transport and Recycling	187 - 697
Articles 20 to 24	Administration	174 - 606
	<b>Total</b>	<b>762 - 2979</b>

<sup>22</sup> With a UK population of around 60 million, at least 9600 tonnes of batteries will need to be collected.

101. The EC's extended impact assessment developed an economic model to estimate the total collection and recycling costs under various scenarios and for a range of collection rates, based on the data from the European scheme and a range of assumptions. This model estimates the cost of meeting the 160g/inhabitant/year target to be in the range of £900 to £1100 per tonne of batteries collected, which equates to a total of £8.6m to £10.6m per year for the UK.
102. If the collection rate target were increased to 200g/inhabitant/year, the model estimates the costs to be between £1500 and £2000 per tonne, or £14.4m to £19.2m per year for the UK. This increase is driven by the higher communication costs needed to encourage consumers to separate out and collect the batteries. If the target collection rate were increased to 90%, communication costs would increase significantly: the model estimates that the total costs would be in the range of £3800 to £4100 per tonne, which is a total of £36m to £40m per year for the UK.
103. The model suggests that if the collection target were reduced the costs per tonne would not change significantly, because up to a certain point the costs of the communication strategy and the collection systems are fixed.
104. Using the estimates from the model and assuming that one battery weighs 40g on average, it would cost between 3.6p and 4.4p to recycle. A breakdown of the approximate costs for the range of batteries available is given in Table 7 below.
105. As previously mentioned it is likely that most of the cost increase would eventually be passed on to the consumer. This is because the demand for batteries is not very responsive to price increases and the profitability of the primary battery industry in Western Europe is very low<sup>23</sup> (therefore producers are not able to absorb any cost increases). On average therefore each household in the UK might pay 43p to 53p per year for battery recycling<sup>24</sup>.

*Table 7 - Battery type/size average weight*

Battery type	approximate weight <sup>4</sup> (g)	Total cost of treatment (pence)
AAA*	10	0.9 - 1.1
AA*	20	1.8 - 2.2
C*	55	5.0 - 6.1
D*	125	11.3 - 13.8
9V E-block*	42	3.8 - 4.6

\*Average weight of zinc carbon and alkaline manganese batteries

<sup>23</sup> Ernst and Young, *Environmental Costs to the European Portable Battery Industry*, May 2001.

<sup>24</sup> Assuming an average of three people per household.

### **Compliance costs for a typical business**

106. Given the number of businesses that could potentially be affected, and the fact that some aspects of financial responsibility have not yet been determined, it is difficult to assess the compliance costs for a typical business at this stage.

### **Competition Assessment**

107. There are three main key markets that will be affected by the Batteries Directive: battery manufacturers, retailers and recyclers. There are separate markets for each type of battery as they are used in different applications.
108. At present there are a limited number of battery manufacturers in the UK. The Batteries Directive is unlikely to change the structure of the market or make it harder for firms to enter the market or affect one firm more than another.
109. The draft Directive places no specific obligations on retailers at this stage, although they may be involved in discharging the obligations. At present, therefore, there should be limited effect on competition between retailers.
110. There is only one recycler of lead acid batteries in the UK. A facility to recycle lithium-ion batteries is under development. Therefore at present competition between recyclers is limited. The Directive will result in an increase in the amount of spent batteries collected and is therefore likely to result in companies entering the market to recycle batteries, which would result in increase competition.
111. Thus an initial assessment of the competition impacts of the Batteries Directive using the RIU's Competition Filter suggests that the Directive will not have a significant detrimental impact on competition between battery manufacturers or retailers in the UK. The Directive is likely to have a positive impact on competition between battery recyclers.

### **Small firms Impact Test**

112. There are no small businesses involved in the manufacture or recycling of batteries in the UK. There are however numerous small businesses involved in the sale of batteries. At this stage, it is difficult to say whether there might be any specific impacts on these small businesses. The Small Business Service have expressed concerns about the potential impacts of in-store take-back on small retailers who sell batteries (such as newsagents or independent supermarkets), should an obligation be placed on them. Some small businesses are also involved in collecting, storing, sorting and treating batteries prior to recycling.
113. It is possible that larger retailers may be involved in the collection of batteries. One possible impact on small businesses is that consumers may be more attracted to retail outlets that provide facilities for recycling. These facilities are already offered on a voluntary basis for a variety of recyclable materials, and it is likely that additional collection facilities for batteries (which are also likely to

be offered on a voluntary basis) will have an insignificant impact on consumer behaviour.

### **Summary and Conclusions**

114. Implementation of the Batteries Directive in the UK will result in a reduction in the amount of heavy metals going to landfill, which should result in a reduction in risks to human health and the environment. In addition, disposal of batteries in landfill or through incineration can lead to the loss of resources that could otherwise have been recycled. However it is not easy to quantify these benefits, which are offset to some extent by the environmental impacts of additional transport when collection and recycling rates are high, although these costs can be reduced if a coordinated approach to collection is adopted, e.g. collection with other recyclables.
115. The costs of the Batteries Directive include the costs of collecting, sorting, transporting and recycling spent batteries; in addition to the costs of a communication strategy to promote the separation and collection of portable batteries. There are also costs associated with administering a scheme to allocate responsibility to producers.
116. Current estimates of the costs of implementing the Directive, outlined in this partial RIA, range from £7.3m to £28.6m per year, based on data from national schemes that have been implemented in various European countries. However these schemes achieved varying collection rates.
117. The economic model developed in the EC's extended impact assessment, estimates the cost of meeting the 160g/inhabitant/year target to be in the range of £900 to £1100 per tonne of batteries collected. This equates to a total of £8.6m to £10.6m per year for the UK. These costs may vary significantly from year to year. They are likely to peak in the year when the target is required to be met, and then decline as the collection infrastructure becomes established and the consumer awareness of battery recycling grows.
118. There are a number of reasons why the assumptions made in the economic model may not be true for the UK, which makes it difficult to justify predicting the costs to this level of accuracy. The most significant of these assumptions relate to the recycling culture in the UK. The costs of the communications strategy in the European schemes ranged from over £1,000/tonne of batteries collected in Belgium and the Netherlands, to less than £200/tonne in Germany. The cost of the communication strategy to promote separation and collection of batteries is the key variable in assessing the costs of implementing the Directive in the UK.
119. Storage of waste is subject to the permitting requirements of the Waste Framework Directive and therefore a waste management licence or an exemption from a licence is required. If collection routes such as in-store take-back or collection in schools required a waste management licence, the additional administrative burden would make it significantly less likely that these routes would be used. This would have significant implications both on

overall implementation costs and on the likelihood of the UK meeting the collection target for portable batteries. Defra are currently considering the need for exemptions for batteries.

**ANNEX C**

**OFFICIAL COMMISSION TEXT OF PROPOSAL FOR A DIRECTIVE OF  
THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON BATTERIES  
AND ACCUMULATORS AND SPENT BATTERIES AND ACCUMULATORS**



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 21.11.2003  
COM(2003) 723 final

2003/0282 (COD)

Proposal for a

**DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND  
ACCUMULATORS**

[SEC(2003)1343]

(presented by the Commission)

## TABLE OF CONTENTS

1.	Introduction.....	53
1.1.	The market for batteries and accumulators.....	53
1.2.	Community legislation on batteries and accumulators.....	54
2.	Policy considerations and objectives.....	54
3.	Environmental considerations.....	57
3.1.	Materials used in batteries and accumulators.....	57
3.2.	Final disposal of spent batteries and accumulators.....	60
3.3.	Re-introduction of the metals used in batteries in the economic cycle.....	62
4.	Internal market considerations.....	62
5.	Policy measures introduced in the Proposal.....	63
5.1.	Collection of all spent batteries and accumulators.....	63
5.2.	Recycling of all spent batteries and accumulators.....	64
6.	Economic considerations.....	66
6.1.	Collection and recycling costs.....	66
6.2.	Collection and recycling benefits.....	68
7.	Subsidiarity and proportionality.....	69
8.	Trade aspects.....	70
9.	Legal basis.....	70
	ANNEXES.....	71
	ANNEX I: Summary of the content of the Proposal.....	71
	ANNEX II: Summary of the Extended Impact Assessment.....	75
	Chapter I Subject-matter, scope and definitions.....	80
	Chapter II Product requirements.....	82
	Chapter III Placing on the Market.....	83
	Chapter IV Collection.....	84
	Chapter V Treatment and Recycling.....	86
	Chapter VI Common provisions on collection, treatment and recycling.....	87
	Chapter VII Consumer information.....	89
	Chapter VIII Marking requirements.....	89
	Chapter IX Final provisions.....	90
	ANNEX I.....	92
	ANNEX II.....	95

## EXPLANATORY MEMORANDUM

### 1. INTRODUCTION

#### 1.1. The market for batteries and accumulators

Batteries and accumulators are an essential energy source in our society. They are used in a wide variety of products and appliances for a large number of consumers and professionals. The world battery market has grown in value by approximately 9% every year since 1989, driven by the growth linked to the development of new consumer electronic appliances. In value terms, the current growth trend seems to have slowed down and the world-wide demand for batteries and accumulators is projected to grow by 5% a year over the next few years.<sup>25</sup>

Batteries can be distinguished according to users, technologies and certain properties like rechargeability or size.<sup>26</sup> Generally, the battery and accumulator market is divided into two main groups: (i) the 'portable' sector, where batteries usually weigh less than 1 kg and (ii) the 'industrial and automotive' sector, where batteries usually weigh more than 1 kg.

There are three main different types of portable batteries and accumulators:

- general purpose batteries and accumulators which are non-rechargeable (mainly zinc-carbon and alkaline manganese batteries<sup>27</sup>);
- button cells (mainly zinc air, silver oxide, manganese oxide and lithium batteries)<sup>28</sup>, which are non rechargeable;
- rechargeable batteries and accumulators (mainly nickel-cadmium, nickel-metal hydride, lithium ion and sealed lead-acid batteries)<sup>29</sup>.

In 2002, 158.270 tonnes of portable batteries and accumulators were sold in the EU-15. Non-rechargeable portable batteries represent the largest proportion of the portable battery market, approximately 72% in 2002. Rechargeable batteries accounted for 28% of the portable battery market in 2002.<sup>30</sup>

Automotive batteries and accumulators are mainly lead-acid batteries used for automotive starter, lighting and ignition power for vehicles. The automotive battery market can be subdivided into the original equipment market, - batteries sold with new cars - and the after market, batteries sold independently of equipment at filling stations or garages. In 2001, approximately 58 million units were sold in the EU-15. Assuming an average weight of 15 kg per unit, this would amount to 870.000 tonnes in 2001. The entire automotive battery market is expected to increase 1.4% annually until 2006.<sup>31</sup>

---

<sup>25</sup> The Freedonia Group, "World Batteries" report, published in October 2002. EPBA estimates the growth of the battery market in tonnes at 1% per year.

<sup>26</sup> "Impact Assessment on Selected Policy Options for Revision of the Battery Directive", Bio Intelligence, July 2003.

<sup>27</sup> General- purpose batteries are typically used in clocks, portable audio and devices, torches, toys and cameras.

<sup>28</sup> Button cells are small round batteries or accumulators, with diameter greater than height, used for special devices such as hearing aids, watches and small portable equipment.

<sup>29</sup> Portable rechargeable batteries are typically used in cordless and cellular phones, power tools, emergency lighting, laptops and household appliances.

<sup>30</sup> See also EPBA's web site: <http://www.epba-europe.org/>.

<sup>31</sup> See also EUROBAT's web site: <http://www.eurobat.org/>.

Industrial batteries and accumulators are used for industrial purposes, e.g. as standby or traction power in telecommunications and rail applications. In 2002, 189.490 tonnes of industrial batteries and accumulators were sold in the EU-15. Most of the total industrial battery segment are lead acid batteries and accumulators (96%) and a small percentage of industrial nickel-cadmium (NiCd) batteries (2%), that are used for either aircraft or railway/transit system applications.<sup>32</sup> Industrial NiCd batteries and accumulators can also power electrical vehicles (EVs).

## **1.2. Community legislation on batteries and accumulators**

Current Community legislation on batteries and accumulators is Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances,<sup>33</sup> as amended by Commission Directive 98/101/EC.<sup>34</sup> This Directive only covers batteries and accumulators containing more than 0.0005% mercury by weight, more than 0.025% cadmium by weight and more than 0.4% lead by weight. It aims to approximate the laws of the Member States on the recycling and controlled disposal of spent batteries and accumulators by:

- prohibiting the marketing of batteries and accumulators containing more than 0.0005% mercury from 1 January 2000 onwards;
- requiring Member States to ensure the separate collection of the batteries and accumulators covered by the Directive;
- requiring Member States to draw up four-yearly programmes designed, among others, to reduce the heavy metal content of batteries and gradually reduce their share in the municipal solid waste stream.

This Directive was supplemented by Commission Directive 93/86/EEC,<sup>35</sup> laying down marking requirements for batteries and accumulators covered by Directive 91/157/EEC, indicating their separate collection as well as their heavy metal content. Directive 91/157/EEC does not prescribe measurable and verifiable instruments preventing uncontrolled disposal of batteries and accumulators into the environment. As a result there are divergent approaches, and the overall collection efficiency of spent batteries and accumulators in the Community is low. Thus, many batteries and accumulators still are landfilled or incinerated, instead of being collected and recycled. As an illustration, in 2002, out of the 158.270 tonnes of portable batteries and accumulators sold in the EU-15, 72.155 tonnes (representing 45.5% of sales) went to final disposal (landfill or incineration).<sup>36</sup>

## **2. POLICY CONSIDERATIONS AND OBJECTIVES**

The EU waste hierarchy defines the priorities in waste treatment. It gives preference firstly to waste prevention, then to recycling, then to energy recovery and finally to disposal. Indeed, the Communication from the Commission on the review of the Community Strategy for waste management assigns prevention of waste the first

---

<sup>32</sup> The remaining 2% comprises NiMH and other battery types.

<sup>33</sup> OJ L 78, 26.3.1991, p. 38.

<sup>34</sup> OJ L 1, 5.1.1999, p. 1, adapting to technical progress Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.

<sup>35</sup> OJ L 264, 23.10.93, p. 51, adapting to technical progress Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.

<sup>36</sup> “Impact Assessment on Selected Policy Options for Revision of the Battery Directive”, Bio Intelligence, July 2003.

priority, followed by re-use and recovery and finally by safe disposal of waste. Moreover, in its Resolution of 24 February 1997 on a Community Strategy for waste management, the Council reiterated its conviction that waste prevention should be a first priority for a rational waste policy, in relation to minimising waste production and the hazardous properties of waste.<sup>37</sup>

The main impetus for this Proposal comes from the Sixth Community Environment Action Programme (6EAP) which lays down the key environmental objectives and priorities for the next ten years starting as from 22 July 2002.<sup>38</sup> In the field of the sustainable use and management of natural resources and wastes, the 6EAP identifies four specific objectives, including “*a significant reduction in the quantity of waste going to disposal and the volumes of hazardous waste produced, while avoiding an increase of emissions to air, water and soil*” and “*encouraging re-use for wastes that are still generated: the level of their hazardousness should be reduced and they should present as little risk as possible, preference should be given to recovery and especially recycling; the quantity of waste for disposal should be minimised and should be safely disposed of (...)*”.<sup>39</sup>

The 6EAP stipulates that those objectives shall be pursued by, among others, developing or revising the legislation on batteries.<sup>40</sup>

Furthermore, this Proposal builds upon the objectives established by the current Battery Directive, namely to approximate the laws of the Member States on the recovery and controlled disposal of batteries and accumulators containing lead, mercury and cadmium.<sup>41</sup>

Moreover, improving waste management in general is recognised as a major environmental challenge not only at Community level but also at international level. The plan of implementation agreed at the World Summit on Sustainable Development (Johannesburg 2002) builds on Agenda 21 and calls for further action to “prevent and minimise waste and maximise reuse, recycling and the use of environmentally friendly alternative materials, with the participation of government authorities and all stakeholders, in order to minimise adverse effects on the environment and improve resource efficiency”.<sup>42</sup>

To re-incorporate waste in the economic cycle (‘closing the materials loop’), i.e. waste recovery, is recognised by the Communication from the Commission “Towards a Thematic Strategy on prevention and recycling of waste”<sup>43</sup> as an important element of a comprehensive approach to resource management.

This Proposal also takes account of the objectives of the recent Commission Communication on Integrated Product Policy.<sup>44</sup> This Communication sets as its objective “the reduction of environmental impacts from products throughout their life-cycle, harnessing, where possible, a market driven approach, within which competitiveness concerns are integrated”.

---

<sup>37</sup> OJ C 76, 11.03.1997, p. 1.

<sup>38</sup> OJ L 242, 10.9.2002, p. 1.

<sup>39</sup> See Article 8 (1) third and fourth indent of the 6EAP.

<sup>40</sup> See Article 8(2) fourth indent of the 6EAP.

<sup>41</sup> See Article 2 of Directive 91/157/EEC.

<sup>42</sup> [http://www.johannesburgsummit.org/html/documents/summit\\_docs/2309\\_planfinal.htm](http://www.johannesburgsummit.org/html/documents/summit_docs/2309_planfinal.htm) in particular paragraph 21.

<sup>43</sup> Communication from the Commission “Towards a thematic strategy on the prevention and recycling of waste” of 27.05.2003, COM(2003) 301final.

<sup>44</sup> Communication from the Commission “Integrated Product Policy”, COM(2003)302 final of 18.6.2003.

Further policy considerations come from other pieces of Community legislation which also aim to improve the waste management of specific waste streams, such as Directive 94/62/EC on Packaging and Packaging Waste, Directive 200/53/EC on end of life vehicles (ELV Directive)<sup>45</sup>, Directive 2002/96/EC on waste electrical electronic equipment (WEEE Directive)<sup>46</sup> and Directive 2002/95 on the restriction of the use of hazardous substance in electrical and electronic equipment (RoHS Directive).<sup>47</sup>

The WEEE Directive explicitly calls for the revision of Directive 91/157/EEC as soon as possible.<sup>48</sup>

As regards the scope, the RoHS Directive does not apply to batteries. However, batteries incorporated in electrical and electronic equipment, the moment the equipment because waste, will be collected together with the equipment on the basis of the WEEE Directive. The battery producers will become responsible for further treatment once the battery is removed from the equipment after collection. A similar situation applies to batteries incorporated in end-of life vehicles. Those batteries will be collected on the basis of the requirements of the ELV Directive. Furthermore, Article 4(2)(a) of the ELV Directive requires the substitution of mercury, lead, hexavalent chromium and cadmium in vehicles by 1 July 2003.<sup>49</sup> This Directive applies to both automotive lead-acid batteries and nickel-cadmium batteries used in electrical vehicles. However, the Community legislator established a list of exemptions from this substitution requirement in Annex II to this Directive. The use of lead in automotive batteries was exempted without time limitation. As the same time, the Community legislator requested the Commission to look into the feasibility of substituting cadmium in nickel-cadmium batteries used in electrical vehicles as a matter of priority. Commission Decision 2002/525/EC, amending Annex II of the ELV Directive,<sup>50</sup> grants an exemption for the use of cadmium in batteries for electric vehicles until 31 December 2005. However, Article 2(2) of Commission Decision 2002/525/EC stipulates: *“in the framework of the overall environmental assessment already undertaking, the Commission shall continue to analyse the progressive substitution of cadmium, taking into account the need to maintain the availability of electrical vehicles. The Commission shall finalise and make public its findings by 31 December 2004 at the latest and may make, if proven justified by the results of the analysis, a proposal to extend the deadline in accordance with Article 4(2)(b) of Directive 2000/53/EC”*.

In line with the policy considerations mentioned above, this Proposal aims at a significant reduction on the quantities of spent batteries going to disposal and at the highest possible re-introduction of wastes into the economic cycle. The aim is to set verifiable and comparable collection and recycling objectives so that progress throughout the Community can be monitored. Secondly, because of the current divergences between Member States, this Proposal is required to ensure the proper functioning of the internal market and to avoid obstacles to trade and distortion and restriction of competition within the Community.

---

<sup>45</sup> OJ L 269/34, 21.10.2000.

<sup>46</sup> OJ L 37/24, 13.02.2003.

<sup>47</sup> OJ L37/19 of 13.02.2003.

<sup>48</sup> Recital 11.

<sup>49</sup> O.J. L 269/34 of 21.10.2000

<sup>50</sup> OJ, L 170/81, 29.6.2002.

In line with the Community policy of improving and simplifying legislation,<sup>51</sup> this Proposal repeals Directives 91/157/EEC, 91/101/EC and 93/86/EEC and replaces them with one single legal instrument.

### 3. ENVIRONMENTAL CONSIDERATIONS

Each year, approximately 800.000 tonnes of automotive batteries, 190.000 tonnes of industrial batteries and 160.000 tonnes of portable batteries are placed on the Community market. Batteries and accumulators pose not particular environmental concerns when they are in use or kept at home. However, sooner or later those batteries will become waste and risk of contributing to the final disposal of waste in the Community.

The proposed measures aim at managing the risks of the hazardous characteristics of the materials used in batteries, their contribution to air emissions and to polluting incineration residues as well as managing the risks related to landfilling of batteries. As acknowledged by the Scientific Committee on Toxicity, Ecotoxicity and the Environment (SCTEE), there is a lack of methodology to assess the long-term risks of leachate from landfills. Furthermore, the proposed measures aim at contributing to resource savings by re-introducing metals used in batteries in the economic cycle.

#### 3.1. Materials used in batteries and accumulators

Environmental concerns related to batteries and accumulators are mainly due to the materials they contain. The main environmental impacts occur during the production and waste management phases.

Commission Decision 2000/532/EC<sup>52</sup> has established two categories of batteries: non-hazardous and hazardous batteries. Hazardous batteries are lead batteries, nickel-cadmium batteries and mercury-containing batteries. Mercury, various compounds of cadmium and lead are also classified under Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.<sup>53</sup>

- **Mercury:** Mercury is known for a variety of documented, significant adverse impacts on human health and the environment. Mercury and its compounds are highly toxic, especially to the developing nervous system.<sup>54</sup>

Under Directive 67/548/EEC, mercury is classified as

- T; R 23 - Toxic by inhalation;
- R33 - Danger of cumulative effects; and
- N; R50-53 - Dangerous for the environment / Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

---

<sup>51</sup> See Commission Communication COM(2002)275final of 6.6.2002: "European Governance: better lawmaking".

<sup>52</sup> Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, OJ L 226/3 of 06.09.2000.

<sup>53</sup> OJ L 196, 16.8.1967, p. 1.

<sup>54</sup> See Global Mercury Assessment, United Nations Environmental Programme, Chemicals; Geneva, Switzerland, December 2002.

Organic and inorganic mercury compounds in general are classified as:

- T+; R26/27/28 - Very toxic by inhalation, in contact with skin and if swallowed;
- R33: Danger of cumulative effects;<sup>55</sup>
- N; R50-53 - Dangerous for the environment / Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Since 1990, mercury consumption in primary batteries has declined significantly in the EU due to the restriction on the use of mercury in batteries introduced by Directive 91/157/EEC. The restriction entered into force on 1 January 2000. However, button cells are exempted from this restriction. The biggest part of current mercury emissions from batteries in the EU originates from special purpose mercury button cells.<sup>56</sup>

Despite the restriction on the use of mercury in batteries and accumulators, mercury batteries produced before the restriction entered into force are still on the market. For example, in Germany, GRS reported that the average mercury content of general-purpose batteries and accumulators was approximately 200-300 ppm in 1998, and 100 ppm in 2002 and will be below 20 ppm in 2005. In 2001, it was estimated that six tonnes of mercury batteries and accumulators are still at home with the consumers, since the rate of return for button cells containing mercury is only around 10% of the sales volume.<sup>57</sup> The European Battery Recycling Association (EBRA) considers that it will take at least 10 years before all of the older mercury containing batteries will be discarded by the consumers. As the marketing of primary batteries containing more than 5 ppm of mercury stopped in 2000, EBRA estimates that the disappearance of spent batteries in the waste stream will not be observed before 2010.

- **Cadmium:** Cadmium (Cd) is a toxic and carcinogenic substance. The International Agency for Research on Cancer has identified Cd as a known human carcinogen. Epidemiologic studies of Cd-exposed workers show excess lung cancer. The main non-cancer endpoint of concern is kidney damage. Bone and hematologic disorders have also occurred at high level exposure. A wider range of organ toxicity has been demonstrated in animals.<sup>58</sup>

---

<sup>55</sup> Inorganic mercury which is spread in the water is transformed to methylated mercury in the sediments at the bottoms. Methylated mercury easily accumulates in living organisms and becomes concentrated through the food chain via fish. Methylated mercury has chronic effects and causes damage to the brain.

<sup>56</sup> Emission Inventory Guidebook, December 2000.

<sup>57</sup> See press release of 5 June 2002 of the Bundeskartellamt, <http://www.umweltbundesamt.de/uba-info-presse-e/presse-informationen-e/p5602e.htm+mercury+batteries+Germany+2002&hl=fr&ie=UTF-8>.

<sup>58</sup> See Risk Assessment, Cadmium oxide / Cadmium metal; Final Draft, July 2003

[http://ecb.jrc.it/php-pgm/open\\_file.php?ITEM=Draft\\_RAR&CASNO=7440439&FICHIER=/DOCUMENTS/Existing-Chemicals/RISK\\_ASSESSMENT/DRAFT/R303\\_0307\\_env\\_hh.pdf](http://ecb.jrc.it/php-pgm/open_file.php?ITEM=Draft_RAR&CASNO=7440439&FICHIER=/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/DRAFT/R303_0307_env_hh.pdf)

and

Results of the 2<sup>nd</sup> SCOPE Environmental Cadmium workshop, University of Ghent, Belgium, September 2003

<http://www.icsu-scope.org/cdmeeting/2003meeting/cdindex.htm>.

Under Directive 67/548/EEC, cadmium compounds in general are classified as:

- Xn; R20/21/22 - harmful by inhalation, in contact with skin and if swallowed;
- N; R50-53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Due to the results of the risk assessment carried out under Regulation 793/93/EEC<sup>59</sup>, the following classification of cadmium and cadmium oxide is proposed for the 29<sup>th</sup> ATP of Directive 67/548/EEC:

- T; R48/23/25 - Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed;
- T+; R26 - Very toxic by inhalation;
- Carc. Cat. 2, R45 - Carcinogenic substance category 2;<sup>60</sup>
- Muta. Cat.3, R68 - Mutagenic substance category 3<sup>61</sup> / Possible risk of irreversible effects;
- Repr. Cat.3; R62-63 - Substance toxic to reproduction category 3<sup>62</sup> / Possible risk of impaired fertility and possible risk of harm to the unborn child;
- N; R50-53 - Dangerous for the environment / Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Batteries have the highest concentration of cadmium compared to the other typical metal concentration of MSW constituents.<sup>63</sup> The EU regional consumption of cadmium reaches the value of 2.638 tonnes, which are distributed for 75.2% to NiCd batteries, 14.9% to pigments, 5% to stabilisers and 5% in alloys and plating<sup>64</sup>. Of the total amount of cadmium used in batteries, 75-80% is used in portable NiCd batteries and accumulators, while the rest is used in industrial NiCd batteries and accumulators. Portable NiCd batteries and accumulators are said to contain on average 13% of cadmium by weight and industrial NiCd batteries and accumulators contain 8% by weight.

- **Lead:** Above certain concentrations, lead is toxic to humans. Continued or acute overexposure to lead can cause severe and cumulative health problems. Lead affects the major organs as well as the central nervous and circulatory systems. Lead exposure is most serious for young children because they absorb lead more easily than adults and are more susceptible to its harmful effects. During pregnancy, especially in the last trimester, lead can cross the placenta and affect the unborn child. Lead can have adverse effects on the

---

<sup>59</sup> OJ L 224/34 of 3.9.1993.

<sup>60</sup> Substance which should be regarded as if it is carcinogenic to man.

<sup>61</sup> Substance which cause concern for man owing to possible mutagenic effects.

<sup>62</sup> Substance which cause concern for human fertility / substance which cause concern for humans owing to possible developmental toxic effects.

<sup>63</sup> Targeted Risk Assessment (TRAR) on the use of cadmium oxide in batteries, draft final report May 2003, page 67. This report states that the final contribution to the overall cadmium content is dependent on the weight distribution of the different waste components.

<sup>64</sup> TRAR on the use of cadmium oxide in batteries, draft final report May 2003, page 28.

ecosystem, including interference with growth and productivity of marine life, and toxicity of fish.<sup>65</sup>

Under Council Directive 67/548/EEC, lead compounds in general are classified as:

- Repr. Cat.1, R61 - Substance toxic to reproduction category 1<sup>66</sup> / May cause harm to the unborn child;
- Repr. Cat.3, R62 - Substance toxic to reproduction category 3<sup>67</sup> / Possible risk of impaired fertility;
- Xn; R20/22 - Harmful by inhalation and if swallowed;
- R33 - Danger of cumulative effects;
- N; R50-53 - Dangerous for the environment / Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

As regards the use of lead in batteries and accumulators, automotive lead-acid batteries and accumulators are the largest use of lead. In 1997, it was reported that they used about 73% of the global lead production.<sup>68</sup>

### **3.2. Final disposal of spent batteries and accumulators**

Two thirds of the total European municipal solid waste stream (MSW) is still landfilled. However, within the EU there is a clear distinction between 'landfilling' and 'non-landfilling' countries, with the choice of opinions depending on factors such as traditional practice, public acceptance and the availability of land for landfill sites. In Acceding States, the fraction of MSW going to landfill is generally more than 90% and in many cases close to 100%.<sup>69</sup> Legal landfills are becoming increasingly full. Heavy metals and toxins are leaking into the surrounding groundwater and soil. Also worrying is the unknown, but estimated high number of illegal landfills in the EU-25 whose risks cannot be quantified.<sup>70</sup> Directive 1999/31/EC on landfills aims to reduce both the amount and the toxicity of landfilled wastes and defines standards for the design and operation of existing and new landfills.<sup>71</sup> The main alternative disposal route, incineration, also produces toxins and heavy metals. Directive 2000/76/EC on the incineration of waste sets emission standards for both new and existing installations.<sup>72</sup> Filters must be installed in incinerators to prevent the release of toxins and heavy metals in the air. Used filters, together with a quarter of the waste's original weight (incineration residues), are either landfilled, emitted into water and air or further used for construction works and others.

---

<sup>65</sup> See report "Risks to Health and the Environment related to the Use of Lead in Products"; TNO report STB-01-39 (Finals)

<http://europa.eu.int/comm/enterprise/chemicals/legislation/markrestr/studies/lead.pdf>.

<sup>66</sup> Substance known to cause developmental toxicity in humans.

<sup>67</sup> Substance which cause concern for humans owing to possible developmental toxic effects.

<sup>68</sup> See, Lead Industry Profile at the on-line lead fact book, Icon 2001;

<http://www.ldaint.org/factbook/factbookch3.htm>.

<sup>69</sup> European Environmental Agency, Environmental Signals 2002.

<sup>70</sup> "EU focus on waste management", European Commission, DG Environment, August 1999.

<sup>71</sup> OJ L 182/1 of 1.7.1999.

<sup>72</sup> OJ L 332/91 of 28.12.2000.

In case of incineration of batteries, metals such as cadmium, mercury, zinc, lead, nickel, lithium and manganese will be found in the bottom-ashes and fly ashes. Incineration of batteries thus contributes to emissions of heavy metals to air and reduces the quality of the fly ashes and bottom-ashes (incineration residues). The main disposal route for spent batteries and accumulators is landfilling. It is estimated that 75% of the disposed spent batteries are being landfilled. The main environmental concerns associated with the landfilling of batteries are related to the generation and eventual discharges of leachate into the environment.<sup>73</sup> A particular concern related to lithium batteries is their risk of explosion.

The environmental risks related to the disposal of cadmium batteries are assessed in the draft Targeted Risk Assessment Report “Cadmium (oxide) as used in batteries” (TRAR),<sup>74</sup> which is currently being peer-reviewed by the Scientific Committee on Toxicity, Eco-toxicity and the Environment (SCTEE).<sup>75</sup> According to the TRAR, the cadmium emissions of portable nickel-cadmium batteries due to incineration was calculated to be 323 – 1.617 kg of cadmium per year to air and 35-176 kg of cadmium per year to water. Total cadmium emissions of portable nickel-cadmium batteries due to landfill was calculated at 131-655 kg of cadmium per year.<sup>76</sup>

It is estimated that in 2002 at EU level 2.044 tonnes of portable NiCd batteries were disposed of in the municipal solid waste stream.<sup>77</sup> However, a large quantity of batteries and accumulators – even spent batteries - are kept at home, for many years, by end-users before being discarded (‘hoarding of batteries’). At EU level it is estimated that households hoard 37% of portable batteries and accumulators.<sup>78</sup>

Industry estimates that for portable NiCd batteries, this hoarding effect may be even higher. At the moment, when the end-user decides to dispose of those batteries and accumulators conventionally, they may end up in the MSW stream. The TRAR states: *“If NiCd batteries cannot be collected efficaciously, the future cadmium content in the MSW stream is predicted to increase. The impact of this potential increase on future emissions has been assessed for MSW incineration only. The impact of a future change in the MSW composition on the composition of the leachate of a landfill could not be judged based on the current lack of knowledge and methodology”*.<sup>79</sup>

---

<sup>73</sup> Leachate is generated as a result of the expulsion of liquid from the waste due to its own weight or compaction loading (‘primary leachate’) and the percolation of water through a landfill (‘secondary leachate’). The source of percolating water could be precipitation, irrigation, groundwater or leachate recirculated through the landfill.

<sup>74</sup> Targeted Risk Assessment Report (TRAR), draft final report of May 2003, carried out by Belgium within the framework of Regulation 793/93/EEC.

<sup>75</sup> The SCTEE will give its opinion to the European Commission on the overall scientific quality of the report.

<sup>76</sup> See TRAR, draft final report of May 2003, page 133. The following assumptions are made: portable NiCd batteries account for 10-50 % of the total MSW cadmium content, the total cadmium content of MSW on dry weight basis equal 10 g/tonne, and 24.4 % of the spent portable nickel-cadmium batteries are sent to incineration activities and 75.6 % to landfill activities.

<sup>77</sup> “Impact Assessment on Selected Policy Options for the Revision of the Battery Directive”, Bio Intelligence 2003.

<sup>78</sup> “Impact Assessment on Selected Policy Options for the Revision of the Battery Directive”, Bio Intelligence 2003.

<sup>79</sup> TRAR, Final Draft May 2003, page 7. Furthermore, the TRAR itself also indicates the following lack of methodologies to assess certain impacts: *“neither the delayed cadmium emissions of the re-use of incineration residues nor the impact of future expected increase in cadmium content of bottom ash and fly ash on the re-usability of these incineration residues have been quantified”* (page 6) and *“the contamination of the groundwater compartment due to fugitive emissions of landfills have not been quantified in this TRAR since no guidance is available to perform these calculations”* (page 7).

The Commission believes that the measures proposed are suitable to manage the risks currently identified by the TRAR on the use of cadmium in batteries.

### **3.3 Re-introduction of the metals used in batteries in the economic cycle**

At present, many spent batteries which are collected and then disposed of, instead of being recycled.<sup>80</sup> Bio Intelligence reported that in 2002, out of the 22.361 tonnes of portable primary batteries collected, 19.643 tonnes were sent to a recycling facility.<sup>81</sup> For portable rechargeable batteries the entire amount collected (4.862 tonnes) was sent to a recycling facility. EBRA reported a recycling of 10.710 tonnes of portable primary batteries and 4.657 tonnes of portable rechargeable batteries in 2002.<sup>82</sup> On a resource management level, batteries are considered as an ore of secondary raw materials.<sup>83</sup> Valuable metals such as nickel, cobalt and silver could be recovered. Additionally, a range of substances such as various acids, salts and plastics which are also contained in the batteries will be captured by the system and diverted from municipal waste to specific installations equipped to deal with waste batteries. The use of recycled metals in battery production instead of virgin metals has positive environmental impacts through reduced energy use and reduced pollution related to the mining of the virgin source. As an example, using recycled cadmium and nickel require respectively 46% and 75% less primary energy compared with the extraction and refining of virgin metal.<sup>84</sup> For zinc, the relation between the energy needed for recycling and the energy needed for extraction from primary resources is 2.2 to 8.<sup>85</sup> These figures may be particularly significant given the fact that the primary production of metals is the source of approximately 10% of global CO<sub>2</sub> emissions.

## **4. INTERNAL MARKET CONSIDERATIONS**

This Proposal also aims at contributing to the proper functioning of the internal market, thereby guaranteeing the free movement of goods and contributing to the creation of an internal market for the recycling of collected batteries. Current Community legislation on batteries and accumulators containing certain dangerous substances (Directive 91/157/EEC) is based on Article 95 (formerly Article 100a) of the Treaty, which aims at harmonising national legislation with a view to establishing the internal market. In practice, however, there are significant disparities between the national laws implementing Directive 91/157/EEC. Diverging national measures on, for example, marketing restrictions or marking obligations, constitute, in general, barriers to trade and may have a negative impact on the functioning of the internal market. Such effects have frequently been reported by industry following the different ways of implementing Directive 91/157/EEC in various Member States. These potential restrictions on the free movement of goods

---

<sup>80</sup> In the UK, for example, collected industrial NiCd batteries are disposed of in landfills (see “Analysis of the Environmental Impacts and Financial Costs of a Possible New Directive on Batteries”, ERM 2000). In Sweden all alkaline manganese and zinc carbon batteries are put in landfills after collection. In Germany approximately 30% of the portable batteries collected separately are sent to landfills.

<sup>81</sup> “Impact Assessment on Selected Policy Options for the Revision of the Battery Directive”, Bio Intelligence 2003.

<sup>82</sup> See: <http://www.ebrarecycling.org/ArticlesPDF/pressreleases/EBRApressrelease4-6.pdf>

<sup>83</sup> Compare for example the metallic content of a zinc ore (15%) with the zinc content of batteries (20%).

<sup>84</sup> Life Cycle Inventory of Recycling Portable Nickel-Cadmium Batteries, Rydh, C.J., Karlström, M. (2002), Resources, Conservation and Recycling, No. 34, p. 289-309.

<sup>85</sup> Metaller, materialflöden i samhället, Naturwardsverket, rapport 4506, p. 27.

between Member States should therefore be eliminated by legislation at Community level.

Another concern is the disparities between the scope of the national collection and recycling schemes. For instance, in some Member States the schemes cover collection and recycling of all batteries and accumulators, whereas in others they simply cover batteries and accumulators covered by Directive 91/157/EEC. The collection rates also vary considerably between Member States. As these different schemes can have a negative impact on the internal market and distort competition, it is important to ensure a level playing-field across the EU. Whilst Member States remain free to organise the collection and recycling schemes at their national territory, this Proposal requires Member States to extend the scope of those schemes to all batteries and accumulators put on the market.

Economies of scale make battery recycling more efficient if large volumes of batteries and accumulators are processed. Small Member States may find it difficult to collect sufficient volumes for economically sound recycling within their own territories, so they depend on battery collection in other Member States in order to operate their own recycling installations efficiently. A Community-wide system ensuring that the internal market functions properly is thus needed. Moreover, the environmental objectives and requirements to be fulfilled by the market operators as regards the management of spent batteries and accumulators also need to be clarified, if the internal market is to function properly.

## **5. POLICY MEASURES INTRODUCED IN THE PROPOSAL**

The Proposal introduces policy measures which should divert all spent batteries and accumulators from final disposal operations (landfill and incineration) and should ensure that Member States adopt environmentally sound waste management practices which will lead to an efficient collection and recycling of spent batteries and a proper functioning of the internal market. Additional measures are proposed with respect to batteries containing mercury, cadmium and lead since those batteries are qualified as hazardous waste and thus require additional risk management measures.

When preparing this Proposal, the Commission assessed a range of policy measures using an Extended Impact Assessment (ExIA).<sup>86</sup> Main input to this ExIA came from a study performed by an independent consultant<sup>87</sup>, a public stakeholder consultation and the TRAR on the use of cadmium (oxide) in batteries.<sup>88</sup>

### **5.1. Collection of all spent batteries and accumulators**

For portable batteries and accumulators the current collection rate is poor. One of the main reasons seems to be that consumers have considerable difficulty distinguishing between the batteries and accumulators covered by the current Directives (batteries containing certain amounts of mercury, cadmium and lead) and other batteries (e.g. general-purpose batteries). In addition, it appears that due to economies of scale and

---

<sup>86</sup> According to the Communication from the Commission on Impact Assessment, impact assessments should be used to identify the likely positive and negative impacts of proposed policy action, enabling informed political judgements to be made about the proposal and identifying the trade-offs in achieving competing objectives. The impact assessment should be conducted on the basis of the “principle of proportionate analysis”, i.e. the depth of the analysis must be proportionate to the significance of the likely impacts (COM(2002) 276 final.)

<sup>87</sup> “Impact Assessment on Selected Policy Options for Revision of the Battery Directive”, Bio Intelligence 2003.

<sup>88</sup> TRAR on the use of cadmium oxide in batteries, draft final report May 2003.

scope, the cost of a separate collection and disposal system just for a small percentage of the total quantity of portable batteries and accumulators is a major obstacle. So, it is generally considered that moving to an ‘all batteries’ collection scheme will also increase the collection rate of the batteries and accumulators containing mercury, cadmium and lead.

Experience with Directive 91/157/EEC confirmed that the most efficient way to collect portable batteries and accumulators from households is to apply an ‘all batteries’ collection scheme.<sup>89</sup> It is thus important to encourage Member States to set up effective collection schemes for the collection of all portable batteries and accumulators by setting a minimum collection target at Community level.

The Proposal establishes a uniform minimum target for the collection of all spent portable batteries and accumulators to ensure high and equivalent levels of collection in the different Member States. This would also allow monitoring at Community level. It is proposed to calculate this target on the basis grams per inhabitant. This is in line with the calculation of the collection target of the WEEE Directive.<sup>90</sup>

Contrary to spent portable batteries and accumulators, spent industrial and automotive batteries and accumulators have a lower risk of being disposed of in the environment because they are large and used professionally. Moreover, because of their economic value, the collection rate of these batteries and accumulators is reported to be already close to 100% according to established industry practices. It is therefore not deemed necessary to adopt specific collection targets for these batteries and accumulators. Instead, the Proposal imposes a legal obligation on manufacturers to take-back those batteries. The Proposal also requires that automotive batteries and accumulators are collected separately, in so far as those batteries are not already collected on the basis of schemes set up under Directive 2000/53/EC.

For environmental reasons, it is particularly important to divert hazardous waste from the waste stream. Therefore, it is proposed to prohibit the landfilling and incineration of industrial and automotive batteries. Those are mainly lead-acid and nickel-cadmium batteries. As regards the portable nickel-cadmium batteries, such a ban would not appear to be enforceable. Therefore, it is proposed to set an additional collection target for those batteries. It is proposed to set this target at 80% of the total quantity of spent portable NiCd batteries and accumulators which arose annually. This is the quantity of portable NiCd batteries and accumulators which are being collected and disposed of together with the municipal solid waste.

Member States should thus monitor the quantities of portable NiCd batteries and accumulators found in the municipal solid waste stream and report this to the Commission. On the basis of this information as well as new scientific and technical progress, the Commission will evaluate the specific environmental risks related to the use of cadmium in batteries and accumulators on a regular basis.

## **5.2. Recycling of all spent batteries and accumulators**

Directive 91/157/EEC does not specify recycling requirements for spent batteries and accumulators. These are left to the discretion of the Member State provided they

---

<sup>89</sup> This is why several Member States (Austria, Germany, France, the Netherlands, Belgium and Sweden) have already moved from a dedicated battery collection scheme (as required by Directive 91/157/EEC) to an ‘all battery’ collection scheme. An ‘all battery’ collection scheme has also been advocated by EPBA since 1997 with the adoption of their two step plan (“Two Steps Towards a Better Environment”, EPBA November 1997).

<sup>90</sup> Stakeholders submitted that there is no link with the annual battery sales because of the longer life span of batteries (up to 15 years) and the hoarding behaviour of consumers (consumers tend to keep their batteries at home, even after the use-phase). This calculation method is favoured by EPBA.

comply with the internal market rules. The Directive does encourage Member States to promote research into recycling methods and allows them to introduce measures, such as economic instruments, to encourage recycling.<sup>91</sup>

The recycling of batteries and accumulators will ensure that batteries and accumulators are not sent for landfill or incineration after collection, and is thus necessary to close the materials loop. Moreover, it will contribute to the saving of valuable natural resources in conformity with Article 174 of the EC Treaty. Since thousands of tonnes of different metals are used in the production of batteries and accumulators, high recycling rates will contribute substantially to saving of valuable natural resources.

Therefore, this Proposal establishes the principle that all batteries and accumulators collected should be processed for recycling. However, in exceptional circumstances some portable batteries and accumulators might be unsuitable for recycling, for example, in case they are damaged during the collection process. Therefore, the Proposal provides for an exemption from the rule that all batteries collected should be processed for recycling, up to a maximum of 10% of the collected batteries.

In addition, for environmental reasons it is important that the lead and cadmium content of lead-acid and nickel-cadmium batteries is actually recycled, once these batteries and accumulators enter the recycling facility. Since approximately 70% of the lead and cadmium production is used for the battery production, recycling of those batteries would contribute to significant resource savings. Therefore, it is proposed to set a minimum recycling efficiency level for the recycling of those batteries.

From an environmental perspective, life-cycle assessments (LCAs) indicate that the optimum recycling rate for NiCd batteries and accumulators tends to be close to 100%.<sup>92</sup> Studies show that NiCd battery recycling is energy-efficient even in cases where the processing facilities are some distance away.<sup>93</sup> Excluding the use-phase of the battery, 65% of the primary energy used is in the battery manufacture while 32% is in the raw material production. Recycled cadmium and nickel require 46% and 75% less primary energy respectively, compared with extracting and refining virgin metal. Recycling of cadmium, nickel, iron and other battery materials is relatively easy, so it is virtually possible to recycling all (99.9%) of the materials in a NiCd battery. The cadmium recovered should be used in the production of new batteries and accumulators or other products.

Hence, for nickel-cadmium batteries, the minimum recycling efficiencies proposed are all the cadmium and a minimum of 75% by average weight of nickel-cadmium batteries and accumulators.<sup>94</sup>

Recycling schemes for lead-acid batteries and accumulators are already well established and part of current industry practices. These batteries and accumulators contain mainly lead, which is easily recyclable. LCA studies of lead-acid batteries and accumulators indicate that if more quantities of recycled lead are used in lead-acid batteries and accumulators, the negative environmental impacts during their life-cycle

---

<sup>91</sup> See Articles 6, fourth indent and Article 7, paragraph 1 of Directive 91/157/EC as amended.

<sup>92</sup> "Rechargeable Battery Management and Recycling: A Green Design Educational Module", Rebecca Lankey and Francis McMichael, 1999.

<sup>93</sup> "Life Cycle Assessment of Recycling Portable Nickel-Cadmium Batteries", Carl Johan Rydh and Magnus Karlström, 2002.

<sup>94</sup> According to Bio Intelligence, this is the percentage of recoverable materials in NiCd batteries. (see "Impact Assessment on Selected Policy Options for Revision of the Battery Directive", Bio Intelligence 2003, p. 59). EBRA's proposal is to set a minimum recycling of 70% by weight of nickel-cadmium batteries. With industry practices, it is estimated that up to 80% of the average weight of industrial NiCd batteries is recycled.

will decrease.<sup>95</sup> The minimum recycling efficiencies proposed for these batteries and accumulators is all the lead and a minimum of 65% by average weight of the materials they contain.<sup>96</sup>

For other batteries and accumulators, the recycling efficiency proposed is an average of 55% by weight.

## **6. ECONOMIC CONSIDERATIONS**

### **6.1. Collection and recycling costs**

Costs of collection and recycling include the costs of sorting, consolidation, storage, delivery to the recycling facility and recycling.

The cost of collecting and recycling portable batteries and accumulators varies significantly from one Member State to another, depending on how their collection schemes are organised. It is difficult to compare the costs of the various schemes. However, it is clear that specific collection costs (€/tonne) are lower in “all batteries” schemes than in collection schemes dedicated to certain types of portable batteries and accumulators, and that the collection rates achieved are higher.

The European Portable Battery Association (EPBA) reports that the collection and transportation costs in each of the Member States that have set up efficient collection schemes for all portable batteries and accumulators are relatively stable at 300-550€/tonne. Recycling costs have decreased because of economies of scale as more and more batteries and accumulators are collected. Moreover, effective competition on the recycling market, and recycling of portable batteries and accumulators with less mercury in non-dedicated recycling facilities has helped to cut recycling costs. According to the EPBA, the average recycling costs for portable batteries and accumulators ranges from €400 to €900 a tonne.

According to recent experience in some Member States, collection rates have been increased simply by optimising the management of collection schemes, i.e better localisation of collection points and better information to the public. This has been done without a corresponding increase in the specific collection costs. Furthermore, there is no direct relationship between costs and collection rate, as is shown by the fact that the two national collection schemes with the highest collection rates (UFB in Austria and BEBAT in Belgium) have the lowest and the highest collection cost per tonne.<sup>97</sup>

Two comments can be made on the costs of establishing collection and recycling obligations for portable batteries and accumulators at Community level, as proposed in this Directive. Firstly, it is reasonable to predict that costs per tonne will increase if mandatory Community collection targets have to be met. Secondly, costs of existing collection schemes can be expected to decrease over time as management and design of the collection schemes improves along with consumer awareness.

The most cost-efficient collection rate for all portable batteries ranges between 160-200 grams per inhabitant per year. The total costs of collecting, sorting and recycling

---

<sup>95</sup> “Environmental assessment of vanadium redox and lead-acid batteries for stationary energy storage”, C.J. Rydh, *Journal of Power Sources*, 80 (1999), 21-29.

<sup>96</sup> See EBRA’s position paper of 25 April 2003 submitted within the framework of the stakeholder consultation.

<sup>97</sup> In 2002, Austria collected 44% of the annual sales at a cost of € 1,115€/tonne and Belgium collected 59% of the annual sales at a cost of € 3,765€/tonne.

related to this collection rate is estimated between €1.386 - €1.846 €/tonne.<sup>98</sup> The total additional costs of moving from collecting and recycling certain types of batteries and accumulators (as required by Directive 91/157/EEC) to collecting and recycling all batteries and accumulators can then be estimated at € 70-92 million per year.<sup>99</sup>

It should be noted that this estimate is relatively high.<sup>100</sup> As more batteries and accumulators are collected and treated, significant economies of scale are expected to take effect, especially for dedicated recycling schemes, and there is the potential for significant cost reductions. Experience with existing collection programmes has also shown that the schemes can be improved without substantial cost increases.

Moreover, implementation of the WEEE Directive should boost the collection of the portable batteries and accumulators in electrical and electronic equipment. Industry estimates that 90% of portable NiCd batteries and accumulators are incorporated into electrical and electronic equipment. This should allow Member States to achieve collection rates in excess of those currently achieved by existing national collection organisations with only a small increase in marginal costs per tonne of batteries collected, since some of the costs will be allocated to the implementation of the WEEE collection schemes.

Experience in Belgium, Germany and the Netherlands shows that increasing the selling price of batteries and accumulators seems to have no effect on battery consumption. If all the costs of the proposed collection and recycling rates for spent portable batteries were passed on to consumers, the additional annual cost per household would be between one and two Euros.

Revenue from the sale of recycled lead from spent automotive batteries and accumulators amounted to € 265-350€/tonne in the period 1995-1999. Compared to the total costs of collecting and recycling those batteries, which vary between €270 and € 350 per tonne, net cost/revenues range from € -77 to €+ 93 per tonne.<sup>101</sup>

The average net cost of collecting and recycling industrial NiCd batteries and accumulators ranges from € 0 to € 300 per tonne.<sup>102</sup> The costs depend mainly on the type of recycling plant, the proportions of metals recovered and the market prices of scrap metal. According to industry, the recycling cost of these batteries and accumulators is already built into the price that the manufacturers charge the final customer. Hence, mandatory recycling targets would not affect the producers' competitiveness. The recycling industry reports that the recycling costs of NiCd batteries and accumulators could decrease in the future, in particular by increasing the nickel recycling rate by 10-15%.

Given these circumstances, the additional costs incurred by industry in implementing the collection obligations and recycling targets for industrial and automotive batteries and accumulators in this Proposal are unlikely to be significant in terms of their overall cost structure.

The proposed ban on the final disposal of spent automotive and industrial batteries and accumulators is not expected to have significant economic impacts either. As the

---

<sup>98</sup> See "Impact Assessment on Selected Policy Options for Revision of the Battery Directive", Bio Intelligence 2003, page 133 in a 'high' cost scenario with a recycling input target of at least 90%.

<sup>99</sup> Assuming that a collection rate of 160- 200 grams per inhabitant would require an additional collection of 50.000 tonnes of portable batteries.

<sup>100</sup> Compare with EPBA (July 2003) which estimates that a collection of 40.000 tonnes would result in a potential cost of € 43 million per year.

<sup>101</sup> See "Impact Assessment on Selected Policy Options for Revision of the Battery Directive", Bio Intelligence 2003.

<sup>102</sup> See "Impact Assessment on Selected Policy Options for Revision of the Battery Directive", Bio Intelligence 2003. Bio Intelligence final report of July 2003.

recycling of lead-acid batteries and accumulators generally has net economic benefits, the landfill/incineration ban would eliminate the disposal costs of landfilling spent lead-acid batteries, which are estimated at 120€/tonne. For industrial NiCd batteries and accumulators, the landfill/incineration ban could have an additional cost/revenues in the range between € –120 and €+180€ per tonne.<sup>103</sup>

## **6.2. Collection and recycling benefits**

In terms of economic benefits, collecting and recycling all spent batteries and accumulators on the Community market should:

- Cut the costs of raw materials used in batteries and accumulators, as virgin materials can be replaced by recycled materials;
- Cut disposal costs, particularly landfill costs, because there will be less disposal of spent batteries and accumulators in landfills or incinerators and more recycling. Cost for final disposal is estimated at 120€/tonne. Assuming that the proposed collection rate would lead to an additional collection of 50.000 tonnes of portable batteries, the total avoided disposal costs would be €6 million.
- Cut recycling costs because of higher collection rates, economies of scale etc.
- Avoid external costs. External costs are the costs of negative environmental impacts which are not included in the price of the product and are usually paid for by society in the form of cleanup costs or environmental deterioration or negative health effects. As it is difficult to quantify and put a monetary value on any of these external costs avoided by the proposed measures, a description of the benefits is limited to the following:
  - Avoidance of external costs by using resources in spent batteries and accumulators which would otherwise go to final disposal. The metals contained in batteries and accumulators can be diverted from the waste stream and recycled. In addition, other substances in batteries; acids, salts, plastics etc., will also be diverted from the waste stream.
  - Avoidance of potential air and water pollution and external costs caused by the negative environmental impacts from incinerating/landfilling spent batteries and accumulators. Those environmental impacts will depend on a large number of factors such as the stringency of legal standards, whether or not they are in reality respected, the environment in which a waste treatment plant is located, and so on. Certain substances in batteries and accumulators may also pollute incinerator ashes, which could otherwise have been used as construction materials. The levels and effects of exposure to human beings and the environment are potentially very significant.

---

<sup>103</sup> Comparing the range of the net recycling costs of € 0- € 300 per tonne with a costs of € 120 per tonne for landfilling, see also “Impact Assessment on Selected Policy Options for Revision of the Battery Directive”, Bio Intelligence 2003. Bio Intelligence final report of July 2003.

## 7. SUBSIDIARITY AND PROPORTIONALITY

Environmental protection measures and measures with an impact on the internal market fall within the competence of both the Community and the Member States. The principle of subsidiarity requires that the Community takes action only<sup>104</sup> if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can thus be better achieved by the Community, because of the scale effects of the proposed action. The proportionality principle requires Community action not to go beyond what is necessary to achieve the objectives.<sup>105</sup> The present Proposal takes account of the principles of subsidiarity and proportionality for the following reasons:

- The pollution caused by the management of spent batteries and accumulators is of a transboundary nature. This is particularly true for pollution of air and water from disposal of spent batteries and accumulators in landfills or incinerators.
- Divergent national measures as regards, e.g., marking obligations, can have a negative impact on the functioning of the internal market by creating barriers to trade and distortions of competition. Product requirements should be set at Community level to ensure the proper functioning of the internal market and to allow the free movement of spent batteries and accumulators between Member States.
- The Proposal sets out legal requirements for a harmonised Community strategy for the collection and recycling of spent batteries and accumulators, but at the same time leaves Member States free to choose the most appropriate national measures (for example voluntary agreements) to reach the objectives of the Proposal.
- Member States need to take account of national, regional and local conditions when setting up their collection, treatment and financing systems for the management of spent batteries and accumulators. The Proposal allows them the flexibility to do this.
- The Proposal focuses exclusively on the key actions required to achieve its objectives: definitions, marketing restrictions, collection and recycling requirements, marking obligations, data collection, reporting obligations and consumer information. These should guarantee a closed loop system for all spent batteries and accumulators. Although consideration has been given to phasing-out the use of cadmium in batteries and accumulators, the results of the Extended Impact Assessment show that in the current situation, the specific measures proposed are a more appropriate solution. The chosen form of the legal act (a new Directive) gives Member States alternative ways of achieving the objectives of the Proposal, whilst respecting the Treaty, in particular the rules on the internal market and competition.

---

<sup>104</sup> This principle only applies to areas which do not fall within the Communities' exclusive competence.

<sup>105</sup> See Article 5 of the EC Treaty.

## **8. TRADE ASPECTS**

The proposed Directive will apply uniformly to all types of batteries and accumulators on the Community market, irrespective of where they were manufactured. The measures proposed are necessary to meet the objectives of the Directive.

In addition, all measures in this Proposal have been designed to meet international obligations and to minimise potential impacts on trade. Full account has been taken of the obligations of the EU under the WTO-Agreement and the need to avoid unnecessary obstacles to trade.

Within the current framework of Community legislation and programmes, consideration should be given, where necessary, to providing Acceding States, Candidate Countries and Developing Countries with technical assistance to facilitate compliance with the proposed Directive so they can (continue to) have access to the Community market.

## **9. LEGAL BASIS**

This Proposal aims both to protect the environment and to harmonise national legislation on batteries and accumulators. Therefore, it is based both on Article 95 and Article 175 of the EC Treaty. These two Articles of the Treaty set different conditions as regards the right of Member States to maintain or introduce more stringent protective measures. As a consequence, it is necessary to specify the legal basis for each part of the Proposal.

It seems appropriate to harmonise the laws of the Member States as regards product requirements (like a mercury ban and labelling requirements) on the basis of Article 95 of the EC Treaty. This legal basis is appropriate since the disparities between the laws of the Member States on product requirements could create barriers to trade and distort competition in the Community and thus have a direct impact on the establishment and functioning of the internal market.

On the other hand, it seems more appropriate that harmonisation measures to prevent or reduce the generation of spent batteries and accumulators and to prevent or reduce the negative environmental impacts of the metals used in them, are based on Article 175 of the EC Treaty. These measures, which aim to provide a high level of environmental protection, should not prevent Member States from adopting more stringent measures on their national territory.

## ANNEXES

### **ANNEX I: SUMMARY OF THE CONTENT OF THE PROPOSAL**

**Article 1** sets out the subject-matter of the proposed Directive.

**Article 2** sets out the scope of the Directive. It covers all types of batteries and accumulators on the market, irrespective of their material content or use.

**Article 3** lists definitions for the purposes of the Directive.

**Article 4** reiterates the requirement to substitute the heavy metal mercury, which is already established by Directive 98/101/EC.

**Article 5** requires Member States to encourage producers to increase the overall environmental performance of batteries and accumulators throughout their entire life-cycle in accordance with the Commission's Communication on Integrated Product Policy (IPP).<sup>106</sup>

**Article 6** obliges Member states to monitor the quantities of portable NiCd batteries and accumulators disposed of in the municipal solid waste stream. The Commission shall establish detailed rules for this monitoring requirement in accordance with the comitology procedure.

**Article 7** stipulates that, in line with internal market rules, batteries and accumulators meeting the requirements of the Directive can be placed on the market freely and obliges Member States to prohibit or withdraw batteries and accumulators not meeting the requirements of this Directive.

**Article 8** sets out provisions on the collection of spent batteries and accumulators designed to avoid the final disposal thereof. Member States are required to set up schemes to ensure that all batteries and accumulators are collected for recycling and thus to ensure a closed-loop system for all batteries.

**Article 9** requires that Member States shall ensure that efficient collection schemes will be set up for all batteries. The main challenge in creating efficient collection schemes is to motivate consumers to return their spent portable batteries and accumulators via collection schemes. However, for reasons of subsidiarity, only general requirements for collection schemes are specified, in particular that consumers can return portable batteries and accumulators free of charge. The Proposal requires producers to take back industrial batteries and accumulators. Spent automotive batteries and accumulators can also be collected through schemes set up under Directive 2000/53/EC on end-of life vehicles. When setting up those schemes, Member States are to ensure that the negative externalities resulting from transport distances are minimised.

**Article 10** gives producers the possibility to set up either individual or collective collection schemes.

**Article 11** prohibits the final disposal of industrial and automotive batteries and accumulators in landfills or by incineration.

**Article 12** provides a framework for economic instruments. The use of economic instruments remains a valid option for Member States to achieve the objectives of this Proposal. For instance, in order to promote the development and marketing of batteries and accumulators with less hazardous substances, fiscal instruments might be used to offset the cost difference between two technically equivalent battery types. Additionally, tax differentials can provide an incentive to influence consumer's behaviour to promote batteries and accumulators that contain less polluting

---

<sup>106</sup>

COM(2003) 203final of 18.6.2003.

substances. In both cases, Member States have to comply with the EC Treaty rules. Of special importance are Articles 28, 87 and 90 of the EC Treaty. In this context, the Commission adopted a Communication on Environmental Taxes and Charges in the Single Market<sup>107</sup> which sets out guidelines for Member States on the use of economic instruments at national level.

**Article 13** establishes a uniform target for the collection of all spent portable batteries and accumulators as a basis for efficient national collection schemes. It is proposed to set this target at a minimum of 160 grams per inhabitant. Moreover, because of their hazardousness, portable NiCd batteries and accumulators give rise to specific environmental concerns, unless they are collected efficiently. Therefore an additional collection target is set for them in order to guarantee that those batteries will be collected instead of disposed of together with the normal household waste. This target is calculated on the basis of 80% of the quantities of spent portable NiCd batteries collected through collection schemes and disposed of in the municipal solid waste stream.

The proposed calculation method for this additional target builds upon the requirement in Article 6 that Member States should monitor the quantities of spent portable NiCd batteries and accumulators disposed of in the municipal solid waste stream. This monitoring should be based on verifiable, reliable methods representative of the entire national territory and approved by an independent expert body.

**Article 14** gives Member States the possibility to request an exemption from the collection targets of Article 13 due to specific circumstances. For instance, some Member States have specific geographical circumstances such as a large number of small islands or the presence of rural and mountain areas and a low population density. Those Member States could request an extra delay to reach the targets with a maximum of three years.

New Member States acceding to the EU by virtue of the Accession Treaty of 16 April 2003 have a lower GDP than the current Member States. This may reflect in a lower battery consumption which may make it more difficult for them to reach the collection targets.<sup>108</sup> In such case, those countries could also request an adaptation of the collection targets of Article 13.

The envisaged national measures should be notified to the Commission, which will need to approve them, in cooperation with the other Member States.

**Article 15** sets minimum requirements for the treatment of spent batteries and accumulators in the Community. In line with Directive 2002/96/EC, this Article requires Member States to ensure that producers, or third parties acting on their behalf, set up treatment facilities which use the best available recycling techniques.

**Article 16** clarifies that in conformity with Council Regulation 293/93/EEC, Member States may export collected batteries and accumulators to other Member States or third countries for further treatment. Those exports will count for achieving the recycling obligations of this Directive, provided that the exporter declares that the recycling operation took place under conditions equivalent to the requirements of this Directive. To this end, the Commission shall establish detailed rules in accordance with the comitology procedure.

**Article 17** requires Member States to promote research to develop new recycling technologies and the introduction of EMAS.

---

<sup>107</sup> COM(97)009 final.

<sup>108</sup> Another indicator of this could be the Power Purchasing Parities (PPP).

**Article 18** sets out recycling requirements. In principle all batteries and accumulators collected should enter a recycling facility, unless the collected batteries are damaged during collection and it has become technically unfeasible to recycle them.

**Article 19.** In addition to the recycling targets of Article 18, it is proposed to set minimum recycling efficiencies. Those minimum recycling efficiencies are higher for nickel-cadmium and lead-acid batteries which are classified as hazardous waste under Commission Decision 2000/532/EC. Moreover, approximately 70% of the total production of lead and cadmium is used in batteries. Therefore, high recycling efficiencies could substantially contribute to resource savings. For nickel-cadmium batteries and accumulators, all the cadmium and a minimum of 75% of the average weight are to be recycled. For lead-acid batteries, all the lead and a minimum of 65% by average weight are to be recycled. For other batteries and accumulators, a minimum recycling efficiency of 55% by average weight is proposed. The proposed minimum recycling efficiencies are to be evaluated regularly and adapted to technical progress under the comitology procedure.

**Article 20** requires Member States to ensure that producers are responsible for financing the management of spent batteries and accumulators. For portable batteries and accumulators, producers are responsible from at least the collection point onwards. Producers may set up individual or collective schemes.

**Article 21** stipulates that for industrial and automotive batteries, Member States should allow producers and users to conclude financial agreements.

**Article 22.** In line with Directive 2002/96/EC, producers are required to provide a guarantee for the financing of the waste management of batteries and accumulators when placing those products on the Community market. Moreover, Member States should draw up a register of producers placing their products on the national market. These measures should prevent free riders.

**Article 23** provides that for historic waste, final industrial users could also be made financially responsible. Furthermore; in line with Directive 2002/96/EC, this Article obliges Member States to allow producers to use visible fees for a transitional period of four years after the transposition of this Directive.

**Article 24** requires Member States to ensure that the collection and recycling schemes are non-discriminatory and do not create any barriers to trade or distortions of competition.

**Article 25** lists the elements that must be part of consumer information.

**Article 26** stipulates that Member States may require some or all of the consumer information to be provided by economic operators.

**Article 27** requires producers to mark their products with the symbol shown in Annex II, and batteries and accumulators containing mercury, lead or cadmium must be marked with a “chemicals” symbol.

**Article 28** contains reporting obligations for the Member States. They have to report on implementation of the Directive every three years, using a questionnaire established in accordance with the procedure laid down in Article 18 of Directive 75/442/EEC.

**Article 29** contains a review clause. The Commission shall evaluate the results of the monitoring of the municipal solid waste stream on the amount of spent portable nickel-cadmium batteries as referred to in Article 6 and may propose additional risk management measures if appropriate. Moreover, the Commission shall evaluate the minimum collection target for all spent portable batteries and the additional target for spent portable NiCd batteries and accumulators as well as the minimum recycling targets and efficiencies of Articles 18 and 19. The Commission shall publish a report

on those evaluations in the Official Journal, together with a report on the implementation this Directive.

**Article 31** requires Member States to establish rules on penalties applicable to infringements of national measures implementing this Directive. These penalties must be effective, proportionate and dissuasive.

**Article 33** encourages Member States to transpose certain provisions of this Directive through environmental agreements with economic operators.

**Annex II** gives the symbol which shows that batteries, accumulators and battery packs are for separate collection, together with technical specifications for marking.

## **ANNEX II: SUMMARY OF THE EXTENDED IMPACT ASSESSMENT**

The main issues identified by the ExIA have already been covered in the Explanatory Memorandum. This summary focuses on the final policy option chosen, the level of ambition, the expected impact over time and the stakeholder consultation.

### **What is the final policy choice and why?**

The final policy instrument chosen is a new Directive. A Directive is the most appropriate policy instrument given both the objective and the content of the present Proposal. A new Directive revising and repealing the current Battery Directives will establish a framework for the collection and recycling of spent batteries and accumulators and guarantee the proper functioning of the internal market in these products.<sup>109</sup> This policy instrument also leaves it up to Member States to choose the most appropriate implementation measures at the lowest compliance cost. In any case, for the collection of spent batteries and accumulators, Member States can use existing collection infrastructure or infrastructure (to be) set up under other pieces of Community legislation, such as Directive 2000/53/EC on end-of-life vehicles and Directive 2002/96/EC on waste electrical and electronic equipment.

Member States are also encouraged to use environmental agreements to implement certain obligations of the Directive. This approach is consistent with other pieces of Community waste legislation, such as Article 10 of Directive 2000/53/EC on end-of-life vehicles and Article 17 of Directive 2002/96/EC on waste electrical and electronic equipment.

### **Why was a more or less ambitious option not chosen?**

Less ambitious options – ‘no policy change’ or ‘environmental agreement at Community level’, instead of a new legislative instrument - were not chosen because they were not an enforceable or reliable means of addressing the environmental considerations regarding the waste management of batteries and accumulators. More ambitious options, like more stringent collection and recycling requirements, were not chosen mainly because of the cost implications.

A ban on the use of cadmium in portable batteries and accumulators was not chosen, since the proposed measures are expected to provide an equivalent level of environmental protection at lower costs. Such a ban would not cover existing and hoarded portable NiCd batteries and accumulators. For household appliances, the trend now seems to be towards substitution of NiCd batteries by other types (e.g. NiMH and Li-Ion).

### **What are the impacts over time?**

This Proposal is expected to have positive impacts on the environment (less heavy metals from batteries and accumulators in the leachate from landfills and in the air emissions and residues (bottom ash and fly ash) from incineration), on resource savings of the metals used in batteries and on the functioning of the internal market. The collection and recycling requirements for spent batteries and accumulators could create investment in recycling facilities in the existing Member States, Acceding States and in Candidate Countries. Recycling requires a mix of jobs at local level: low-skilled staff for collection and high-skilled staff for processing.

Moreover, exporting batteries and accumulators for recycling may make the market more competitive than depending solely on national recycling facilities. The Proposal

---

<sup>109</sup> In this context, the principles laid down in the Communication from the Commission on the Single Market and the Environment, COM (1999)263, have been taken into account.

will thus contribute to the functioning of the internal market and to competition among recyclers.

**Which interested parties were consulted, when in the process, and for what purpose?**

A public on-line stakeholder consultation was launched on 25 February 2003, with the publication of a Consultation Document on the website. The stakeholder consultation ran until 28 April 2003. The purpose of this on-line stakeholder consultation was to obtain input from all interested parties on a wide range of policy options listed in the Consultation Document. This stakeholder consultation took place at an early stage in the process. The results from the consultation were therefore a useful contribution to selection of the final policy options.

A stakeholder meeting to provide feedback on the on-line stakeholder consultation took place on 15 July 2003. Further information can be found at:

<http://europa.eu.int/comm/environment/waste/batteries.htm>.

**What were the results of the consultation?**

The Commission received contributions from 149 stakeholders (including national, local and regional authorities, industry, battery associations, trade associations, NGOs and consumer and retail organisations). A considerable number of international stakeholders also contributed. This stakeholder participation shows the importance of the debate launched by the Commission. A list of the participating stakeholders and their positions can be found at:

<http://europa.eu.int/comm/environment/waste/batteries/consultation.htm>.

Proposal for a

**DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**  
**ON BATTERIES AND ACCUMULATORS AND SPENT BATTERIES AND**  
**ACCUMULATORS**

**(Text with EEA relevance)**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Articles 95 (1) and 175 (1) thereof,

Having regard to the proposal from the Commission,<sup>110</sup>

Having regard to the opinion of the European Economic and Social Committee,<sup>111</sup>

Having regard to the opinion of the Committee of Regions,<sup>112</sup>

Acting in accordance with the procedure laid down in Article 251 of the Treaty,<sup>113</sup>

Whereas:

- (1) The different national measures concerning batteries and spent batteries should be harmonised in view of the double objective to minimise the impact of batteries and spent batteries on the environment, thus contributing to the protection, preservation and improvement of the quality of the environment and to ensure the smooth functioning of the internal market and avoid distortions of competition in the Community.
- (2) The Commission's Communication on the Review of the Community Strategy for Waste Management of 30 July 1996<sup>114</sup> established guidelines for future Community waste policy. That Communication stresses the need to reduce the quantities of hazardous substances in waste and points out the potential benefits of Community-wide rules limiting the presence of such substances in products and in production processes. It further states that, where the generation of waste cannot be avoided, that waste should be reused or recovered for its material or energy.
- (3) Council Directive 91/157/EEC of 18 March 1991 on batteries and accumulators containing certain dangerous substances,<sup>115</sup> have brought about an approximation of the laws of the Member States in this field. However, the

---

<sup>110</sup> OJ C.....

<sup>111</sup> OJ C.....

<sup>112</sup> OJ C.....

<sup>113</sup> Opinion of the European Parliament of ... .. (OJ C .....), common position of the Council of

... ..

(OJ C .....) and Decision of the European Parliament of ... .. (OJ C .....). ....

<sup>114</sup> COM(96)399 final, 30.7.1996.

<sup>115</sup> OJ L 78, 26.3.1991, p. 38. Directive amended by Commission Directive 98/101/EC (OJ L 1, 5.1.1999, p. 1) and adapted to technical progress by Commission Directive 93/86/EEC of 4 October 1993 adapting to technical progress Council Directive 91/157/EEC (OJ L 264, 23.10.1993,51).

objectives of these Directives have not been fully attained and the need to revise it was also underlined by the Sixth Community Environment Action Programme,<sup>116</sup> and in Directive 2002/96 on waste electrical and electronic equipment.<sup>117</sup> Directive 91/157/EEC should therefore be revised and replaced in the interests of clarity.

- (4) The objective of the provisions on minimum requirements for the collection, treatment and recycling of spent batteries and accumulators and consumer information (Chapters IV – VII) is the protection of the environment and the legal basis for those provisions is therefore Article 175(1) of the Treaty. The objective of the provisions related to product requirements, placing on the marking and labelling in Chapters II, III, VIII and Annex II is to ensure the proper functioning of the internal market and the legal basis for those provisions is therefore Article 95(1) of the Treaty.
- (5) In order to prevent batteries and accumulators from ending up in the environment, and to avoid consumer confusion about the different waste management requirements for different batteries, this Directive should apply to all batteries and accumulators placed on the market in the Community. Provide for such a scope should also ensure economies of scale in collection and recycling, as well as optimal resource saving.
- (6) Reliable batteries and accumulators are fundamental for the safety of many products, appliances and services and are an essential energy source in our society.
- (7) In order to achieve a high level of protection of human and animal health and of the environment, the marketing of certain batteries and accumulators should be prohibited because of the quantity of heavy metals they contain. The quantities of spent nickel-cadmium batteries and accumulators disposed of in the waste stream should be monitored. The Commission should evaluate the need for an adaptation of the Directive, taking account of the results of the monitoring and of available technical and scientific evidence.
- (8) In order to protect the environment, spent batteries and accumulators should be collected. This means setting up collection schemes so that all spent portable batteries and accumulators can be conveniently returned by the end-users free of charge.
- (9) Member States should be required to achieve a high collection rate for spent batteries and accumulators to ensure that they contribute to the environmental objectives of the Community. To achieve a high level of material recovery throughout the Community and prevent disparities between Member States, all Member States should be required to send the spent batteries and accumulators collected to recycling facilities.
- (10) In the light of the specific environmental and health concerns regarding cadmium, mercury and lead and the particular characteristics of batteries and accumulators containing cadmium, mercury and lead additional measures should be adopted. The use of mercury in batteries should be restricted. Final disposal of automotive and industrial batteries should be prohibited. An

---

<sup>116</sup> OJ L 242, 10.9.2002, p. 1.

<sup>117</sup> OJ L 37/24, 13.02.2003, recital 11.

additional collection target should be set for portable nickel-cadmium batteries. Moreover, specific recycling requirements should be established for cadmium and lead batteries in order to attain a high level of materials recovery throughout the Community and to prevent disparities between the Member States.

- (11) All interested parties should be able to participate in collection and recycling schemes. Those schemes should be designed to avoid discrimination against imported products, barriers to trade or distortions of competition and should guarantee the maximum possible returns of spent batteries and accumulators. For a transitional period, producers should be allowed, on a voluntary basis at the time of sale of new products, to show purchasers the costs of managing waste in the past. Producers making use of that provision should ensure that the costs mentioned do not exceed the actual costs incurred.
- (12) Collection and recycling schemes should be optimised, in particular with a view to minimising the negative external costs of transport.
- (13) Basic principles for financing the management of spent batteries and accumulators should be set at Community level. Financing schemes should help to achieve high collection and recycling rates and to implement the producer responsibility principle.
- (14) Holders of spent portable batteries or accumulators should be able to return them free of charge. Producers should therefore finance the collection, treatment and recycling of those deposited at their collection facility. Producers should also finance the collection, treatment and recycling of other spent batteries and accumulators.
- (15) Consumer information on separate collection, the collection schemes available and the consumer's role in the management of spent batteries and accumulators is necessary for successful collection. Detailed arrangements should be made for a marking system, which should provide the consumer with transparent, reliable and clear information on the collection of batteries and accumulators and the heavy metals they contain.
- (16) If, in order to achieve the objectives of this Directive, and, in particular, to achieve high separate collection and recycling rates, Member States use economic instruments, such as differentiated tax rates, they should inform the Commission accordingly.
- (17) Reliable and comparable data on the quantities of batteries and accumulators marketed, collected and recycled are necessary for the monitoring of whether the objective of this Directive has been achieved.
- (18) Member States should lay down rules on the penalties applicable for infringements of the provisions of this Directive and ensure that they are implemented. Those penalties must be effective, proportionate and dissuasive.
- (19) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission.<sup>118</sup>

---

<sup>118</sup> OJ L 184, 17.7.1999, p. 23.

- (20) Since the objectives of this Directive of protecting the environment and ensuring the proper functioning of the internal market cannot be sufficiently achieved by the Member States and can therefore, by reasons of the scale or effects of the action, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve those objectives.
- (21) This Directive applies without prejudice to Community legislation on safety, quality and health requirements and specific Community waste management legislation, in particular Directive 2000/53/EC of the European Parliament and Council of 18 September 2000 on end-of life vehicles<sup>119</sup> and Directive 2002/96/EC of the European Parliament and the Council of 27 January 2003 on waste electrical and electronic equipment.<sup>120</sup>
- (22) As regards producer responsibility, battery producers become responsible for further treatment after the removal of the battery from any separately collected end-of life vehicle or waste electrical and electronic equipment.
- (23) Directive 2002/95/EC on the restriction of hazardous substances in electrical and electronic equipment (RoHS Directive) does not apply to batteries used in electrical and electronic equipment.
- (24) Automotive and industrial batteries used in vehicles should meet the requirements of Directive 2000/53/EC, in particular Article 4 thereof. As regards the use of cadmium in industrial batteries for electrical vehicles, Annex II to Directive 2000/53/EC grants an exemption until 31 December 2005.

HAVE ADOPTED THIS DIRECTIVE:

## **Chapter I**

### **Subject-matter, scope and definitions**

#### *Article 1*

##### **Subject-matter**

This Directive establishes rules regarding the marketing of batteries and accumulators as well as the collection, treatment and recycling of spent batteries and accumulators.

#### *Article 2*

##### **Scope**

1. This Directive shall apply to all types of batteries and accumulators, regardless of their shape, volume, weight, material composition or use.
2. This Directive shall not apply to batteries and accumulators used in equipment connected with protection of essential interests of the security of Member States, including military material, or in arms and munitions intended for specifically military purposes.

---

<sup>119</sup> OJ L 269, 21.10.2000, p. 34.

<sup>120</sup> OJ L 37/24 of 13.2.2003.

### *Article 3*

#### **Definitions**

For the purposes of this Directive, the following definitions shall apply:

- (1) “battery” means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable);
- (2) “accumulator” means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more secondary battery cells (rechargeable);
- (3) “battery pack” means any set of batteries or accumulators encapsulated in an outer casing into one complete unit, not intended to be opened by the consumer;
- (4) “portable battery or accumulator” means a battery or accumulator used in household applications, cordless power tools, emergency lighting and electrical and electronic equipment or other applications by either consumers or professional users;
- (5) “button cell or accumulator” means a small round battery or accumulator whose diameter is greater than its height and which is used for special purposes such as hearing aids, watches and small portable equipment;
- (6) “industrial battery or accumulator” means a battery or accumulator used for industrial purposes, for instance as standby or motive power and a battery or accumulator used for electrical vehicles;
- (7) “automotive battery or accumulator” means a battery or accumulator used for automotive starter, lighting or ignition power for vehicles;
- (8) “spent battery or accumulator” means a battery or accumulator which is waste within the meaning of Article 1 (a) of Directive 75/442/EEC;
- (9) “recycling” means the reprocessing in a production process of the waste materials for the original purpose or for other purposes, but excluding energy recovery;
- (10) “disposal” means any of the applicable operations provided for in Annex IIA to Directive 75/442/EEC;
- (11) “treatment” means any treatment of spent batteries and accumulators after they have been handed over to a facility for sorting, recycling, preparation for disposal, and any other operation carried out for the recycling or disposal of spent batteries and accumulators;
- (12) “appliance” means any electrical or electronic equipment as defined by Directive 2002/96/EC of the European Parliament and of the Council<sup>121</sup> which is fully or partly powered by batteries or accumulators or is capable of being so;

---

<sup>121</sup> OJ L 37 13.2.2003, p.24.

- (13) “producer” means any person who, irrespective of the selling technique used, including by means of distance communication according to Directive 97/7/EC on the protection of consumers in respect of distance contracts.<sup>122</sup>
- (a) manufactures and sells batteries or accumulators under his own brand;
  - (b) resells batteries or accumulators under his own brand or incorporated into appliances;
- or
- (c) imports or exports batteries, accumulators or appliances on a professional basis into a Member State.
- (14) “closed-loop system” means a system in which a spent battery or accumulator is taken-back by a producer, or a third parties acting on his behalf, in order to recycle its secondary materials, which will be re-used in the manufacturing of new products.

## **Chapter II**

### **Product requirements**

#### *Article 4*

##### **Prevention**

1. Member States shall prohibit the marketing of all batteries or accumulators, whether or not incorporated into appliances, which contain more than 0.0005% of mercury by weight.
2. Button cells, and batteries made up of button cells with a mercury content of no more than 2% by weight shall be exempt from the prohibition referred to in paragraph 1.

#### *Article 5*

##### **Increased environmental performance**

Member States shall promote research into the possibility of increasing the overall environmental performance of batteries and accumulators throughout their entire life-cycle, and the marketing of batteries and accumulators which contain smaller quantities of dangerous substances or which contain less polluting substances, in particular as substitutes for mercury, cadmium and lead.

#### *Article 6*

##### **Monitoring of the waste stream**

1. Member States shall ensure the monitoring of the quantities of spent portable nickel-cadmium batteries and accumulators disposed of in the municipal solid waste stream. A report on the results of the monitoring shall be drawn up on the basis of Table 1 in Annex I.

---

<sup>122</sup> OJ L 144, 4.6.1997, p. 19.

2. Without prejudice to Regulation (EC) 2150/2002 on waste statistics<sup>123</sup>, Member States shall establish the report every year, starting one year after the date referred to in Article 32(1) of this Directive and covering the whole of each calendar year. It shall be transmitted to the Commission no later than six months after the end of the year concerned.
3. The Commission shall establish detailed rules for the monitoring of the municipal solid waste stream as referred to in the previous paragraph, in accordance with the procedure referred to in Article 30.

## **Chapter III**

### **Placing on the Market**

#### *Article 7*

#### **Placing on the market**

1. Member States shall not impede, prohibit or restrict the placing on the market in their territory of batteries or accumulators that meet the requirements of this Directive.
2. Member States shall take the necessary measures to ensure that batteries or accumulators which do not meet the requirements of this Directive are not placed on the market or are withdrawn from it.

---

<sup>123</sup> OJ L, 322 of 9.11.2002.

## **Chapter IV Collection**

### *Article 8*

#### **Promotion of a closed loop system**

Member States shall take the necessary measures to prevent the final disposal of spent batteries and accumulators and to aim at achieving a closed loop system for all spent batteries and accumulators.

### *Article 9*

#### **Collection schemes**

1. Member States shall ensure that:
  - (a) schemes are set up under which spent portable batteries and accumulators can be returned free of charge and collection facilities are available and accessible, having regard to population density;
  - (b) producers of industrial batteries and accumulators, or third parties acting on their behalf, take back from end-users spent industrial batteries and accumulators, regardless of chemical composition and origin;
  - (c) producers of automotive batteries and accumulators, or third parties acting on their behalf, set up schemes for the collection of spent automotive batteries and accumulators, unless they are collected through the schemes referred to in Article 5(1) of Directive 2000/53/EC.
2. Member States shall ensure that, when setting up the collection schemes, the negative external impacts of transport are taken into account.

### *Article 10*

#### **Individual or collective schemes**

Without prejudice to Article 9, Member States shall allow producers to set up individual or collective take-back schemes for spent batteries and accumulators, provided that those schemes are in conformity with this Directive.

### *Article 11*

#### **Prohibition of final disposal**

Member States shall prohibit the final disposal of industrial and automotive batteries and accumulators in landfills or by incineration.

### *Article 12*

#### **Economic instruments**

If Member States use economic instruments in order to promote the collection of spent batteries and accumulators or to promote the use of batteries containing less polluting substances, for instance by adopting differential tax rates, they shall notify the measures related to the implementation of those instruments to the Commission.

### *Article 13*

#### **Collection targets**

1. No later than four years after the date referred to in Article 32(1), Member States shall achieve a minimum average collection rate equivalent to 160 grams per inhabitant per year for all spent portable batteries and accumulators including portable nickel-cadmium batteries.

By the same date, Member States shall achieve a specific minimum collection rate equivalent to 80% of total quantity of spent portable nickel-cadmium batteries and accumulators per year. The total quantity shall comprise portable nickel-cadmium batteries and accumulators collected annually through collection schemes as well as those disposed of annually in the municipal solid waste stream.

2. A report on the results of the monitoring shall be drawn up on the basis of Table 2 in Annex I. Without prejudice to Regulation (EC) 2150/2002 on waste statistics, Member States shall establish the report every year, starting one year after the date referred to in Article 32(1) and covering the whole of each calendar year. It shall be transmitted to the Commission no later than six months after the end of the year concerned.

### *Article 14*

#### **Specific extensions and adaptations**

1. Member States may apply for an extension of the deadline to reach the collection targets referred to in Article 13 up to a maximum of 36 months, for reasons related to the specific situation of geographical circumstances such as the large number of small islands or the presence of rural and mountain areas and low population density.
2. Member States having acceded to the European Union by virtue of Accession Treaties concluded after 1 January 2003, may also apply for an adaptation of the collection targets referred to in Article 13, because of the specific situation of a particular low level of battery consumption.
3. If a Member State deems it necessary to introduce national measures based on the previous paragraphs, it shall notify the Commission of the envisaged national measures and the grounds for introducing them.
4. The Commission shall, within six months of the notifications as referred to in paragraph 3, approve or reject the envisaged national measures after having verified that they are consistent with the conditions set out in paragraph 1 and 2 and do not constitute an arbitrary means of discrimination or a disguised restriction on trade between Member States.

In absence of a decision by the Commission within this period, the envisaged national measures shall be deemed to have been approved.

5. The Commission shall inform other Member States of these decisions.

## **Chapter V**

### **Treatment and Recycling**

#### *Article 15*

##### **Treatment operations**

1. Member States shall ensure that producers, or third parties acting on their behalf, set up schemes, using the best available treatment and recycling techniques, to provide for the treatment of spent batteries and accumulators collected in accordance with Article 9.

Member States shall ensure that, when setting up the treatment schemes, the negative external impacts of transport are taken into account.

2. The treatment shall, as a minimum, include removal of all fluids and acids, and storage, even temporarily, in sites with impermeable surfaces and suitable weatherproof covering or in suitable containers.
3. Producers may set up such schemes on an individual or collective basis.

#### *Article 16*

##### **Exports**

1. Treatment may also be undertaken outside the Member State concerned or the Community provided that the shipment of spent batteries and accumulators is in compliance with Council Regulation (EEC) No 293/93.<sup>124</sup>

Spent batteries and accumulators exported out of the Community in accordance with Council Regulation (EEC) No 259/93, Council Regulation (EC) No 1420/1999<sup>125</sup> and Commission Regulation (EC) No 1547/1999/EC<sup>126</sup> shall count towards the fulfilment of the obligations and targets in Articles 18 and 19 of this Directive, only if the exporter declares that the recycling operation took place under conditions equivalent to the requirements of this Directive.

2. The Commission shall establish detailed rules for the implementation of the previous paragraph, in accordance with the procedure laid down in Article 30.

#### *Article 17*

##### **New recycling technologies**

1. Member States shall promote the development of new recycling and treatment technologies, and research into environmentally friendly and cost-effective recycling methods for all types of batteries and accumulators.

---

<sup>124</sup> OJ L 30, 6.2.1993, p. 1. Regulation as last amended by Commission Regulation 2557/2001/EC, OJ L 349, 31.12.2001, p. 1.

<sup>125</sup> OJ L 166, 1.7.1999, p. 6. Regulation as last amended by Commission Regulation 2243/2001/EC, OJ L 303, 20.11.2001, p. 11.

<sup>126</sup> OJ L 185, 17.7.1999, p. 1. Regulation as last amended by Commission Regulation 2243/2001/EC.

2. Member States shall encourage treatment facilities to introduce certified environmental management schemes in accordance with Regulation (EC) 761/2001<sup>127</sup> allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

#### *Article 18*

##### **Recycling targets**

Member States shall ensure that, one year after the date referred to in Article 32(1), producers, or third parties acting on their behalf, achieve the following minimum recycling targets:

- (a) all portable batteries and accumulators collected in accordance with Article 9 enter a recycling process.
- (b) Member States may allow to exempt up to a maximum of 10% of the collected portable batteries and accumulators from the obligation referred to in point (a) for technical reasons;
- (c) all industrial and automotive batteries and accumulators collected in accordance with Article 9 enter a recycling process.

#### *Article 19*

##### **Recycling efficiencies**

1. Member States shall ensure that, no later than three years after the date referred to in Article 32(1), producers, or third parties acting on their behalf, achieve the following minimum recycling efficiencies:
  - (a) recycling of all the lead and a minimum of 65% by average weight of the materials contained in lead-acid batteries and accumulators;
  - (b) recycling of all the cadmium and a minimum of 75% by average weight of the materials contained in nickel-cadmium batteries and accumulators.
  - (c) recycling of 55% by average weight of the materials contained in other spent batteries and accumulators.
2. Member States shall report annually on the recycling targets referred to in Article 18 as well as the recycling efficiencies, referred to in the previous paragraph, actually achieved in each calendar year, starting from the dates referred to in the previous paragraph.

That information shall be submitted to the Commission no later than six months after the end of the year concerned.

## **Chapter VI**

### **Common provisions on collection, treatment and recycling**

#### *Article 20*

##### **Schemes for portable batteries and accumulators**

---

<sup>127</sup> OJ L 114, 24.04.2001, p.1.

1. Member States shall ensure that producers, or third parties acting on their behalf, arrange the financing for at least the treatment, recycling and sound disposal of all spent portable batteries and accumulators deposited at collection facilities set up under Article 9(1)(a).
2. Member States shall ensure that producers comply with the previous paragraph by means of individual or collective schemes.

#### *Article 21*

##### **Schemes for industrial and automotive batteries and accumulators**

1. Member States shall ensure that producers, or third parties acting on their behalf, arrange financing for the collection, treatment and recycling of spent industrial and automotive batteries and accumulators collected in accordance with Article 9(1)(b) and (c).
2. Member States shall allow producers and users of industrial and automotive batteries and accumulators to conclude agreements under which other financing methods than the ones referred to in paragraph 1 can be used.

#### *Article 22*

##### **Registration and Guarantee**

Member States shall take the necessary measures to ensure that, when placing a product on the market, each producer is registered and provides a guarantee, that the management of spent batteries and accumulators will be financed. The producer may provide a guarantee in the form of its participation in appropriate schemes for financing the management of spent batteries and accumulators, or of a recycling insurance, or of a blocked bank account.

#### *Article 23*

##### **Historic waste**

1. Responsibility for meeting the costs of managing the spent batteries and accumulators put on the market before entry into force of this Directive, historic waste, shall lie with producers.
2. For industrial batteries and accumulators put on the market before the entry into force of the Directive and being replaced by equivalent products or by products fulfilling the same function, the financing of the management should be provided by the producers when supplying those new products. Member States may, as an alternative, provide that the final user also be partially or totally, responsible for this financing.
3. For other industrial historical waste batteries, the financing of the costs shall be provided for by the industrial users.
4. With regard to historic waste, Member States shall ensure that for a transitional period of four years after the date referred to in Article 32(1) producers are allowed, at the time of sale of new products, to show purchasers the costs of collection, treatment and recycling of all spent batteries and accumulators. The costs mentioned shall not exceed the actual costs incurred.

*Article 24*

**Participation**

Member States shall ensure that all economic operators in the sectors concerned and all the competent public authorities may participate in the collection, treatment and recycling schemes referred to in Articles 9 and 15.

These schemes shall also apply to products imported from third countries under non-discriminatory conditions, and shall be designed to avoid barriers to trade or distortions of competition.

**Chapter VII**  
**Consumer information**

*Article 25*

**Consumer information**

1. Member States shall ensure, in particular through information campaigns, that consumers are fully informed of:
  - (a) the potential effects on the environment and human health of the substances used in batteries and accumulators;
  - (b) the requirement not to dispose of spent batteries and accumulators as unsorted municipal waste and to collect such waste separately;
  - (c) the collection and recycling schemes available to them;
  - (d) their role in contributing to the recycling of spent batteries and accumulators;
  - (e) the meaning of the symbol of the crossed-out wheeled bin and the chemical symbols Hg, Cd and Pb referred to in Annex II.
2. On the basis of the collection rates achieved, Member States shall, if appropriate, adopt additional measures to ensure that consumers participate in the collection of spent batteries and accumulators and to discourage them from the final disposal of such waste.

*Article 26*

**Economic operators**

Member States may require that some or all the information referred to in Article 25 be provided by economic operators, in particular those involved in the manufacture, distribution and sale of batteries and accumulators.

**Chapter VIII**  
**Marking requirements**

*Article 27*

**Labelling**

1. Member States shall ensure that all batteries, accumulators and battery packs are appropriately marked with the symbol shown in Annex II in accordance with the technical specifications laid down in that Annex.

In exceptional cases, where this is necessary because of the size or function of the battery or accumulators, the symbol may be printed on the packaging.

2. The Commission shall amend Annex II in order to adapt to technical progress, in accordance with the procedure referred to in Article 30

## **Chapter IX**

### **Final provisions**

#### *Article 28*

##### **National implementation reports**

1. Member States shall send the Commission a report on the implementation of this Directive every three years. The reports shall be drawn up on the basis of a questionnaire or outline established by the Commission in accordance with the procedure laid down in Article 30. The questionnaire or outline shall be sent to the Member States six months before the start of the period covered by the report.
2. The report shall be made available to the Commission no later than nine months after the end of the three-year period concerned. The first report shall cover the three-year period starting on the date referred to in Article 32(1).

#### *Article 29*

##### **Review**

1. The Commission shall publish a report on the implementation of this Directive and on the impact of this Directive on the environment as well as on the functioning of the internal market no later than nine months after receiving the reports from the Member States. This report shall include an evaluation on the following aspects of the Directive:
  - (a) The appropriateness of further risk management measures for batteries and accumulators containing heavy metals, taking into account the reporting obligation of the Member States referred to in Article 6
  - (b) The appropriateness of the minimum collection target for all spent portable batteries and accumulators and the additional collection target for spent portable nickel-cadmium batteries and accumulators set out in Article 13, taking into account the information provided by the Member States on the basis of Article 6, technical progress and practical experience gained in the Member States.
  - (c) The appropriateness of the minimum recycling targets and recycling efficiencies set out in Articles 18 and 19, taking into account the information provided by the Member States, technical progress and practical experience gained in the Member States.
2. The Commission shall publish the report in the *Official Journal*. The report shall, where necessary, be accompanied by proposals for revision of the related provisions of this Directive.

### *Article 30*

#### **Committee procedure**

1. The Commission shall be assisted by the Committee set up under Article 18 of Directive 75/442/EEC.<sup>128</sup>
2. Where reference is made to this Article, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to Article 8 thereof. The period laid down in Article 5(6) of Decision 1999/468/EC shall be three months.

### *Article 31*

#### **Penalties**

Member States shall lay down the rules of penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all the necessary measures to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive. The Member States shall notify those provisions to the Commission by the date specified in Article 32 at the latest and shall notify it without delay of any subsequent amendment affected them.

### *Article 32*

#### **Transposition**

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive at the latest 18 months after entry into force of this Directive. They shall forthwith communicate to the Commission the text of those provisions and a correlation between those provisions and this Directive.
2. When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.
3. Member States shall communicate to the Commission the text of all existing laws, regulations and administrative provisions adopted in the field covered by this Directive.

### *Article 33*

#### **Voluntary agreements**

Provided that the objectives set out in this Directive are achieved, Member States may transpose the provisions set out in Articles 6, 9, 16, 25, 26 and 27 by means of agreements between the competent authorities and the economic operators concerned. Such agreements shall meet the following requirements:

- (a) they shall be enforceable;
- (b) they must specify objectives with the corresponding deadlines;

---

<sup>128</sup>

OJ L 377, 31.12.1991, p. 48.

- (c) they must be published in the national official journal or an official document equally accessible to the public and transmitted to the Commission;
- (d) the results achieved must be monitored regularly, and reported to the competent authorities and the Commission, and made available to the public under the conditions set out in the agreement;
- (e) the competent authorities shall ensure that the progress reached under the agreement is examined;
- (f) in cases of non-compliance with the agreements, Member States shall implement the relevant provisions of this Directive by legislative, regulatory or administrative measures.

*Article 34*

**Repeal**

Directive 91/157/EEC is repealed with effect from the date referred to in Article 32(1) of entry into force of this Directive.

References to Directive 91/157/EEC shall be construed as references to this Directive.

*Article 35*

**Entry into force**

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Union*.

*Article 36*

**Addressees**

This Directive is addressed to the Member States.

Done at Brussels,

*For the European Parliament*

*For the Council*

*The President*

*The President*

**ANNEX I**

**Table 1 Monitoring the quantity of spent portable nickel-cadmium batteries and accumulators in the municipal solid waste stream in accordance with Article 6**

Year	
Country	
Total quantity in tonnes of municipal solid waste arising in the year	
Monitoring method used	
Contact details of the independent expert body approving the monitoring method	
Quantity in tonnes of municipal solid waste monitored in the year	
Quantity in tonnes of spent portable nickel-cadmium batteries and accumulators found in	

the waste monitored in the year	
Total quantity in tonnes of spent portable nickel-cadmium batteries and accumulators discarded in the municipal solid waste stream in the year	

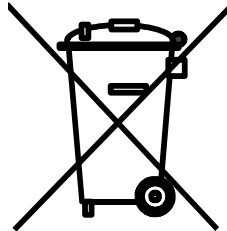
**Table 2: Monitoring of compliance with the collection targets in accordance with Article 13**

Year	
Country	
Number of inhabitants	
Total quantity in tonnes of spent portable batteries and accumulators collected separately in the year	
Collection rate achieved for the total quantity of spent portable batteries and accumulators in grams/inhabitant	
Total quantity in tonnes of spent portable nickel-cadmium batteries and accumulators collected separately in the year (A)	
Total quantity in tonnes of spent portable nickel-cadmium batteries and accumulators discarded in the municipal solid waste stream in the year (B)	
Collection rate achieved for the portable nickel-cadmium batteries and accumulators expressed as a % of A+B ( $\% = \frac{A}{A+B} \times 100$ )	

## ANNEX II

### **SYMBOLS AND TECHNICAL SPECIFICATIONS FOR THE MARKING OF BATTERIES, ACCUMULATORS AND BATTERY PACKS FOR SEPARATE COLLECTION**

1. The symbol indicating “separate collection” for all batteries and accumulators shall be the crossed-out wheeled bin shown below:



2. Batteries, accumulators and button cell containing more than 0.0005% mercury, more than 0.025% cadmium or more than 0.4% lead by weight, shall be marked with the chemical symbol for the metal concerned: Hg, Cd or Pb. The symbol indicating the heavy metal content shall be printed beneath the symbol in paragraph 1 of this Annex and shall cover an area of at least one quarter the size of that symbol.
3. The symbol in paragraph 1 of this Annex shall cover 3% of the area of the largest side of the battery, accumulator or battery pack, up to a maximum size of 5 x 5 cm. In the case of cylindrical cells, the symbol shall cover 1.5% of the surface area of the battery or accumulator and shall have a maximum size of 5 x 5 cm.
4. Where the size of the battery, accumulator or battery pack is such that the symbol would be smaller than 0.5 x 0.5 cm, the battery, accumulator or battery pack need not be marked but a symbol measuring 1 x 1 cm shall be printed on the packaging.
5. The symbols shall be printed visibly, legibly and indelibly.