

### Definitions and rationale

1. **Hazardous waste** is specifically defined in European law as those wastes featuring on a list drawn up by the European Commission (the European Waste Catalogue (EWC),)<sup>1</sup> because they possess one or more of the hazardous properties<sup>2</sup> set out in the Hazardous Waste Directive.<sup>3</sup> The EWC and its constituent hazardous waste list were updated in 2002. The new list applied in full in England from 16 July 2005. From this date, the term special waste was dropped and wastes such as fluorescent tubes, televisions and computer monitors with cathode ray tubes, and refrigerators were required to be consigned as hazardous waste.

2. Hazardous waste, when mismanaged, has potential to cause greater harm to the environment and human health than non-hazardous waste, and, as a result, additional controls apply to its movement and management. In general these stem from specific European Directives, including those on landfill, hazardous waste, waste incineration and those on producer responsibility relating to waste electrical and electronic equipment (WEEE), end-of-life vehicles (ELVs) and the restriction on hazardous substances.

### Arisings, trends and projections

3. Chart C9.1 shows arisings of hazardous waste in England and Wales from 2002 to 2005. Chart C9.2 shows the types of hazardous waste arising by EWC chapter heading. These data were collected by the Environment Agency under the old Special Waste Regulations 1996 and under the new Hazardous Waste Regulations 2005 respectively. The total figure for 2005 is a combination of special waste data from January to mid-July, and for hazardous waste data for mid-July to December.<sup>4</sup>

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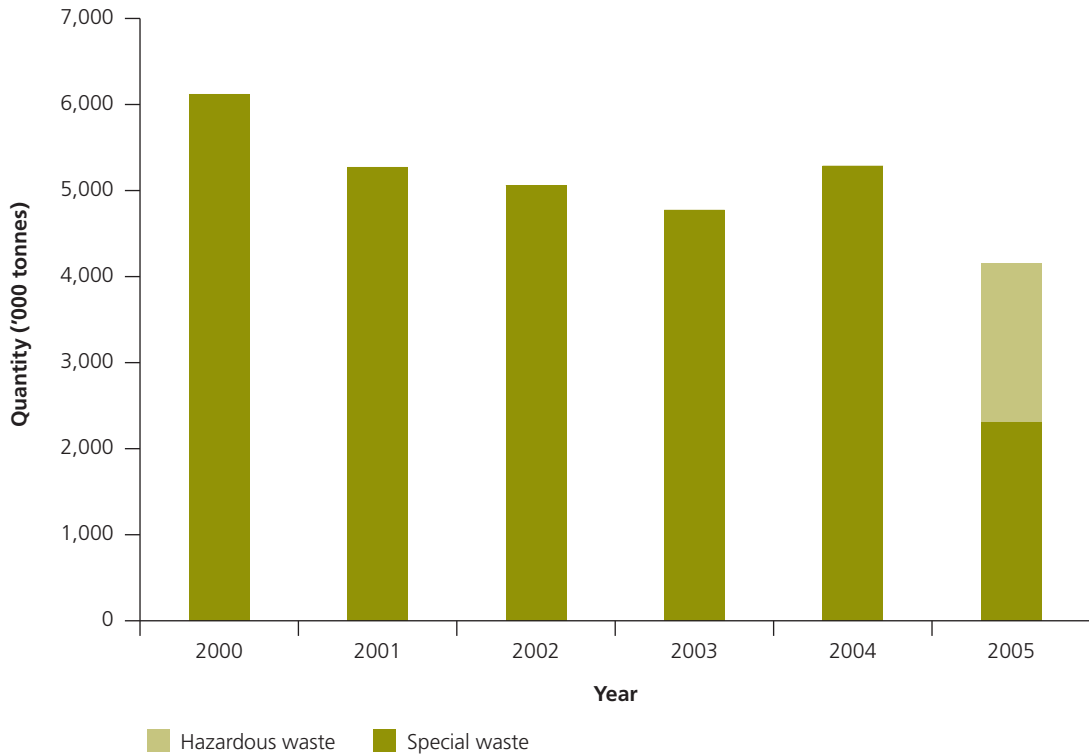
<sup>1</sup> Commission Decision 2000/532/EC as amended.

<sup>2</sup> For a full list of hazardous properties and comprehensive guidance on the classification of hazardous waste see: [http://www.environment-agency.gov.uk/subjects/waste/1019330/1217981/1384307/?lang=\\_e](http://www.environment-agency.gov.uk/subjects/waste/1019330/1217981/1384307/?lang=_e)

<sup>3</sup> Council Directive 91/689/EEC.

<sup>4</sup> It should be noted that hazardous waste data is collected from consignee returns and special waste data was from consignment notes. The two data sets are not directly comparable.

**Chart 9.1: Total quantity of hazardous waste, England and Wales (2000–2005)**

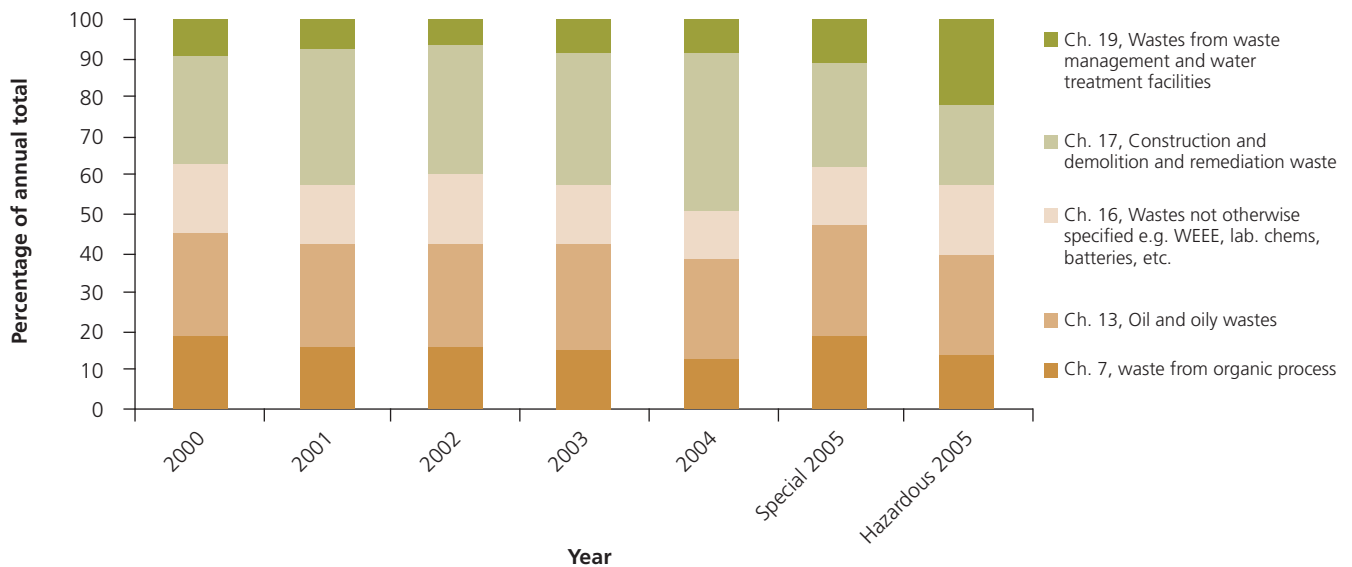


Source: Environment Agency, Hazardous Waste Statistics

4. Chart C9.1 shows that arisings of special waste generally declined between 2000 and 2003, but increased in 2004, and this was partly a result of the rush to beat the ban on the co-disposal of hazardous waste in the same landfill as non-hazardous waste, which applied from 16 July 2004. In the lead-up to the ban, deliveries to landfill sites rose markedly, especially of contaminated soil, as operators sought to use up spare hazardous waste landfill capacity before the ban applied. The latest hazardous waste data for 2005 would appear to show a return to a continuing overall decline in hazardous waste arisings.

**Chart C9.2: Types of hazardous waste produced, England and Wales (2000–2005)**

**Percentage contribution of top 5 EWC codes**

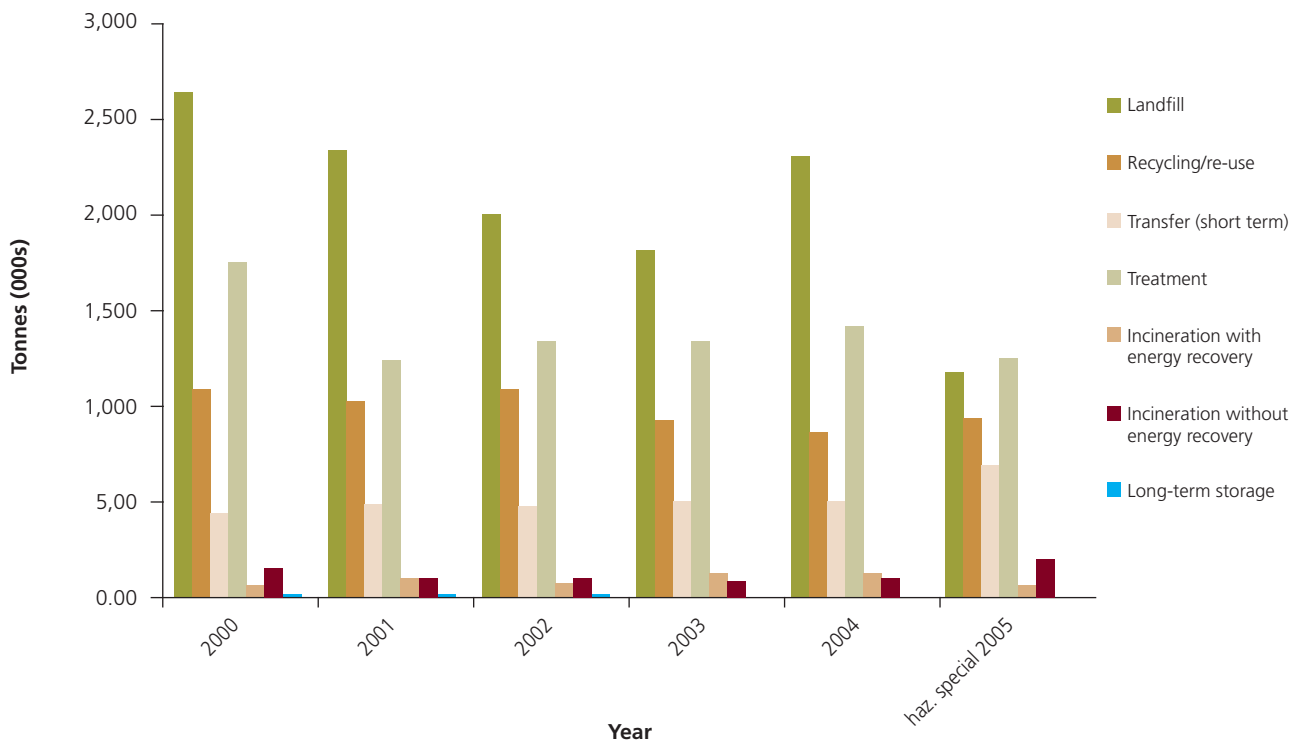


## Management routes

5. Landfill has traditionally been the principle management route for many hazardous wastes but, as can be seen from Chart C9.3, our reliance on its role is declining. Landfill Directive requirements have driven this reduction:

- the ban on co-disposal in July 2004;
- the straight ban on certain hazardous waste from landfill in July 2002 which includes:
  - hazardous liquids
  - flammable, explosive or corrosive wastes
  - some infectious waste
- the requirements for hazardous waste to meet leachate limits as provided in the Landfill Directive waste acceptance criteria from July 2005; and
- the requirement for hazardous waste to be pre-treated prior to landfill.

Chart C9.3: Management routes for hazardous waste (2002–05)



6. These requirements are encouraging alternative treatment and/or pre-treatment to be put in place, as can be seen from the most recent data.

7. The landfill and hazardous waste controls also provide businesses with more incentive to seek out opportunities for preventing and minimising hazardous waste. Companies are working to design out hazardous components and materials from products and production processes as a response to market forces and regulatory control, such as the Restriction on Hazardous Substances Directive and Integrated Pollution Prevention and Control Directive (IPPC). The Environment Agency is encouraging this through the HazRed project<sup>5</sup> which aims to help small and medium-sized enterprises (SMEs) prevent and reduce their production of hazardous wastes, saving them money in the process. The project is working with six key industry sectors to set hazardous waste reduction targets and develop waste reduction plans to demonstrate the benefits of a sector-led approach and inform the practices of other EU Member States.

8. A high proportion of hazardous waste can be re-used, recycled or otherwise recovered. This trend is likely to continue with increased treatment and recycling of hazardous waste electrical and electronic equipment (WEEE) such as televisions and fluorescent tubes, and wastes from the construction sector such as contaminated soil, as well as the prospect of regeneration of waste oil re-commencing in the UK in the near future.

9. Treatment of hazardous waste remains one of the most important management routes, whether through incineration with or without energy recovery, physico-chemical treatment or solidification/stabilisation. The section below on infrastructure and capacity need details the need for more treatment capacity to meet the various new controls.

<sup>5</sup> See <http://www.hazard.org.uk>

10. In the short term, storage and/or transfer of hazardous waste is playing an increasing role in its management, especially as industry seeks to introduce new treatment outlets or takes steps to minimise hazardous waste arisings.

### Policies and targets

11. The Government will continue to encourage policies which lead to reductions in hazardous waste arisings. The Government will continue to encourage the full and proper application of the Landfill Directive controls and the requirements of the Hazardous Waste Regulations which are leading to improved management and control of hazardous waste. The Pollution Prevention and Control (PPC) permitting regime itself includes elements which encourage business to minimise waste, including hazardous waste, and this regime and the Environmental Permitting Programme will continue that process.

12. Full application of the Landfill Directive waste acceptance criteria is difficult for certain specific waste streams, particularly where no alternative treatment or no treatment to meet full Waste Acceptance Criteria (WAC) is immediately available. As a result, the Landfill Regulation Group, under the chairmanship of the Environment Agency, has identified three problematic waste streams: spent pot linings from the primary aluminium sector, slag from automotive battery recycling, and air pollution control residues. Each of these waste streams is being managed in an environmentally sustainable way while an appropriate treatment route is developed.

13. In order to give time for alternative UK-based treatment to be developed, the Government is consulting on changes to the UK Management Plan for Exports and Imports of Waste to allow, on a time-limited basis, the export of problematic wastes for environmentally sound disposal in the EU.

14. The Government and the Environment Agency have issued guidance on the mixing of hazardous waste<sup>6</sup> and on the treatment and landfilling of hazardous waste,<sup>7</sup> in particular to make it clear that mixing hazardous and non-hazardous waste simply in order to dilute hazardous waste is not an acceptable treatment option.

15. There are currently no specific targets on hazardous waste. However, targets for reducing hazardous waste could be set once a baseline for arisings is established following the change in the definition of hazardous waste in July 2005. This suggests that targets should not be set before 2008, when full year data for 2006 and 2007 should be available. The Government will look to relevant stakeholders to provide input to this.

### Household hazardous waste (HHW)

16. Hazardous waste comprises some 1–2% of the household waste stream. The main items include paints and related materials, some household and garden chemicals, motoring products including waste oil and lead acid batteries, as well as some household appliances such as fridges, freezers and televisions. The Government considers that more can be done to improve the segregation and management of household hazardous waste within the new controls applying to hazardous waste. In some areas current practice may be below the level of service needed to meet existing legal requirements. Waste collection authorities are required to provide for the collection of all household waste, including HHW and waste disposal authorities are required to provide household waste recycling centres for the deposit of all household waste including HHW. Many local authorities provide

<sup>6</sup> See <http://www.defra.gov.uk/environment/waste/special/pdf/hwrmixing-guide.pdf> for further information.

<sup>7</sup> See [http://www.environment-agency.gov.uk/ourviews/857198/1498962/?version=1&lang=\\_e](http://www.environment-agency.gov.uk/ourviews/857198/1498962/?version=1&lang=_e) for further information.

<sup>8</sup> See "The Haz Guide" at <http://www.nhhwf.org.uk/> for further information.

a separate collection service for household hazardous waste streams, and the Government encourages all authorities to follow suit and publicise such a service.

17. The Hazardous Waste Regulations 2005 are relevant to the management of HHW. The Regulations, which implement the requirements of the Hazardous Waste Directive do not require householders to separate out hazardous waste from their household waste, but where separate collection schemes for recyclables are developed, it is sensible to include separate collection of hazardous wastes as part of those schemes, as not to do so could lead to a greater concentration of hazardous waste in the residual waste fraction, which is often incinerated or landfilled.

18. Where householders put out hazardous waste separate from their other household waste for separate collection, or deliver such hazardous waste to household waste recycling centres, the legislation requires that this waste should be kept separate and not mixed with non-hazardous waste. This also applies to hazardous waste delivered by householders to household waste recycling centres or civic amenity sites. The National Household Hazardous Waste Forum has issued guidance<sup>8</sup> on the management of HHW at household waste recycling centres, which the Government endorses and encourages local authorities to adopt. The Forum's website also includes guidance for the public on the management of garden chemicals, including a search engine to enable the public to find the nearest site that accepts unwanted garden chemicals.

19. The Government considers that more can be achieved by producers and manufacturers of products that lead to HHW, and intends to investigate with the decorative paint and garden chemicals sectors the scope for voluntary agreements to increase separate collection, recycling and recovery of these products. Schemes such as Community RePaint provide an example of what can be achieved on a voluntary basis.<sup>9</sup>

### Implementation and timescales

20. The legislation transposing the Landfill and Hazardous Waste Directives has been put in place. The key issues now are the enforcement and implementation of the controls, and the provision of facilities to meet the requirements. As highlighted below, there are still some infrastructure capacity needs, which are expected to be put in place over the next five years.

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<sup>9</sup> See <http://www.communityrepaint.org.uk> for further information.

## Roles and Responsibilities

**Table C9.2: Roles and responsibilities**

Organisation/ stakeholder	Roles and responsibilities
Government	<p>Set the strategic and legislative framework, including estimates of capacity need, any targets for hazardous waste reduction</p> <p>Provide broad guidance on main legislative provisions, for example, on the mixing ban of hazardous waste</p>
Environment Agency	<p>Principal regulator in England for the hazardous waste controls, especially the Hazardous Waste Regulations 2005, the Landfill Regulations 2002, the main elements of the PPC controls, the waste management licensing regime</p> <p>Apply proportionate and risk based enforcement of the controls on a consistent basis throughout the country</p> <p>Produce technical and regulatory guidance documents for example on waste classification, treatment requirements and on how to meet the controls</p> <p>Produce data on hazardous waste arisings and fates</p> <p>Facilitate awareness raising amongst regulated business for example through the HazRed and NetRegs initiatives</p>
Waste producers	<p>Comply with the relevant waste controls, including where necessary, notifying sites producing hazardous waste with the Environment Agency, and complying with waste characterisation requirements of the landfill regulations</p> <p>As far as possible reduce arisings of hazardous waste, including the hazardousness of waste, for example, through green design, process change and good environmental management</p>
Waste management industry	<p>Comply with the relevant waste controls</p> <p>Provide facilities for the treatment, recovery and disposal of hazardous waste</p> <p>Provide advice on hazardous waste controls to customers as necessary.</p>
Regional and local authorities	<p>Plan for facility provision in their areas</p>
Local authorities	<p>Provide sites for the deposit of hazardous household waste in their areas, and publicise these</p> <p>Provide specialist collection services for hazardous household waste, and publicise these</p>
Householders	<p>As far as possible keep hazardous waste separate from their other household waste and ensure it is either taken separately to the nearest available household waste recycling centre permitted to take such waste, or collected by the local authority where such a service is provided</p>

### Infrastructure and capacity needs

21. Treatment and disposal capacity for hazardous waste needs to be in place to meet the requirements of the Landfill Directive, and this was recognised by the Hazardous Waste Forum, as part of its Action Plan in December 2003,<sup>10</sup> (*Recommendation 3.2A*).

22. This annex builds on all available information and sets out an assessment of the capacities that are needed in order to help guide regional planning bodies (RPBs), their Regional Technical Advisory Bodies (RTABs), and business in the planning and procurement of new hazardous waste infrastructure. In accordance with PPS10, RPBs and planning authorities should prepare and deliver planning strategies that help implement WS2007. This annex can also inform the decisions of after-planning bodies including local planning authorities and any established following the Government's Planning White Paper.

23. In 2004, the Treatment Capacity Task Force of the Hazardous Waste Forum made a quantitative estimate<sup>11</sup> of future capacity needs for England's hazardous waste treatment and disposal, taking into account the need for hazardous wastes to be pre-treated prior to landfill, and in some cases to be treated to meet the waste acceptance criteria under the Landfill Regulations, and the requirement for some wastes to be diverted from landfill. The Task Force report concluded that there was a predicted shortfall in stabilisation/solidification treatment capacity and a potential shortfall in hazardous waste landfill capacity.

24. More recent information shows that current permitted and available hazardous waste landfill capacity, including separate cells for stable non-reactive hazardous waste, is 3.4 million tonnes per annum, which is sufficient for current need. However, regional and local plans should consider future void space capacity over a 10–20-year period and ensure it continues to meet need. Furthermore, it is recognised that the regional distribution of facilities is not matched to regional arisings. While hazardous waste has always travelled across regional boundaries, there is scope for minimising this with a regional distribution of facilities more closely matched to regional arisings. More recent data on regional arisings and fates of hazardous waste will shortly be available from the Environment Agency, which will assist regional planning bodies in assessing their individual facility needs. The information will be posted on the Agency's website and regional data can be accessed via the Hazardous Waste Interrogator.<sup>12</sup>

25. Assessments carried out by the Hazardous Waste Forum and the Landfill Regulation Group (LRG) show that there continues to be insufficient stabilisation/solidification treatment in place thus far, although plant are being planned and developed. Work is ongoing at European level to agree waste acceptance criteria for monolithic waste, though Member States can agree their own levels. Once agreed, this will encourage the provision of facilities. In the meantime, hazardous waste can be treated to meet the Waste Acceptance Criteria (WAC) for granular wastes.

26. The LRG has also identified a number of waste streams likely to require alternative treatment, including filter cakes from waste treatment plant, oily sludges, contaminated packaging, contaminated soil, and certain construction and demolition wastes including treated wood. Alternative treatment could encompass incineration, stabilisation/solidification or other treatments depending on the waste stream. In addition, there must be flexibility to accommodate new treatment technologies, as long as they meet regulatory requirements. Inappropriate methods, such as mixing hazardous and non-hazardous waste simply to dilute or conceal the hazardous waste, should be prevented.

<sup>10</sup> See <http://www.defra.gov.uk/environment/waste/hazforum/actionplan.htm> for further information.

<sup>11</sup> See <http://www.defra.gov.uk/environment/waste/hazforum/statusreport.htm> for further information.

<sup>12</sup> See <http://www.environment-agency.gov.uk>

27. An analysis of facility needs for England has been made on the basis of information on predicted treatment needs and factoring in recent developments affecting the management of hazardous waste including: changes to definitions; recent requirements for recycling of WEEE and batteries; the application of the Directives on waste oil and waste incineration; and the publication of a UK ship recycling strategy.<sup>13</sup> The results are summarised below and set out in full in Table C9.1. The priority needs are for:

- high temperature incineration (HTI) for waste diverted from landfill – (e.g. oily filter cakes). It remains to be seen whether current capacity in the two existing dedicated commercial HTI plant in England will be sufficient, but indications are that additional capacity may be needed;
- a new small waste incineration plant has recently been commissioned in Colnbrook, Middlesex, which is designed to take specific types of hazardous waste. In addition, some municipal waste incinerators are allowed by their Waste Incineration Directive (WID) permit to take specified hazardous wastes such as contaminated packaging, but further capacity is likely to be needed for this waste stream and others. However, in many cases the planning permission and waste permit for the plant would require modification;
- solidification plant or other acceptable treatment to enable certain hazardous waste to meet the requirements for deposit in hazardous waste landfill or in separate cells for stable non-reactive hazardous waste at non-hazardous waste landfill sites;
- at least one oil regeneration plant with a minimum capacity of 35,000 tonnes per annum to be viable, although a larger plant is possible, to enable the UK to broaden its management options for used oil;
- outlets for the combustion of waste oil which are able to comply with the requirements of the WID;
- dismantling and pre-processing facilities for hazardous waste electrical and electronic equipment (WEEE), mainly cathode ray tubes (televisions and computer monitors), refrigeration equipment and fluorescent tubes;
- the Battery Directive means a priority need exists for further treatment capacity in existing or new battery recycling plant. Development of specialist facility for NiCds, lithium ion and NiMH batteries would obviate need for export;
- facilities to treat contaminated soils and oily sludges including treatment hubs, bioremediation, soil washing, and thermal desorption;
- upgrade of some household waste recycling centres to take household hazardous waste; and
- facilities for the environmentally sound recycling of end-of-life ships which are required as a priority in the OECD, with the UK being well placed to provide a significant proportion.

28. The Government recognises the role that municipal waste incinerators can play in the provision of integrated hazardous waste management. The WID sets down strict conditions for permits in order to protect human health and the environment. In order to accept certain potentially lower risk hazardous wastes, such as treated wood, oily rags or contaminated packaging, the Environment Agency would need to be fully satisfied that these conditions were met, and that the permit for the plant allowed such wastes to be accepted. The Government recognises that this approach could help divert lower risk hazardous waste from landfill and potentially free up capacity at HTI plant to deal with more intractable hazardous waste, such as those hazardous wastes with a content of more than 1% of halogenated organic substances, which under the WID require incineration at temperatures at or above 1,100°C.

<sup>13</sup> See <http://www.defra.gov.uk/environment/waste/strategy/pdf/shiprecycle-strategy.pdf> for further information.

Table C9.1: Summary of facility needs for hazardous waste management in England			
Facility type	Existing provision	Need	
		Priority	Potential
<b>Treatment/recovery</b>			
Physico-chemical	85 physico-chemical treatment facilities <sup>14</sup> Estimated capacity is 1,500,000 tonnes <sup>15</sup>		Could be some potential for expansion of existing or provision of additional facilities
Chemical treatment	27 facilities		Chemical industry has advised they are self-sufficient and can cope with impact of Landfill Directive
Solidification or other acceptable treatment to enable hazardous waste to meet WAC	Only a few plant exist for (a) the solidification of hazardous waste, which may enable such waste to be classified as stable and non-reactive for deposit in a cell for such waste or (b) to treat to meet the WAC for deposit in hazardous waste landfill	Cells for stable non-reactive hazardous waste are being developed, and there is a need for associated treatment plant for the solidification of hazardous waste. Such treatment is required for filter cakes from waste treatment plant which currently fail WAC for hazardous waste landfill	Solidification treatment may be required for ash residues from incineration, including Air Pollution Control (APC) residues, which can have elevated heavy metal contaminants
Oil regeneration, treatment, storage and recovery	A number of waste oil treatment plant exist. Adequate capacity for the c.350,000 tonnes arising: but market is in a state of flux Used oil storage facilities exist but are not significant	Market may seek to establish an oil regeneration plant. This would broaden UK used oil management options and would help UK meet obligations under the current Waste Oil Directive. <sup>16</sup> Outlets also need to continue to be in place for the combustion of used oil, although export for recovery remains an option. Facilities for used oil storage are a priority	Potential exists for at least one oil regeneration plant. 35,000 tonnes is accepted minimum annual throughput to ensure market viability, although a plant of 70,000 tonnes per annum or more is more likely

<sup>14</sup> Defra statistics on operational waste facilities, <http://www.defra.gov.uk/environment/waste/wip/data/pdf/waste-facilities.pdf>

<sup>15</sup> Hazardous Waste Forum Treatment and Capacity Task Force, <http://www.defra.gov.uk/environment/waste/hazforum/statusreport.htm>

<sup>16</sup> Current Commission proposal for a revised Waste Framework Directive proposes repeal of the Waste Oil Directive and its requirement on Member States to give priority to regeneration of waste oils.

Table C9.1: Summary of facility needs for hazardous waste management in England (continued)			
Facility type	Existing provision	Need	
		Priority	Potential
<b>Treatment/Recovery (continued)</b>			
Thermal treatment	2 dedicated merchant high temperature incineration (HTI) plant with capacity of c.125,000 tonnes per annum Additional thermal treatment available at other plant such as Municipal waste incinerators where permit allows	Current HTI capacity may be sufficient, but operators still considering options to meet Waste Acceptance Criteria (WAC), so demand may yet increase. Scope for other incinerators to take specified hazardous waste (e.g. contaminated packaging, treated wood) where the permit and planning permission allows	Potential need for additional capacity to deal with waste not able to meet WAC
Co-incineration	7 cement kilns currently permitted or seeking a permit to accept secondary liquid fuel		Potential for cement kilns to accept a further 300,000 tonnes of hazardous waste – particularly waste oil. Use will depend on the market price for waste oil
Clinical waste incinerators	18 operational, sufficient for current need		
Battery recycling	1 alkaline battery recycling plant (non-hazardous) and 1 lead acid battery recycling plant. No plant exist for NiCd, lithium ion or NiMH which are recovered in the EU	Battery Directive means priority need exists for further treatment capacity in existing or new plant. Development of specialist facility would obviate need for export	

**Table C9.1: Summary of facility needs for hazardous waste management in England (continued)**

Facility type	Existing provision		Need	
	Existing provision	Need	Priority	Potential
<b>Treatment/Recovery (continued)</b>				
Waste Electrical and Electronic Equipment (WEEE) treatment	Extensive network of metal recycling plant, including specialised plant for refrigeration equipment containing CFCs; CRT treatment plant (Wales) and fluorescent tubes	Priority need for additional WEEE dismantling and recovery plant(s) especially of hazardous components, including CRTs and fluorescent tubes		May be some opportunities for further specialised facilities, e.g. for fluorescent lamps
End-of-Life-Vehicles (ELVs) treatment	Extensive network of vehicle dismantlers and authorised treatment facilities			
Contaminated soil and oily sludge treatment	Some mobile, bioremediation, soil washing and thermal desorption plant exist. Landfill is still heavily relied on	Further facilities to treat wastes from specific redevelopment sites, or 'mobile' plants to serve several sites in turn, as well as development of treatment hubs for soils failing WAC in particular		Potential for a range of treatments
Collection and transfer stations	Over 400 transfer stations permitted to accept hazardous waste	Some household waste recycling centres (civic amenity sites) still require upgrade to accept household hazardous waste		
Recycling sites for end-of-life ships	1 permitted facility with others seeking the necessary permits	Facilities for the environmentally sound recycling of end-of-life ships required as a priority in the OECD, and UK well placed to provide a significant proportion		

Table C9.1: Summary of facility needs for hazardous waste management in England ( <i>continued</i> )			
Facility type	Existing provision	Need	
		Priority	Potential
<b>Disposal via Landfill/Permanent storage</b>			
Deep salt mine	1 facility in Cheshire with capacity of 100,000 tonnes per annum	–	Facility adequate for disposal of a proportion of specified intractable wastes, such as APC residues.
Hazardous waste landfill	13 permitted facilities with combined capacity of 2.5 million tonnes per annum (England and Wales)	Only where regional need exists	Facilities adequate for current perceived need, although a better distribution could generate additional need in some regions
Cells for stable non-reactive hazardous wastes at a non-hazardous waste landfill site (general)	41 permits issued (England and Wales) with operating capacity of c.880,000 tonnes per annum (permitted capacity 1.3 million tonnes per annum)	Only where regional need exists	Facilities adequate for current perceived need, although a better distribution could generate additional need in some regions
Cells for asbestos only	A number of separate cells operational	Only where regional need exists	Facilities adequate for current perceived need, although a better distribution could generate additional need in some regions

## References

Defra guidance

<http://www.defra.gov.uk/environment/waste/topics/hazwaste/>

<http://www.defra.gov.uk/environment/waste/special/index.htm>.

Hazardous Waste Forum

<http://www.defra.gov.uk/environment/waste/hazforum/>

Environment Agency guidance

<http://www.environment-agency.gov.uk/subjects/waste/>

Environment Agency data

<http://www.environment-agency.gov.uk>

Find your local household waste recycling centre able to take hazardous waste such as pesticides or other chemicals

<http://www.chem-away.org.uk/>