

<b>Title:</b> Batteries Regulations Amendment  <b>IA No:</b> BIS 2114  <b>Lead department or agency:</b>  Department for Business, Innovation and Skills <b>Other departments or agencies:</b>	Impact Assessment (IA)	
	<b>Date:</b> 21 January 2015	
	<b>Stage:</b> Final	
	<b>Source of intervention:</b> EU	
	<b>Type of measure:</b> Secondary legislation	
	<b>Contact for enquiries:</b>  Grahame Dovey 020 7215 6187	
<b>Summary: Intervention and Options</b>	<b>RPC Opinion: Green</b>	

#### Cost of Preferred (or more likely) Option

Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as Two-Out?	
-£0.1m	-£0.1m	£0m	No	

#### What is the problem under consideration? Why is government intervention necessary?

The Batteries Directive 2013/56/EU amends Directive 2006/66/EC removing exemptions concerning placing on the market of portable batteries and accumulators containing cadmium for use in cordless power tools (CPTs), and of button cells with low mercury content.

Currently the exemptions mean the negative externality of adverse health effects are not taken into account by firms producing and selling cadmium and mercury batteries. The materials used in the batteries of CPTs, such as cadmium and mercury, are both carcinogenic and highly toxic. In both cases, alternative, safer chemistries are available.

This is a single market measure and as such falls within the competency of the EU Commission. UK Government intervention was necessary during negotiations to achieve a UK friendly outcome. UK Government action is necessary now to ensure timely and accurate transposition of the Directive to ensure that UK business is not disadvantaged and that HMG is not subject to Commission infraction proceedings.

#### What are the policy objectives and the intended effects?

- To remove the cadmium and mercury exemptions over a reasonable period of time (From 31 December 2016 and 31 October 2015 respectively).
- To diminish the amount of NiCd batteries in household waste which are released into the environment through landfill.
- To help reduce the risk of mercury polluting the environment.
- To increase competition and consumer choice by enabling consumers to go to independent qualified professionals, not exclusively those representing the manufacturers, for replacement of batteries in products.

**What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)**

The Amendment to the Batteries Directive concerns single market provisions of the original Batteries Directive. As such the UK is obliged to introduce transposing legislation to ensure the single market operates in this area. The Directive does not allow for a non-regulatory approach.

**Will the policy be reviewed? Yes If applicable, set review date: 2017**

Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	<b>Micro</b> Yes	<b>&lt; 20</b> Yes	<b>Small</b> Yes	<b>Medium</b> Yes	<b>Large</b> Yes
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions? (Million tonnes CO <sub>2</sub> equivalent)			<b>Traded:</b>		<b>Non-traded:</b>

***I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.***

Signed by the responsible SELECT SIGNATORY: Matthew Hancock Date: 24 Jan 2015

# Summary: Analysis & Evidence

## Policy Option 1

Description: Transpose the EU legislation removing Nickel Cadmium and Mercury batteries in markets where they were previously exempt

### FULL ECONOMIC ASSESSMENT

Price Base Year 2014	PV Base Year 2014	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -£0.1m	High: -£0.1m	Best Estimate: -£0.1m

COSTS (£m)	Total (Constant Price)	Transition Years	Average (excl. Transition) (Constant Price)	Annual (Constant Price)	Total (Present Value)	Cost
Low	£0.1m	1	£0		£0.1m	
High	£0.1m		£0		£0.1m	
Best Estimate	£0.1m		£0		£0.1m	

#### Description and scale of key monetised costs by 'main affected groups'

Familiarisation costs are estimated at £130,000 assuming 5,000 managers within business have to familiarise themselves with the legislation.

#### Other key non-monetised costs by 'main affected groups'

There may be costs to companies recycling Nickel Cadmium, however the evidence presented so far does not suggest these will be significant. There may also be a cost to consumers from the increased price of substitutes for the banned batteries. However, the EU Impact Assessment and industry associations have suggested these costs will be minimal due to the small price differential and the small and diminishing market share of the banned batteries.

BENEFITS (£m)	Total (Constant Price)	Transition Years	Average (excl. Transition) (Constant Price)	Annual (Constant Price)	Total (Present Value)	Benefit
Low						
High						
Best Estimate						

#### Description and scale of key monetised benefits by 'main affected groups'

#### Other key non-monetised benefits by 'main affected groups'

The main non-monetised benefit is the reduced risk to human health associated with the banned battery chemistries when they are released into the environment through leachate emissions from landfill and incineration residue. Both Nickel cadmium and Mercury are classified as hazardous to human health.<sup>1</sup> For example Cadmium released in water impacts human health by increasing morbidity in the total human population. Mercury is toxic through inhalation and associated with numerous health risks from cumulative exposure.

Key assumptions/sensitivities/risks	Discount rate (%)

### BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OITO?	Measure qualifies as
Costs:	Benefits:	Net:	Yes/No	IN/OUT/Zero net cost

<sup>1</sup> See EC 'Directive of the European Parliament and the Council on batteries and accumulators and spent batteries and accumulators: Extended Impact Assessment' 2003, available at: [http://ec.europa.eu/environment/waste/batteries/pdf/exten\\_impact\\_assessment.pdf](http://ec.europa.eu/environment/waste/batteries/pdf/exten_impact_assessment.pdf)

# Evidence Base (for summary sheets)

## 1. Background to the UK Batteries and Accumulators (Placing on the Market) Regulations

1.1 The Batteries and Accumulators (Placing on the Market) Regulations 2008 set out the technical requirements for new batteries that are placed on the market. They control the use of mercury and cadmium in batteries; ensure that batteries are marked appropriately and that they can be readily removed from appliances for end of life disposal. The Regulations apply to all types of batteries and they place legal obligations on:

- producers of batteries and products that contain batteries
- distributors (retailers) of batteries

1.2 The requirements apply to all businesses irrespective of size. The regulations also reduce consumer choice by restricting products but protect consumers, of batteries or otherwise, from the harmful effects of carcinogens and highly toxic materials.

1.3 The Regulations ban placing batteries containing more than the permitted levels of cadmium and mercury on the market, controls the marking of batteries and sets design requirements on producers of electrical and electronic equipment that contain batteries.

## 2. Rationale for intervention

2.1 The EU Batteries Directive has been amended to ban the use of cadmium in batteries for cordless power tools from 31 December 2016. It also prohibits battery button cells containing mercury from 1 October 2015. Batteries placed on the market before the bans come into place can still be sold until stocks run out. Both of the bans are enacted to reduce substances that adversely affect human health, therefore the ban corrects the negative externality producers would not have factored into their production decision.

2.2 This is a single market measure and as such falls within the competency of the EU Commission. UK government intervention was necessary during negotiations to achieve a UK friendly outcome. UK government action is necessary now to ensure timely and accurate transposition of the Directive to ensure that UK business is not disadvantaged and that HMG is not subject to Commission infraction proceedings.

2.3 The ban on mercury button cells is in line with the undertaking made by the UN Environment Programme in January 2013, to a ban on most uses of mercury by 2020 (the Minamata Convention).

We are required to implement the changes to the Directive by 1 July 2015.

## 3. Policy Objectives

3.1 There are 3 key objectives

- To ensure the eventual removal from the market of NiCd batteries for use in cordless power tools
- To prohibit the marketing of mercury button cells.
- To ensure that where batteries and accumulators cannot be readily removed by the end-user, manufacturers should design appliances in such a way that they can be readily removed by qualified professionals that are independent of the manufacturer.

## 4. Description of options considered

4.1 **“Do Nothing”** – This was not extensively explored as an option as we are legally obliged under EU law to transpose the Directive. We would also be putting UK business at a competitive disadvantage creating uncertainty and an unlevel playing field.

4.2 **Introduce amended Batteries Regulations through copy out** - In transposing the amended Directive, we don't intend to go further than implementing its minimum requirements, e.g. by extending the scope beyond what is required in order to minimise the possibility of a differing interpretation of the Directive.

4.3 **Go beyond EU regulations** – There is no scope to go beyond the EU Directive as this is a single market Directive and any attempt to do so would result in infraction proceedings being taken against the UK.

## 5 Risks and Assumptions

*There will be a negligible impact on UK manufacturers*

5.1 There is no manufacture of nickel cadmium (NiCd) cordless power tool (CPT) batteries or button cells containing mercury in the UK meaning no direct impact to manufacturers.

*Recycling of nickel cadmium batteries is predominantly exported*

5.2 There may be a small impact on the collection/recycling facilities that presently gain from material revenues of waste NiCd batteries which generally have a higher residual value than the alternative battery types. However, all of these types of batteries are exported from the UK for recycling elsewhere in Europe. There could be an impact on UK collection schemes as fewer NiCd batteries from power tools will become waste. It is suspected that there will be a lag from the ban on the sale of new batteries, coupled with effects of stockpiling, until they disappear, as it will take several years before batteries sold in, say, 2016 come to the end of their life. Again, given the timescales involved it is assumed that industry has adequate time to, if necessary, adapt their facilities to deal with the change. Indeed one would assume that the majority of equipment that up to 2016 is sold with a NiCd battery will still be sold, but with another battery chemistry in place of the NiCd. Thus one would not necessarily expect to see a reduction in overall waste battery arising, or even a reduction in new batteries being put on the market – although the mix of the chemistries will change.

5.3 NiCd batteries are now very expensive to recycle – the cost having more than doubled in the course of 2013. Therefore there is a risk of unscrupulous people hiding NiCd in other chemistries, or dumping them to avoid a high cost.

*The substitute for Nickel Cadmium batteries will be less harmful, giving a net health improvement to consumers*

5.4 Some stakeholders have expressed concerns about the high level toxicity of the materials used in one of the cadmium-free technologies (NiMH) and claim that a cadmium ban could lead to even more harmful materials entering the market than is currently the case with NiCd batteries because alternative batteries do not last as long and are less easily recycled.

5.5 However the EPTA disagree as safety and quality tests are typically performed by their members (or their sub-contractors) on cells and battery packs and design safety features into their batteries. Their view is supported by the Targeted Risk Assessment Report (TRAR) on the use of Cadmium in batteries and the Risk Reduction Strategy (RRS) adopted for Cadmium by the EU.<sup>1</sup> The latter report states that

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[http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/1032/1/reqno\\_jrc38226\\_european%20union%20risk%20assessment%20report%20-%20part%201%20-%20environment%20-%20cadmium%20oxide%20and%20cadmium%20metal%5B2%5D.pdf](http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/1032/1/reqno_jrc38226_european%20union%20risk%20assessment%20report%20-%20part%201%20-%20environment%20-%20cadmium%20oxide%20and%20cadmium%20metal%5B2%5D.pdf)

“the conclusion of the assessment to the risk to Consumers is that there is at present no need for further information and /or testing or for risk reduction measures beyond those which are being applied. This conclusion is reached because: among the scenarios examined in the risk assessment, Cadmium oxide is only used for the manufacture of NiCd batteries and, in this case, consumer exposure is considered to be non-existent or negligible.

5.6 In recent years lithium-ion technology has taken the market share from NiCd to such an extent that last year NiCd represented only 10% by value. Over the same period collection systems have improved and there are more batteries collected and recycled. Collection and recycling of Ni-Cd batteries is driven by the value of the nickel and cadmium content of the waste NiCd batteries. The implementation of the Batteries Directive and the future restriction of placing portable NiCd batteries on the market results in a situation where more waste NiCd batteries are collected than the quantity of new NiCd batteries placed on the market. Therefore the impact on the environment is significantly reduced.

## **6 Costs and Benefits of Option 1**

The analysis below concludes the unmonetised benefits to human health outweigh the small transition costs of the legislation.

### Costs

6.1 There are two potential costs of option 1 that are considered in this analysis:

- Increased cost of nickel cadmium and mercury battery substitutes to consumers
- Reduced sales to UK cordless power tool retailers and manufacturers due to reduced demand if the price elasticity of demand is significant

The assumptions above show that there are no manufacturers of nickel cadmium or mercury batteries in the UK, therefore there is no value lost in production. However, the ban could still affect consumers who purchase goods with nickel cadmium and mercury batteries, since they will now have to purchase substitutes. The substitutes are shown to be more expensive for the consumer goods affected; however the value of sales for those products is shown to be very small with a trended decline even in the absence of the regulation amendments. Therefore, the analysis concludes a negligible cost to both consumers and businesses from the new regulations. This conclusion was further confirmed by industry respondents to the consultation where 4 out of 5 respondents agreed there would be no increased costs to consumers and businesses.

#### *Increased cost of substitutes to consumers*

6.2 The main consumer goods that contain nickel cadmium batteries are cordless power tools. The price differential and market trends are considered here and the substitute for mercury batteries is considered afterwards.

6.3 NiCd batteries are used in some cheaper cordless power tools. Consumers will still be able to buy corded power tools (cheapest option) and power tools with alternative (but more expensive) batteries such as NiMH or Lithium-ion. The impact on UK consumers is expected to be limited; in Western Europe, around 70% of cordless power tools (volume) already use these alternative chemistries as they provide more power for a given weight and can be more quickly charged. NiCd batteries are used much more commonly in Eastern Europe where the cost advantage is more significant to consumers. The European Power Tool Association (EPTA) collects pan-European sales data from its members and provides consolidated statistics back to those members on a confidential basis. Their estimate of the 2012 EU27 market of CPTs was 1.6 billion euros and 14 million units. They estimated that products powered by lithium-ion

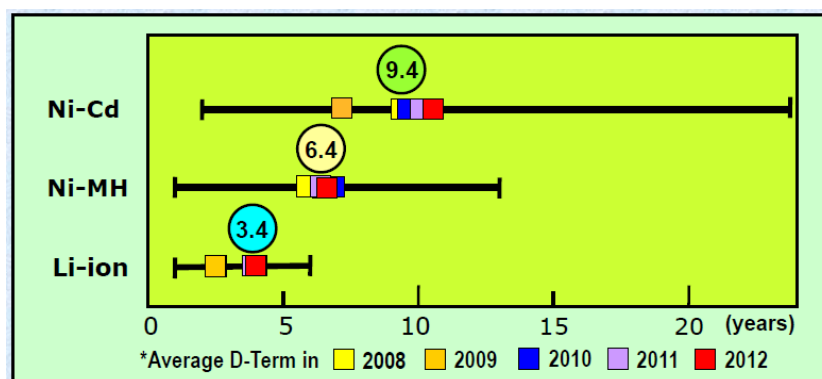
batteries represented 70% and products powered by nickel based batteries 30%. Their estimate of the size of the UK, based on GDP was around 14% of the EU.

*Nickel Cadmium battery power tool sales have been on a long term decline and now only make up an estimated 10% of the market*

6.4 The estimate of 70% of cordless power tools in the UK containing Nickel cadmium batteries shows the volume but industry discussions have suggested that an estimated 90% of the value of all cordless power tools sold in the UK use Lithium ion or NiMH batteries. The sale of Nickel Cadmium power tools has been in decline, since the lighter batteries entered the market from 2006. The increase of approximately 10-20% in price for the lighter batteries has been paid by most consumers as there is a gain in quality to offset the price increase: lighter power tools.

6.5 The price increase in the upfront cost of lithium ion batteries, the main substitute, may underestimate the true economic cost increase to consumers compared to nickel cadmium batteries. This is because the battery life of Nickel cadmium batteries has been shown to be greater than lithium ion and nickel-metal hydride batteries. A recent update of power tool battery collection and recycling in Japan, provided by the European Power Tools Association, revealed the following graphic which shows the average disposal term for each battery chemistry over five years:

Fig 1. Japanese data on average battery life of cordless power tool batteries, provided by EPTA



6.6 The figure shows improving performance of Ni-Cd substitutes but evidence suggests that substitutes will have to be replaced more often and therefore the full economic lifetime cost is likely to be higher than 10-20%.<sup>2</sup> However, market data and industry discussions have all suggested that in the UK the regulations will not significantly speed up the observed decline in Nickel cadmium power tool sales. Industry has also stated that they do not expect to see a decline in sales, therefore analysts have concluded costs to consumers and businesses will be negligible.

#### *The increased cost of mercury battery substitutes*

6.7 The Commission produced an impact assessment in 2012 which suggested that replacement chemistries were available and that the cost increase was between 5 and 10% (0.04-0.18 EUR per button cell) and will decrease over time.<sup>3</sup> It is therefore suggested that by the end of the transition period in October 2015, the cost difference will be minimal. That evidence coupled with the ability of the Commission to propose the continued exclusion of

<sup>2</sup> In addition to the Japanese study, in 2010 Arcadis consultants made an environmental and socio-economic analysis of batteries used in CPTs in relation to the impending review of the Battery Directive. [http://ec.europa.eu/environment/waste/batteries/pdf/report\\_12.pdf](http://ec.europa.eu/environment/waste/batteries/pdf/report_12.pdf)

The following excerpts are taken from the analysis:

"NiCd CPT surpass other technologies in service life. Where NiCd CPT are expected to have a service life of approximately 10 years, Ni-MH tools and Li-ion tools currently have one of only 6 and 4 years. This means that consumers will need to replace Ni-MH or Li-ion CPT earlier compared to the replacement of their NiCd CPT, which leads to a higher cost."

<sup>3</sup> EC DG ENV 'Study on the potential for reducing mercury pollution from dental amalgam and batteries – Final Report' 11 July 2012, available at: [http://ec.europa.eu/environment/chemicals/mercury/pdf/final\\_report\\_110712.pdf](http://ec.europa.eu/environment/chemicals/mercury/pdf/final_report_110712.pdf)

mercury button cells for use in hearing aids in the event of alternative chemistry button cells not being available reduces the risk of significant consumer costs. Therefore, the cost to consumers is assumed to be minimal.

### *Familiarisation costs*

6.8 In 2011, there were an estimated 13 power tool manufacturers in the UK representing a £140m turnover. In the same year there were also an estimated 5,200 retailers of hardware, paints and glass with a £9.8bn turnover.<sup>4</sup> Other non-specialist retailers are also expected to be affected since they will also sell power tools. However, many of the 5,200 retailers may not sell power tools. Franchises are also likely to do this once for a number of sites rather than at each individual site. Therefore, as an initial estimate, this analysis assumes 5,000 managers within business will have to familiarise themselves with the regulations. To calculate these costs it was assumed it would take 2 hours of a retail or wholesale manager's time<sup>5</sup>. This gives a total cost of approximately £130,000 for businesses to familiarise themselves with the Batteries Regulations Amendment. Industry responses to the consultation in some cases suggested higher familiarisation costs whilst others agreed with the costs presented here. It was suggested the 2 hours assumed here could be achieved through a simple guide to explain the changes. In light of these responses BIS will work to ensure guidance on Gov.UK explains the regulatory change clearly and concisely.

### Benefits

6.9 The main non-monetised benefit is the reduced risk to human health associated with the banned battery chemistries when they are released into the environment through leachate emissions from landfill and incineration residue. Both Nickel cadmium and Mercury are classified as hazardous to human health.<sup>6</sup> For example Cadmium released in water impacts human health by increasing morbidity in the total human population. Mercury is toxic through inhalation and associated with numerous health risks from cumulative exposure. The EU Impact Assessment estimated the reduced levels of cadmium associated with this option would lead to approximately 200 fewer people developing cancer than would have otherwise been the case.<sup>7</sup> This analysis does not attempt to make a full QALY analysis of the health benefits and the distribution of the health benefits to the UK but based on the EU analysis the reduced prevalence of the hazardous substances in landfill is expected to improve health outcomes compared to the BAU scenario.

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<sup>4</sup> Annual Business Survey 2011 Revised Results, ONS. SIC codes: 28.24 and 47.52

<sup>5</sup> Hourly salary assumed to be £13. 2012 ASHE data - Managers and directors in retail and wholesale, this was up-rated by 17.8% to account for non-wage costs.

<sup>6</sup> See EC 'Directive of the European Parliament and the Council on batteries and accumulators and spent batteries and accumulators: Extended Impact Assessment' 2003, available at: [http://ec.europa.eu/environment/waste/batteries/pdf/exten\\_impact\\_assessment.pdf](http://ec.europa.eu/environment/waste/batteries/pdf/exten_impact_assessment.pdf)

<sup>7</sup> Page 48 of: EC 'Impact Assessment: amending directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as regards the placing on the market of portable batteries and accumulators containing cadmium intended for use in cordless power tools' 2012, available at: [http://ec.europa.eu/environment/waste/batteries/pdf/impact\\_assessment\\_part1.pdf](http://ec.europa.eu/environment/waste/batteries/pdf/impact_assessment_part1.pdf)