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**DEFRA**

**GUIDANCE ON THE KERBSIDE COLLECTION OF  
HOUSEHOLD HAZARDOUS WASTE**





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# 1 INTRODUCTION

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This guidance document is intended to provide advice to local authorities in England on the options for collecting Household Hazardous Waste (HHW) through kerbside collection schemes. To inform this document a number of local authorities, who are currently collecting hazardous wastes at the kerbside, have been interviewed. Examples of the approaches used are highlighted through the guidance with the full case studies based on the interviews included in Appendix 2.

Chapter 2 of this document considers the two main recycle collection types: kerbside sorting and co-mingled collection and how their use may influence the inclusion of household hazardous wastes within the collection scheme. Chapters 3 – 6 look at the issues surrounding the collection of specific hazardous waste streams, based on those materials collected by Local Authorities in the case studies. The use of 'On-Request' and Bulky Waste collections is discussed in Chapter 7.

This guidance is focused on the options for collecting HHW at the kerbside. Other guidance, such as the "Haz Guide 2008", prepared by the National Household Hazardous Waste Forum<sup>1</sup> covers the options for collection at Household Waste Recycling Centres (HWRCs).

## 1.1 The Benefits of Separating HHW from Residual Waste

By their nature, hazardous wastes pose a greater risk of harm to the environment than non-hazardous wastes. By separating these hazardous materials from the residual municipal waste stream, the risks can be reduced and any environmental impacts from the treatment or disposal of both fractions may also be reduced. The separation of hazardous wastes also allows options higher up the waste hierarchy to be considered, such as preparing for re-use and recycling.

The Hazardous Waste Regulations 2005<sup>2</sup> as amended in April 2009<sup>3</sup> are relevant to the management of HHW. The Regulations require that where household hazardous waste is put out separately to mixed household waste, it must be kept separate and managed as hazardous waste. Where separate collection schemes for recyclables are developed, it is sensible to consider the inclusion of separate collection for 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. This in turn has the potential to contaminate the outputs from the residual waste management processes.

For example

- If the residual waste stream is incinerated, the presence of household batteries or other wastes may lead to the incinerator bottom ash (IBA) being classified as hazardous waste due to the level of heavy metals within the ash. This would prevent the IBA being recycled and instead it would be sent for hazardous waste landfill, increasing costs.
- Where Mechanical Biological Treatment (MBT) is used, compost like output (CLO) may not be suitable for re-use due to contamination from HHW.
- The presence of hazardous wastes such as pesticides or used engine oil within collected garden wastes for composting or anaerobic digestion may adversely affect the plant and lead to the rejection of the entire output of that batch.

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<sup>1</sup> The Haz Guide 2008, National Household Hazardous Waste Forum, available at [http://www.hazguide.co.uk/pdf%20downloads/Haz\\_Guide\\_2008\\_PDF-Full.pdf](http://www.hazguide.co.uk/pdf%20downloads/Haz_Guide_2008_PDF-Full.pdf)

<sup>2</sup> The Hazardous Waste (England and Wales) Regulations (2005) <http://www.opsi.gov.uk/si/si2005/20050894.htm>

<sup>3</sup> The Hazardous Waste (England and Wales)(Amendment) Regulations 2009 [http://www.opsi.gov.uk/si/si2009/pdf/uksi\\_20090507\\_en.pdf](http://www.opsi.gov.uk/si/si2009/pdf/uksi_20090507_en.pdf)



Such negative impacts on process outputs are likely to result in additional costs for an authority. In cases where residual waste is landfilled, hazardous wastes have the potential to pose long term environmental problems, due to their presence in landfill leachate and gas.

HWRCs provide an important collection route for HHW, however not all sites are able to accept hazardous wastes from householders. This may be due to restrictions within the site's Environmental Permit, planning permission constraints or a lack of space at the site. In addition, householders may be unable to deliver their HHW to a HWRC due to a lack of transport, the size of an item or the distance to the nearest HWRC permitted to accept specific wastes. Therefore the collection of certain HHW at the kerbside provides greater access to such services and can increase the diversion of the hazardous materials from the residual waste.

In addition to improving the access to services, the collection of HHW at the kerbside can prevent HHW being flytipped or disposed of illegally. Flytipped materials will still require removal, which can be more expensive than collection via the kerbside or HWRC site.

## 1.2 What is HHW?

Hazardous wastes are defined within the Hazardous Waste Regulations 2005, as amended, as those wastes which are marked as hazardous within the List of Wastes Regulations 2005<sup>4</sup>. These are wastes which display one or more of fourteen hazardous properties due to their chemical or physical nature (See Appendix 1). These hazards include flammable (H3), toxic (H6) and harmful to the environment (H14).

The List of Wastes Regulations, separate wastes by a combination of source and waste type into twenty sections or "chapters" of wastes. The most relevant chapter in this case is Chapter 20, "*Municipal Wastes (household wastes and similar commercial, industrial and institutional wastes) including separately collected fractions*". However, other chapters such as Chapter 15 on packaging waste may also be applicable. Each specific waste stream has a description which is assigned a unique six digit code (known as an EWC code<sup>5</sup>).

Wastes within the List of Wastes Regulations fall into three categories, with hazardous wastes marked with an asterisk (\*):

- "**Absolute entries**" (marked 'A') which are deemed to be hazardous regardless of their composition or concentration of any "dangerous substance" within the waste, for example Acids (20 01 14) ;
- "**Mirror entries**" (marked 'M'). Certain wastes have the potential to be either hazardous or not, depending on whether they contain "dangerous substances" at or above certain thresholds. These wastes are covered by linked (usually paired) entries, collectively called "mirror entries" that comprise:
  - a hazardous waste entry marked with an asterisk (\*); and
  - an alternative non-hazardous waste entry (or entries) not marked with an asterisk.

An example from Chapter 20 would be:

20 01 27\* [paint, inks, adhesives and resins containing dangerous substances](#)

20 01 28 paint, inks, adhesives and resins other than those mentioned in 20 01 27

- Non-hazardous entries, which cannot be hazardous and are not marked with an asterisk, for example paper and cardboard (20 01 01).

The entries from Chapters 15 and 20 for separately collected municipal wastes which may be applicable to wastes generated by householders are included within Appendix 1 of this

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<sup>4</sup> The List of Wastes (England) Regulations 2005 - [http://www.opsi.gov.uk/si/si2005/uksi\\_20050895\\_en.pdf](http://www.opsi.gov.uk/si/si2005/uksi_20050895_en.pdf)

<sup>5</sup> The term "EWC code" stands for European Waste Catalogue Code as the List of Wastes originates from the European Waste Catalogue





document. Due to their nature and likelihood of generation, not all of these wastes will be suitable for kerbside collection.

The Environment Agency guidance WM2 “*Interpretation of the definition and classification of hazardous waste*”<sup>6</sup> provides guidance on the classification of hazardous waste.

### 1.3 Application of the Hazardous Waste Regulations 2005, as amended.

Under the Hazardous Waste Regulations 2005, as amended, separately collected HHW does not need to be consigned using the relevant consignment note from the household to a transfer station or Material Recovery Facility (MRF). However, when the hazardous waste is moved from the transfer station or MRF, then the movement requires the use of hazardous waste consignment notes.

The Hazardous Waste (Amendment) Regulations 2009<sup>7</sup> clarify the position of HHW which is separated from other domestic waste. These materials are hazardous wastes and **must not** be mixed back into the residual household waste stream. This applies if the waste has been collected at the kerbside or at HWRCs.

### 1.4 Typical Levels of Arisings

Representative data on the quantity of hazardous wastes within normal household wastes are difficult to determine. This is because levels will be affected by the socio-demographic make-up of an area, as well as seasonal factors for materials such as paints, pesticides and DIY chemicals.

The Environment Agency’s life cycle assessment tool, WRATE, includes a breakdown of HHW in the municipal waste stream. The composition data from WRATE is set out in Table 1 and provides an indication of the quantities of HHW but will not exactly reflect the waste composition in a specific authority.

**Table 1 Typical Household Hazardous Waste Composition from WRATE**

Hazardous Waste Stream	Percentage in Municipal Waste	Percentage Within Residual Waste	Percentage Within HWRC Arisings
White Goods	0.80%	0.08%	3.04%
Large Electronic Goods	0.20%	0.09%	0.7%
Cathode Ray Tubes (TVs & Monitors)	0.30%	0.01%	1.45%
Other WEEE	0.70%	0.55%	1.5%
Batteries	0.21%	0.12%	0.87%
Paint / Varnish	0.15%	0.14%	0.32%
Oil	0.10%	0.04%	0.11%
Pesticides & Herbicides	0.15%	0.14%	0.32%

The first column gives the level of arisings within the overall household waste stream, with columns two and three detailing the percentage composition within either the residual waste stream or of materials collected at HWRCs. The proportion in the different elements of the waste stream often reflects the nature of the wastes in question, for example white goods are normally collected at HWRCs rather than through residual waste collections.

<sup>6</sup> Available at: <http://www.environment-agency.gov.uk/business/topics/waste/32200.aspx>

<sup>7</sup> 2009 amendments: [http://www.opsi.gov.uk/si/si2009/pdf/uksi\\_20090507\\_en.pdf](http://www.opsi.gov.uk/si/si2009/pdf/uksi_20090507_en.pdf)



Although in overall percentage terms, these are low levels of arisings, due to their hazardous nature, these wastes can pose a significant risk to the environment.



## 2 Kerbside Collection Options

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This section evaluates and compares the suitability of the main kerbside collection options for the collection of HHW. The kerbside collection of recyclable/recoverable materials (either hazardous or non-hazardous) is normally defined by how the materials presented for collection are stored on the collection vehicle.

**Kerbside sort** is where the materials for collection are placed for collection in boxes or similar containers. Operatives then sort the materials at the kerbside into separate compartments or “stillages” on the vehicle. Each collection vehicle will therefore have a number of compartments varying in size depending on the level of arising of specific material.

Alternatively, a **Co-mingled collection** is where materials are collected mixed in one container (usually in a wheeled bin or sack but also in boxes), loaded into a single compartment of the collection vehicle and sent to a Materials Recovery Facility (MRF) for sorting. At these facilities, the mixed recyclables are separated into their various fractions for recycling or recovery usually using a mixture of mechanical and manual sorting techniques. Normally collection vehicles have a single compartment for the co-mingled recyclables, although some authorities utilise additional collection containers for specific materials (such as glass) which necessitate use of a two compartment vehicle.

### 2.1 Collection Considerations

In order to add HHW to an existing recycling collection, the considerations that need to be addressed are partly collection scheme specific.

#### **For kerbside sort collections:**

- can the wastes be easily identified by collection operatives?
- can the additional hazardous wastes be stored separately on the vehicle, either within existing stillages or by modifying the vehicle?

As kerbside sorting requires collection operatives to separate materials into various compartments on the collection vehicle whilst at the kerbside, any hazardous wastes need to be easily identifiable by the operatives to allow their separation.

This collection system can be limited by the number and size of compartments on a vehicle, so the ability to store separated fractions on the vehicle is the key consideration. Keeping HHW separate from the recyclable materials prevents cross contamination. HHWs are often stored in a banded compartment on the underside of the vehicle or in sealed boxes within the vehicle cab<sup>8</sup>, as this does not affect the capacity for the recyclable materials. However this may involve the modification of vehicles or the purchase of new vehicles, which can be costly.

The inclusion of additional wastes within this type of scheme may also affect the collection time taken per household. This issue can be overcome by requiring householders to present the hazardous material in a specific manner, for example household batteries in a plastic bag. This can also help with the identification of materials at the kerbside and speed up their separation.

A benefit of this method of collection for HHW is that the hazardous materials are separated from recyclable materials at source.

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<sup>8</sup> Note: Boxes must be secured to prevent them moving during normal operation



**For Co-Mingled collections:**

- potential for contamination of the collected recyclates by hazardous materials;
- can the MRF separate the hazardous waste from the co-mingled recyclates;
- if not, could either collection or MRF systems be modified.

The most important issue associated with the collection of HHW within a co-mingled collection is the separation of any hazardous wastes from the co-mingled materials. Therefore the separation technologies and techniques used at the MRF will influence the suitability of collecting HHW within the co-mingled stream and where separation at the MRF is not currently practical alternative approaches at the point of collection can be adopted. Contamination of the recovered materials by HHW will affect the quality and value of the recovered recyclates and could lead to rejection by reprocessors. In addition some items, such as liquid wastes, may be impossible to remove once mixed.

MRFs are designed to sort specific input streams utilising a mixture of mechanical and manual techniques and the majority of HHW would be difficult to remove using the techniques currently employed. There may be potential to separate HHW at the pre-sort stage of the MRF, however this would rely on the HHW being easy to identify and separate at this stage and availability of sorting stations at the pre-sort stage.

These issues may be overcome in some cases by modifying the existing collection scheme. There are three potential options.

- **Use of a “caddy” system** to collect the HHW separately from the co-mingled mix. Caddy systems are already used by some authorities for the capture of some non-hazardous wastes, principally glass. The separation of glass is to prevent contamination of the other recyclates with fragments of broken glass and to minimise wear and tear on conveyors and other mechanical parts of the MRF. The caddy is normally placed in the top of the wheeled bin used for the co-mingled materials and is removed prior to emptying and the contents are placed in a separate compartment on the collection vehicle. This method of separation can be used for small hazardous items of wastes, preferably separately packaged to aid the separation.
- **Separate placement** i.e. placement of hazardous materials alongside the main recycling container for separate collection. Due to storage restrictions on the collection vehicle, this option is only likely to be appropriate for smaller items, such as household batteries and mobile phones that can be stored within a secure box in the vehicle cab. No authorities were identified to be using this approach.
- Placement of hazardous wastes within ‘**survival bags**’<sup>9</sup> in co-mingled mix for separation at the pre-sort stage. Small items of hazardous waste, such as household batteries could be placed within ‘survival bags’ in the co-mingled mix; with the bag being removed by handpicking at the pre-sort stage of the MRF. It is likely that this option would be limited due to operational implications at MRFs and no authorities were identified as currently using this approach.

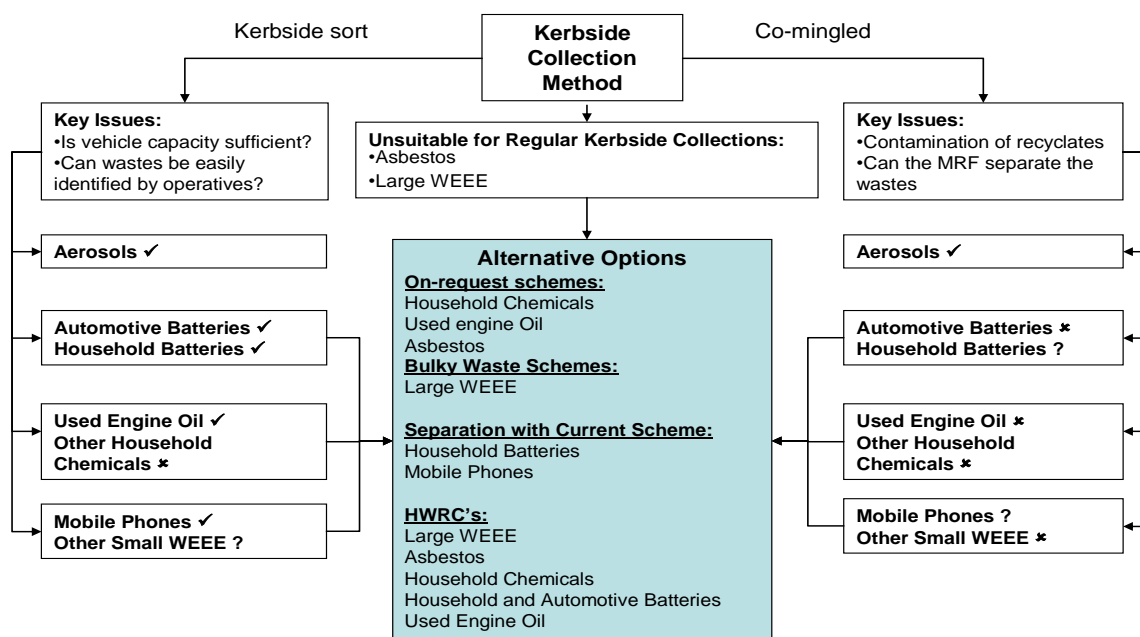
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<sup>9</sup> A survival bag is a toughened bag which would remain sealed during transport

## 2.2 Suitability of HHW to Different Collection Methods

The potential for including HHW in kerbside collections will depend on both the collection system and the hazardous waste being considered. Figure 1 shows which HHW may be suitable for collection within each type of scheme. Some HHW, such as large items of WEEE will be unsuitable for either kerbside scheme due to their size. These items may be captured via 'bulky waste' or 'on-request' collections. 'On-request' collections may also be used to collect hazardous chemicals. A further option is to direct these difficult to collect wastes to the HWRC.

**Figure 1 Suitability of Different Collection Methods for the Collection of HHW**



- ✓ Can be collected via this method
- ✗ Unlikely to be suitable via this method
- ? May be unsuitable for collection via this method

The figure highlights that a larger range of HHW are suitable for inclusion in kerbside sort collections, without scheme modification than in co-mingled collections. However, where authorities operate a co-mingled collection, the collection of certain HHW may be possible by modifying existing practices, such as using caddies for certain materials or requiring householders to place HHW items next to their recycling container. Specific considerations for individual wastes streams are discussed in the following chapters.

Bulky waste collections, or other 'on request' collections, may provide an option for the collection of certain hazardous materials (e.g. fridges, liquid hazardous wastes or household chemicals) and these options are discussed in Chapter 7. The collection of materials at HWRCs falls outside this guidance document but guidance is available in Haz Guide 2008, prepared by the National Household Hazardous Waste Forum<sup>10</sup>.

<sup>10</sup> See reference 1



## 2.3 Multi-Occupancy Properties

The potential for collecting HHW from multi-occupancy housing will depend on how any existing recycling services are provided and similar considerations will apply.

- How will the cross-contamination of other materials be prevented?
- How will the HHW be stored prior to collection?
- How will the HHW be collected?

Where communal recycling bins are located within a secure area, there may be the potential to provide separate containers for the collection of HHW. If materials are collected co-mingled in communal recycling bins, the considerations, detailed above, about keeping the HHW separate from the co-mingled mix need to be addressed.

### Example: Multi-Occupancy Properties

**Teignbridge District Council** includes household battery collection in some multi-occupancy premises. The choice of premises is dependent upon the security of the location of the recycling containers. Where it is deemed that it is suitably secure, a caddy for the collection of household batteries is included with the normal multi-bin recycling centre.

## 2.4 Permitting of Reception Facilities

Where hazardous or other wastes are added to an existing collection scheme, it is necessary to ensure that the transfer station (kerbside sort) or MRF (co-mingled) are permitted to accept the additional materials. This will be covered by a site's Environmental Permit (formerly waste management licence) issued by the Environment Agency.

## 2.5 Health and Safety

The collection of hazardous waste at the kerbside requires consideration of:

- the handling of the waste materials by either waste operatives or the public;
- the risks posed to the environment by the wastes; and
- legislation covering the transport of the collected wastes, under the Carriage of Dangerous Goods Regulations<sup>11</sup>.

Comprehensive risk assessments for the collection, handling, transportation and storage of the collected wastes streams will need to be prepared prior to the implementation of any hazardous waste collection. Advice needs to be sought from the Authority's safety officer during design and operation of the scheme.

### 2.5.1 Waste Handling Considerations

When considering a collection of hazardous wastes, consideration must be given to the potential hazards posed by the waste in question. The hazards may impact on a number of groups.

<sup>11</sup> HSE Carriage of Dangerous Goods (guidance webpage) <http://www.hse.gov.uk/cdg/>



**Public** - All household hazardous wastes which may be included in a kerbside collection system have been sold to the public and advice on their use should come from the information provided by the manufacturer. In advising the public on the handling for collection but not worrying them unduly, the information should focus on how the materials should be presented rather than the hazards the materials may pose. However the environmental risk these materials pose if disposed of incorrectly could be highlighted as a means of encouraging participation in the scheme.

Publicity materials should include information on the secure packaging of wastes. Where possible householders should be encouraged to reuse the original packaging, where the waste needs packaging for collection, such as waste oil. It could be a policy that materials will only be collected if they are contained within their original undamaged packaging. This may affect collection rates however.

**Operatives** - The majority of hazardous wastes collected at the kerbside do not require operatives to take specific precautions beyond those normally followed.

Where car batteries are collected, operatives should be reminded of the weight of these items, typically around 10kg. Although they should be presented next to recycling containers by householders, containers should still be visually checked for their presence prior to lifting. Automotive battery casings should also be visually checked for damage prior to lifting in case of leaks.

Where liquid wastes are collected, care needs to be taken to not spill the liquid and positive identification of both the waste and hazards it poses may be difficult. Some wastes such as oils are however, visually distinctive.

**Environment** - To prevent environmental harm, consideration needs to be given to how the public are advised to store and present hazardous wastes for collection. Householders should be advised to present liquid wastes in sealed, good condition containers, where possible these should be the original containers.

Where liquid wastes are stored on the vehicle, the storage compartment should be sealed and equipped with a drip tray to collect any spillages. Consideration should also be given to equipping transfer or bulking stations with suitable spillage and clean up material, as well as some way of either “bulking up” liquids, or over-packaging them.

Where materials such as oil are collected that pose a slip hazard should they be spilled, spill clean up equipment may also be needed at the kerbside. This may be on the individual collection vehicle or in a supervisor’s vehicle.

### **2.5.2 Waste Carriage Considerations**

Consideration needs to be given to whether the Carriage of Dangerous Goods Regulations apply to the hazardous wastes being collected. This particularly applies to the collection of hazardous liquid wastes and lithium ion batteries which are classified as hazardous for transport.

**Advice must be obtained from the Authority’s Health and Safety Advisor**

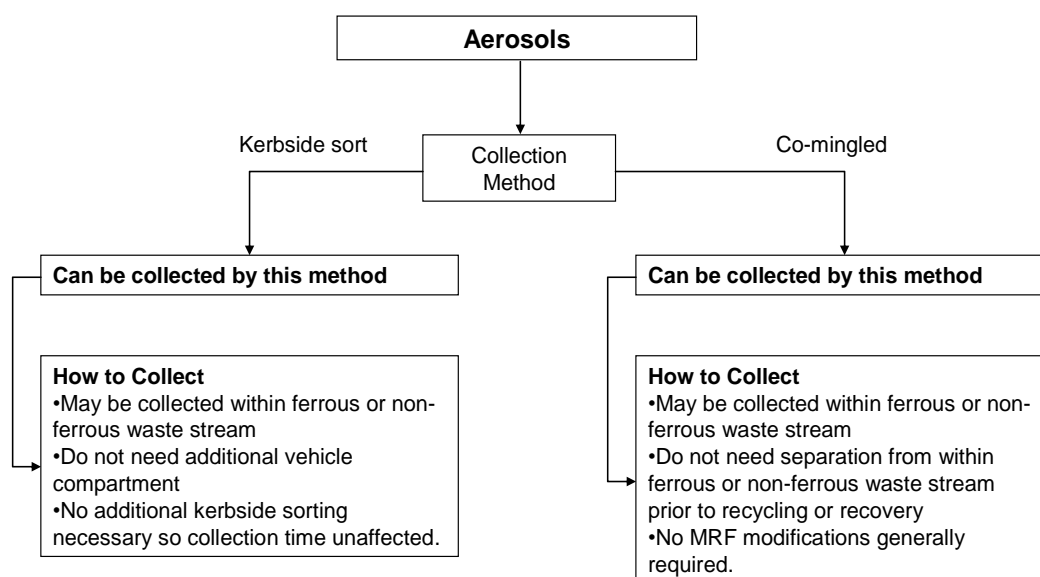
### 3 Aerosols

Aerosols are pressurised canisters, usually manufactured from tinned steel (ferrous) or aluminium (non-ferrous), containing a liquid which is dispensed in spray form, normally by means of a propellant gas. Some aerosols generated by householders will be classified as hazardous wastes. This will depend on the original contents of the aerosol, the type of propellant and how empty the aerosol is. Aerosols containing flammable materials marked H3A or H3B may be classified as hazardous wastes, under the mirror entry 15 01 10\* 'Packaging containing residues of or contaminated by dangerous substances'.

The quantity of aerosol canisters within household waste is hard to determine as they are rarely collected separately and are instead retained within the bulk ferrous and non-ferrous waste stream. Modern reprocessing facilities do not generally require the removal of aerosols from input streams, and so little separation from bulk ferrous or non-ferrous waste streams occurs. The British Aerosol Manufacturing Association (BAMA) estimates that around 30,000 tonnes of aerosols are disposed of per annum, which is approximately 27 aerosols per household.

Figure 2 outlines the suitability of this waste stream for collection within existing recycling collections. It is common practice to include aerosols in kerbside recycling schemes and all of the authorities within the case studies include aerosols within their recycling collections.

**Figure 2 Aerosol Collection Options**



#### 3.1 Kerbside Sort Collection

Aerosols can be added to most kerbside sort collection schemes without modification to the existing scheme. Aerosols can be collected within the ferrous and non-ferrous waste stream, and due to the likely level of arising, should fit within existing stillages. They do not require additional separation at the kerbside, so collection time should not be affected.

#### 3.2 Co-Mingled Collection

Where co-mingled collections already collect ferrous and non-ferrous materials, aerosols can be added to the collection easily. Aerosols will be separated at the MRF within the existing ferrous and non-ferrous waste streams, therefore requiring no plant modification.





### **3.3 Collection Publicity**

Authorities publicise their collection of aerosols in a variety of ways. Some highlight aerosols as a specific item in their promotional literature, while other authorities include them as acceptable items within information relating to food and drink cans (the normal ferrous and non-ferrous waste stream).

Where aerosols are listed as a specific item, some authorities place restrictions on the aerosols that can be placed in the recycling container. These include the exclusion of full or partially full canisters and spray paint canisters. Most authorities also exclude gas canisters, which are more highly pressurised with flammable gas contents, as these may damage reprocessing plants.



## 4 Batteries

There are two main types of batteries discarded by householders - household batteries and automotive batteries. Due to their size and nature these two waste streams are often collected separately within kerbside collection schemes.

Reprocessing facilities for batteries generally handle both automotive and household batteries; although some types of sorted household batteries may be reprocessed abroad due to a lack of facilities at present within the UK.

### Example: Scheme Expansion

**Warwick District Council** discovered that the reprocessor used by the authority for the automotive batteries they collected within their household recycling scheme also accepted household batteries. They decided that expanding their recycling scheme to include household batteries could be achieved at a minimal cost, as deliveries to the reprocessor were already undertaken by their contractor.

### 4.1 The Waste Batteries and Accumulators Regulations 2009

The Waste Batteries and Accumulators Regulations 2009<sup>12</sup> implement the EU Batteries Directive 2006/12/EC. This legislation is based on producer responsibility and requires the collection, treatment and recycling of a specified percentage of household batteries. When this legislation is implemented in 2010, battery producers will be required to fund the collection, treatment and recycling of batteries based upon their share of the UK market, up to a minimum recycling target.

### 4.2 Household Batteries

There are a number of different types of small batteries which may be discarded by householders. Some are hazardous and others non-hazardous and it is difficult for householders or contractors to identify easily which are classified as hazardous. Separation of the different battery types is normally carried out by the reprocessing plant. Specific non-hazardous EWC codes exist for certain household batteries, but where mixed unsorted loads of household batteries are collected they are classified as hazardous waste due to the presence of hazardous batteries types.

There are three main types of household batteries - the hazardous ones are identified below.

**Dry-cell non-rechargeable:** general purpose disposable household batteries which include:  
*zinc carbon; zinc chloride, alkaline manganese* (which tend to be long life batteries).

**Primary button cells:** smaller watch type batteries  
*mercuric oxide* (hazardous); *zinc air; silver oxide; lithium ion*.

**Dry-cell rechargeable:** general purpose rechargeable batteries and batteries for items such as mobile phones, power tools etc:

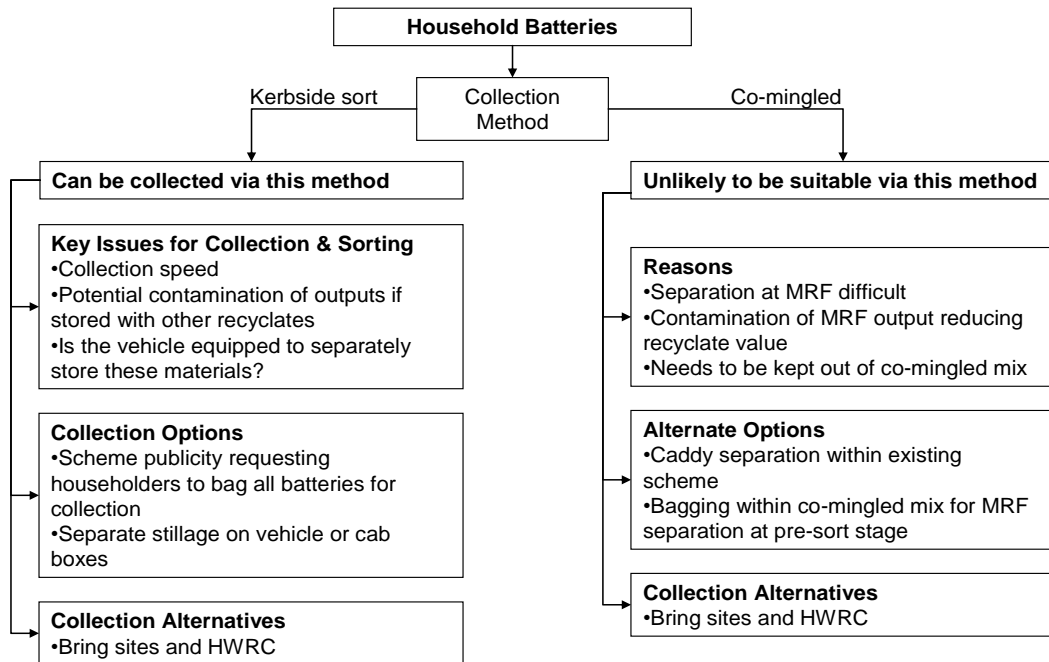
*nickel cadmium (NiCd)* (hazardous); *nickel metal hydride (NiMH)*; *lithium ion (Li-Ion)*<sup>13</sup>

Figure 3 outlines the collection options for this waste stream within kerbside collection schemes.

<sup>12</sup> [http://www.opsi.gov.uk/si/si2009/pdf/uksi\\_20090890\\_en.pdf](http://www.opsi.gov.uk/si/si2009/pdf/uksi_20090890_en.pdf)

<sup>13</sup> Note: collections including lithium ion batteries are classed as dangerous goods for transport and need to comply with ADR.

**Figure 3 Collection Options for Household Batteries**



### 4.2.1 Contamination Concerns

Irrespective of the collection system, it is important to try to prevent contamination of other recyclate streams by batteries. This can be difficult due to their size. Within the case studies all of those authorities collecting household batteries, irrespective of collection type, request that the batteries are bagged. This isolates them from other recyclable materials, preventing cross-contamination, and makes separation easier at the kerbside.

### 4.2.2 Kerbside Sort Collections

Household batteries may be collected within kerbside sort collection schemes. Household batteries are physically small making it comparatively easier to find storage space on collection vehicles compared to other HHW. Of the authorities interviewed some collected the household batteries in containers mounted to the underside of the vehicle chassis, while others utilised sealed boxes within the vehicle cab for storage.

As highlighted above, requesting householders to bag the batteries makes it easier for the operatives to identify and separate them, hence preventing the contamination of other recyclable materials. It will also help to minimise any increase in collection time per household resulting from the additional material. Authorities will need to decide whether to supply bags to householders, and while not supplying bags reduces costs and supply related issues, the provision of specific bags does help to publicise the service and may encourage the householder to separate their batteries.

#### Example: Kerbside Sort Collection of Household Batteries

**South Gloucestershire Council, Teignbridge District Council and Warwick District Council** request that household batteries are placed in the kerbside recycling box within a bag, placed on the top of the other items.

To aid kerbside identification all three authorities request that clear bags are used by householders, although South Gloucestershire also provide specific battery bags which householders should fill before putting out for collection.



### 4.2.3 Co-mingled Collections

Within co-mingled collections, separating loose household batteries from the co-mingled mix is difficult. Complete separation of all household batteries from other recyclate streams is not likely to be possible at the MRF, causing contamination of the other recyclate waste streams.

The three potential options for collecting household batteries, where co-mingled schemes are operated, are:

- use of a “caddy” system to collect the HHW separately from the co-mingled mix;
- placement next to the main recycling container; and
- placement of hazardous wastes within ‘survival bags’ in co-mingled mix for separation at the pre-sort stage of the MRF (no authorities were identified as using this approach).

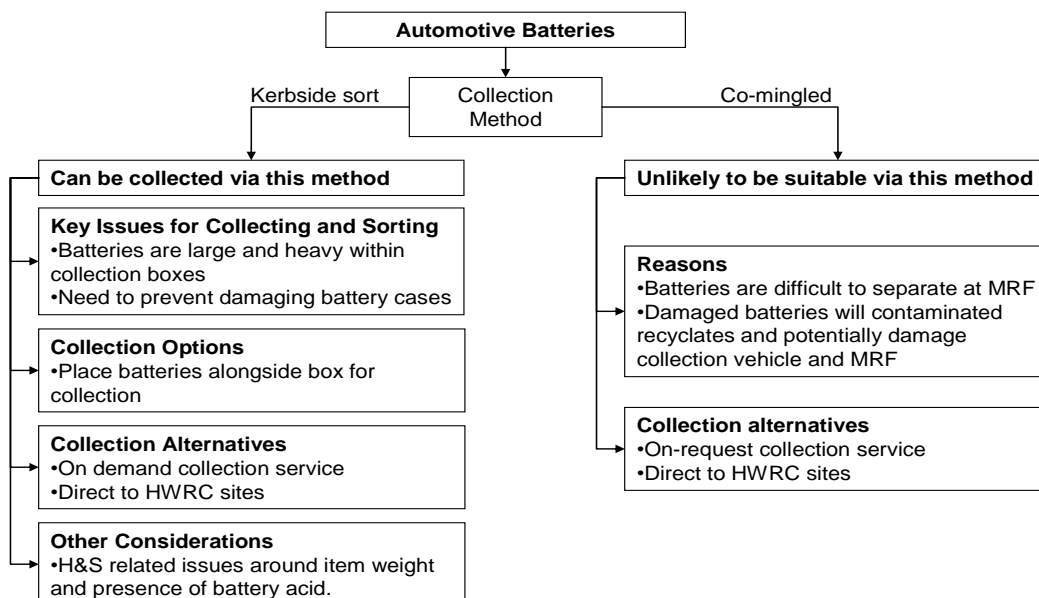
#### Example: Collecting Household Batteries within a Co-mingled Collection

**North Tyneside District Council** operates a co-mingled collection of recyclables. Glass and household batteries are placed in a separate caddy which hangs within the recycling bin. Household batteries need to be packaged within a clear bag within the caddy to allow separation. When collection occurs, this caddy is emptied and its contents placed in separate stillages on the vehicle to the remaining recyclables.

## 4.3 Automotive Batteries

Automotive batteries are wet cell lead acid batteries, which are classified as hazardous wastes. Due to their size and nature they are normally collected separately from household batteries. Automotive batteries tend to have a positive recycling value due to the quantity of lead they contain. Figure 4 illustrates the suitability of automotive batteries for collection within both types of collection scheme.

**Figure 4 Collection Options for Automotive Batteries**





### **4.3.1 Kerbside-sort collections**

A number of authorities collect automotive batteries from householders as part of kerbside sort collections. These collections generally have two conditions for householders to comply with, partly relating to operative health and safety. Householders are requested to place automotive batteries for collection next to their collection box. This allows them to be identified by operatives. A typical automotive battery weighs around 10kg, which may cause issues if they are placed within the box. Authorities also request that only batteries with undamaged casings are left for collection. If the casing is damaged it can lead to the escape of acid which poses both a health and safety and an environmental risk.

#### **Example: Kerbside Sort Collection of Automotive Batteries**

The **London Borough of Barnet** requests that only undamaged batteries are put out for collection next to the recycling box.

Storage on the vehicle is generally within a banded stillage, to prevent the escape of any liquids, mounted on the underside of the vehicle. This is generally not a large compartment - authorities state that the volume of such compartments is sufficient to hold about 4 batteries. This capacity may be reduced in practice as this compartment can also be used for storage of used engine oil. Where the number of automotive batteries in an individual round exceeds the vehicle storage capacity, some authorities require collection staff to request that the batteries are collected by a supervisor's vehicle.

### **4.3.2 Co-mingled Collections**

Automotive batteries are not suitable for collection within a standard co-mingled collection. This is due to the likelihood of casing damage, resulting in the escape of battery acid. This may lead to both vehicle or MRF damage, as well as contaminating other recyclates in the co-mingled mix.

Automotive batteries may be collected via 'on request' collection services or householders may be directed to HWRC sites.

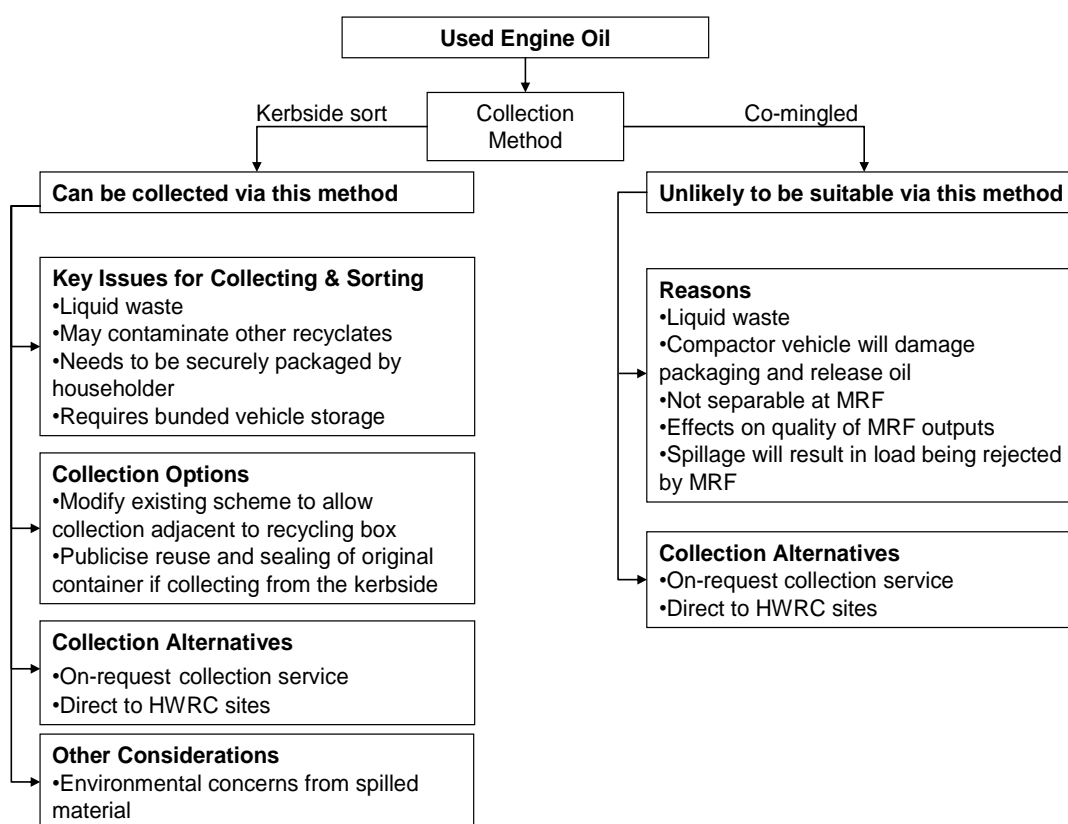
## 5 Household Chemicals

There are a number of hazardous household chemicals which may arise, including photochemicals, pesticides, used engine oil, some paints and varnishes. These are split into two groups within this guidance, used engine oil and other hazardous household chemicals.

### 5.1 Used Engine Oil

Used engine oil is a hazardous waste that originates from home vehicle servicing. The suitability of its collection within a kerbside collection scheme is set out in Figure 5

**Figure 5 Collection Options for Used Engine Oil**



#### 5.1.1 Kerbside Sort Collections

A number of authorities collect used engine oil within kerbside sort schemes. All authorities interviewed have the same collection requirements in place where the oil is placed upright in a suitable sealed, container, next to the recycling box.

For ease of identification householders may be advised to use the original packaging for this waste stream, although most authorities do not state this within their scheme literature.

This method of presentation keeps the used engine oil away from other recyclable materials, preventing contamination in the event of a spillage. Operatives need to check that the containers are securely closed prior to movement to prevent escape of materials, which may pose a risk to operatives and the general public as well as the wider environment.



All authorities within the case studies, collecting used engine oil, also collected automotive batteries. These two items are stored within the same bunded stillage on the vehicle to minimise the risks of liquid spillages. Where arisings exceed vehicle capacity, excess material is dealt with in the same manner as automotive batteries.

Authorities collecting this waste stream report arisings per property are generally low, with most individual collections being in the order of 1 – 2 litres. Some authorities place a maximum collection volume of the order of 5 litres or 1 gallon. This is to discourage disposal of trade waste. However, authorities who place no limits on the quantities reported no trade waste abuse issues.

#### Example: Collections Adjacent to the Kerbside Box

Both **Warwick District Council** and the **London Borough of Barnet** collect used engine oil as part of their kerbside sort collections. Both require used engine oil to be presented in sealed containers, stored upright next to the recycling box.

### 5.1.2 Co-Mingled Collection

Used engine oil is not suitable for collection within co-mingled collections. This is because any release of the oil will result in contamination of the co-mingled mix. Even where the used engine oil is placed within the recycling collection in a sealed container, the container is likely to be damaged during compaction and transport, resulting in the whole co-mingled mix being unsuitable for processing. Of equal importance is that MRFs are not designed to separate such material and the mechanical equipment is likely to rupture any containers and contaminate the equipment and other materials.

## 5.2 Other Household Chemicals

No authorities were identified who collect other hazardous household chemicals routinely within kerbside collections irrespective of the collection method used. However several authorities do offer an 'on-request collection service for household chemicals giving a kerbside collection service in addition to HWRC sites. There may be a number of reasons for this, primarily involving health and safety concerns.

Where household chemicals are left for collection, even where the wastes are presented within their original packaging, it is difficult to determine exactly what is being collected. Used engine oil is a visually distinctive waste, whose hazardous nature is consistent. Other household chemicals such as pesticides are generally clear liquids, which makes visual identification by operatives problematic. It is difficult to tell many pesticides and photochemicals apart from water. This raises two concerns.

- Some chemicals must be stored separately to prevent adverse chemical reactions and therefore would require the vehicle to be fitted with two or more dedicated stillages for these wastes.
- Others wastes, such as acids, may pose handling risks to operatives or the public who come into contact with them.

Within the normal kerbside collection, it is difficult to tightly define chemicals which are compatible with each other and that do not pose harm to operatives or the public. In addition, the carriage of certain hazardous liquids may be covered by the requirements of the Carriage of Dangerous Goods Regulations and advice would need to be sought from the authority's DGSA (Dangerous Goods Safety Advisor).

Alternative approaches for such hazardous materials are “**on-request**” collection services or the use of HWRCs.

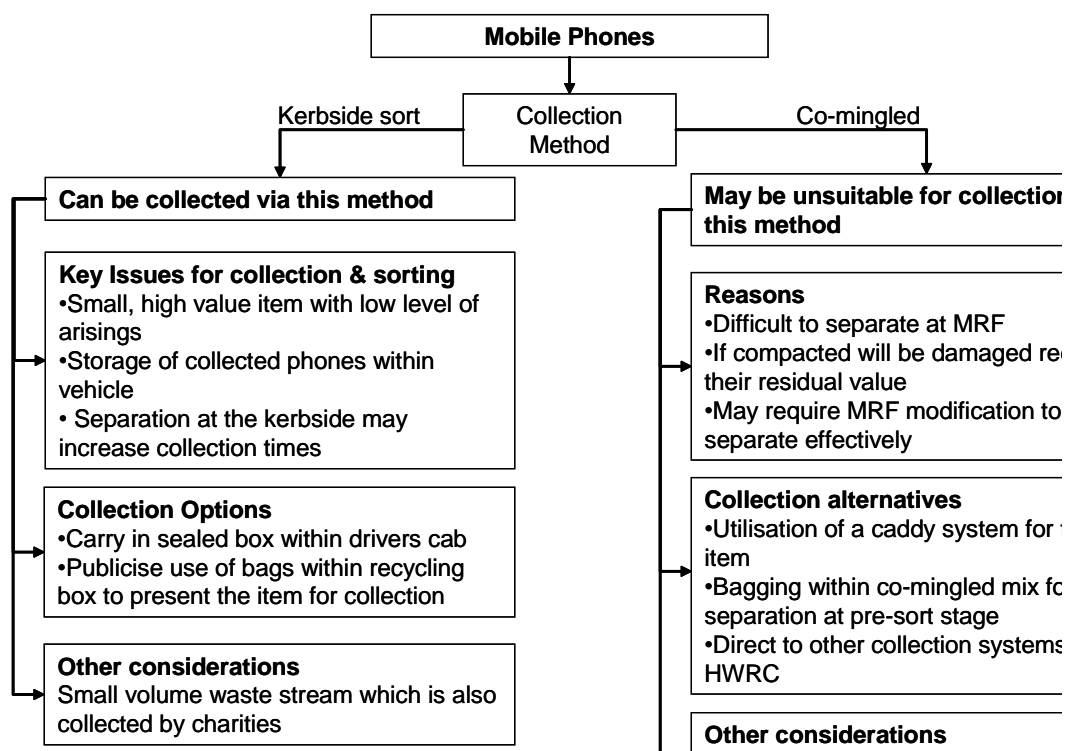
## 6 Mobile Phones and Other Small WEEE

### 6.1 Mobile Phones

Mobile phones can contain a number of hazardous elements, including components on the printed circuit boards and the rechargeable battery. This is unlikely to be a significant waste stream, due to the “trade in” value and the number of charities that accept mobile phones. This is particularly the case where the charger is also collected. Therefore if mobile phones are to be collected the public should be encouraged within promotional literature to include the phone charger in order to maximise the residual value. One authority reported that, on an annual basis, they collected around 20kg of mobile phones, chargers and printer cartridges with a value of over £1200.

The kerbside collection options for mobile phones are summarised in Figure 6

**Figure 6 Collection Options for Mobile Phones**



#### 6.1.1 Kerbside Sort Collections

Mobile phones are suited to collection within kerbside sort schemes, due to the manner in which they are handled. By collecting them within a kerbside sort collection they can be separated from other wastes to prevent damage, maximising this value. In order to facilitate separation and speed up collection times, householders should be requested to bag phones and chargers prior to placing them within the recycling containers.

The arisings from this waste stream will not be sufficient to require the use of an entire stillage on a vehicle, but they can be stored within a sealed box<sup>14</sup> within the vehicle cab.

<sup>14</sup> Note the box must be secured to prevent movement.





Some authorities offer a collection of used printer cartridges in a similar manner, again due to their potential positive value. However, these are not classified as hazardous waste, although the same collection methodology and considerations apply.

### 6.1.2 Co-mingled Collections

This waste stream has a net positive value depending on condition, so preserving them in good physical condition maximises their potential value. This means that even if MRFs were capable of separating mobile phones, they are not suitable for collection within co-mingled collections due to the high probability of them being damaged during compaction and transport.

As with household batteries, the **three potential options** for collecting household batteries, where co-mingled schemes are operated, are:

- use of a “caddy” system to collect the HHW separately from the co-mingled mix;
- collection from alongside the main recycling container when bagged; and
- placement of hazardous wastes within ‘survival bags’ in the co-mingled mix for separation at the pre-sort stage. However, unlike batteries, mobile phones are still likely to be damaged during the collection process (no authorities were identified as currently using this approach).

#### Example: Mobile Phone Collections

The **London Borough of Barnet** offers a kerbside collection of unwanted mobile phones. Once collected, the mobile phones are sent to a designated charity who is able to reclaim any financial revenue through this process.

**Teignbridge District Council** operates a similar collection scheme for both mobile phones and used printer cartridges, but uses the income from these items to offset the costs of other aspects of their recycling service.

## 6.2 Other Small WEEE

No authorities were identified who offer a routine kerbside collection of small WEEE, other than mobile phones (and printer cartridges). There are a number of different reasons why small items of WEEE may be classified as hazardous waste, including the presence of batteries, specific components within circuit boards, or the presence of hazardous materials such as asbestos or CFCs.

If collection schemes are expanded to accommodate other items of small WEEE, there are a number of issues that have to be addressed for the scheme to be successful. Due to the availability of space within collection vehicles and recycling boxes, the type and size of suitable WEEE needs to be tightly defined. An end market for the collected material needs to be identified for costs to be determined. Publicity materials for the scheme will have to identify which materials can be accepted and in what condition. If items are too damaged, then their kerbside separation may be difficult.

- **Kerbside Sort** - the considerations and approaches will be similar to those for mobile phones.
- **Co-mingled** - this waste stream is not suitable for collection via a co-mingled collection as MRFs are not designed to separate this stream. Where the co-mingled mix is compacted in transport, this will make separation more problematic due to the likelihood of damaging the materials.



However, larger items of WEEE are already collected by most authorities within 'bulky waste' or 'on-request collections. It would be possible to widen the range of wastes collected within this type of collection to include smaller items of WEEE, although this may require revision of any existing collection charging scheme.

### **6.3 Compact Fluorescent Light Bulbs**

Compact Fluorescent Lamps, or energy saving light bulbs, contain a maximum of 5mg of mercury which means they are technically classified as hazardous waste. Although no authorities were identified as pro-actively collecting these items, it is a waste stream for which there is a growing public awareness in terms of the residual risk of mercury unnecessarily leaking from landfill and the health and environmental hazards this might pose. Collection considerations are similar to those for small WEEE. However, collection of these items must take into account their fragile nature.



## 7 “On-Request” and Bulky Waste Collections

### 7.1 “On-request” Collection Services

The approach used by some authorities to dealing with hazardous household chemicals and other household hazardous wastes, is to offer an “on-request” collection service directly from householders, operating in a similar manner to bulky waste collections. Due to health and safety concerns surrounding the identification and handling of these materials, these collections tend to be operated via a specialist contractor.

These “on-request” hazardous waste collections normally require the householder arranging the collection to supply as much information as possible to the authority and their contractor about the type of wastes to be collected, the volumes and how they have been packaged.

Some authorities collect asbestos within ‘on-request’ collections (see the case studies on Doncaster Metropolitan Borough Council and Northumberland County Council). One reason given for this approach was to avoid the flytipping of this material, which requires removal at a higher cost to the authority.

Where the authority operates a co-mingled collection, on-request schemes can be utilised to capture HHW such as automotive batteries and used engine oil.

#### Example : “On-request” Chemical Collection

**Northumberland County Council** offers a hazardous waste collection service run by a specialist waste contractor on a monthly basis from all households. No HWRC sites within the authority’s area are permitted to accept either asbestos or liquid hazardous wastes and householders wishing to dispose of these items are directed to the collection service. This scheme collects asbestos and household chemicals. Volume restrictions on both asbestos and chemicals of 12 sheets and 90 litres respectively are in place to prevent trade waste abuse.

The public can request a collection either via the authority’s contact centre or by completing a form on the website. When booking, the householder is encouraged to give as much detail as possible of the volume and nature of the wastes to be collected. The authority’s contractor then arranges a collection schedule based on issues such as the chemical hazards posed by the wastes to be collected and collection location and then informs the householder of the date of the collection. The collection date will be one of two possible dates each month identified to the householder on collection booking. There is no charge for the use of this service

#### Example: Hazardous Waste Disposal Service

**The City of London**, on behalf of 31 London Boroughs, offers a hazardous waste collection service commonly known as a ‘Toxic Taxi’. Householders within these Boroughs can telephone the council to arrange a collection of asbestos or household chemicals. Householders can only have a single asbestos collection per annum, but may have three chemical collections, with a 50 litre limit per collection.

Asbestos should be wrapped prior to collection and all chemicals should be in sealed, non-leaking containers not exceeding 50 kg or 50 l, with no one container exceeding 25 litres. Residents are also required to label the chemicals correctly and not store incompatible materials together while awaiting collection. Generally there is no cost for this service, however there may be a collection charge for this service where the volumes to be collected exceed the stated limits.

### 7.2 Bulky Waste Collections

Local authorities have long operated ‘bulky waste’ collections on an ‘on request’ basis. Some bulky wastes within these collections may be classified as hazardous wastes. These include items such as fridges and freezers, due to the presence of chlorofluorocarbons (CFCs); older television sets and computer monitors which contain cathode ray tubes; and



electric storage heaters containing asbestos. Bulky waste collections can also provide an opportunity for certain hazardous wastes to be reused, for example fridges and freezers.

This type of collection is in addition to HWRC site provision. It means that larger items can be collected from householders, who are unable to take such items to HWRC sites, either due to a lack of transport or size and weight. Some authorities also collect asbestos sheets from householders within this type of collection.

Bulky waste collections are generally carried out by authorities "on-request" from individual householders, although some authorities also operate occasional bulky waste days where householders are requested to place items for collection in their normal waste collection area. For items which can be reused, authorities need to consider how householders are requested to present these items, as their potential for reuse is likely to be reduced if equipment is allowed to stand outside in poor weather conditions. "On-request" collections are normally requested via either the authority's call centre or website.

Collection fees and volume restrictions on this type of collection are set by many authorities. Normally any fee for the collection varies depending on the item being collected. Items such as fridges and freezers have a higher fee due to their size. Most authorities also limit the overall number of items within a collection, to five. The authorities interviewed tended to charge in the region of £10 – 20 per collection, with an additional fee of £5 for multiple items.

As authorities are already operating these schemes, they could be utilised to capture a range of hazardous wastes. This may be aided by publicising those materials of particular concern, or by increasing the range of materials within the acceptable wastes, to include waste such as asbestos.

#### Example: Collection of Bulky Waste

**Teignbridge District Council**, in partnership with Devon Furniture Forum, operates a third sector collection of bulky waste.

Where the waste has no recovery value, the Forum bills the authority the cost of collection and disposal of that unwanted item. However, when the item such as a fridge, freezer, television, or furniture can be reused, the authority pays a Reuse Credit to the Forum. The scale of the credit depends on the item being reused, based upon average weights for the item type. The reuse may be via donation to a low income household, or sale.

### 7.3 Other Approaches

Other less common approaches adopted by authorities for the handling of HHW include:

- referring householders to commercial waste contractors that are working in partnership with or on behalf of the authority; or
- operation of "waste amnesties". This is where authorities arrange a one-day free event within their area for the public to bring waste household chemicals, for safe collection and disposal.

Directing householders to commercial collectors is likely to cost the householder more than a local authority service, and may result in householders disposing of these materials inappropriately. 'Waste amnesties' may result in a good capture of chemicals, but are a one off event, often on an annual basis. This may mean that householders have to store these materials for long periods of time prior to collection.



# Appendices

**A1 HAZARDOUS PROPERTIES AND EWC CODES**

**A2 FULL CASE STUDIES**





# A1 HAZARDOUS PROPERTIES AND EWC CODES

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**H1 'Explosive'**: substances and preparations which may explode under the effect of flame or which are more sensitive to shocks or friction than dinitrobenzene.

**H2 'Oxidizing'**: substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances.

**H3-A 'Highly flammable'**:

- liquid substances and preparations having a flash point below 21 °C (including extremely flammable liquids), or
- substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy, or
- solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the source of ignition, or
- gaseous substances and preparations which are flammable in air at normal pressure, or
- substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities.

**H3-B 'Flammable'**: liquid substances and preparations having a flash point equal to or greater than 21 °C and less than or equal to 55 °C.

**H4 'Irritant'**: non-corrosive substances and preparations which, through immediate, prolonged or repeated contact with the skin or mucous membrane, can cause inflammation.

**H5 'Harmful'**: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may involve limited health risks.

**H6 'Toxic'**: substances and preparations (including very toxic substances and preparations) which, if they are inhaled or ingested or if they penetrate the skin, may involve serious, acute or chronic health risks and even death.

**H7 'Carcinogenic'**: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence.

**H8 'Corrosive'**: substances and preparations which may destroy living tissue on contact.

**H9 'Infectious'**: substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms.

**H10 'Teratogenic'**: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce non-hereditary congenital malformations or increase their incidence.

**H11 'Mutagenic'**: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce hereditary genetic defects or increase their incidence.

**H12** Substances and preparations which release toxic or very toxic gases in contact with water, air or an acid.

**H13** Substances and preparations capable by any means, after disposal, of yielding another substance, e.g. a leachate, which possesses any of the characteristics listed above.

**H14 'Ecotoxic'**: substances and preparations which present or may present immediate or delayed risks for one or more sectors of the environment.

The relevant EWC codes for hazardous household wastes are given below.

Chapter 15 and Chapter 20 entries for separately collected fractions

**15 Waste Packaging; Absorbents, Wiping Cloths, Filter Materials and Protective Clothing not otherwise specified**

**15 01 Packaging (including separately collected municipal packaging waste)**

15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging
15 01 10*	packaging containing or contaminated by dangerous substances (M)
15 01 11*	metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers (M)

**20 Municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) Including separately collected fractions**

**20 01 separately collected fractions (except 15 01)**

20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 13*	solvents (A)
20 01 14*	acids (A)
20 01 15*	alkalines (A)
20 01 17*	photochemicals (A)
20 01 19*	pesticides (A)
20 01 21*	fluorescent tubes and other mercury-containing waste (A)
20 01 23*	discarded equipment containing chlorofluorocarbons (M)
20 01 25	edible oil and fat
20 01 26*	oil and fat other than those mentioned in 20 01 25 (A)
20 01 27*	paint, inks, adhesives and resins containing dangerous substances (M)
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 29*	detergents containing dangerous substances (M)
20 01 30	detergents other than those mentioned in 20 01 29
20 01 31*	cytotoxic and cytostatic medicines (A)
20 01 32	medicines other than those mentioned in 20 01 31
20 01 33*	batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries (A)
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
20 01 35*	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components (M)
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 37*	wood containing dangerous substances (M)
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 01 41	wastes from chimney sweeping
20 01 99	other fractions not otherwise specified

N.B. Hazardous entries are marked with an asterisk (\*) with absolute entries in red and marked with (A) and mirror entries are in blue and marked with (M),





## A2 FULL CASE STUDIES

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### Case Study Guidance Notes

#### Recycling performance

The profile for each of the case study authorities includes a “dry recycling rate”. This is the percentage of household waste sent for dry recycling, as reported against Best Value Performance Indicator 82a for 2007/08.

#### Household hazardous wastes collected

In the list of household recycling collections for each authority, collected household hazardous materials are identified in **bold text**.

#### Household hazardous waste tonnage data

Where tonnage data is known this is referenced in each case study, and has been obtained from WasteDataFlow or directly from the case study authorities. Tonnage data for household hazardous wastes is otherwise unavailable. In some cases this is because these materials have been collected as admixtures e.g. aerosols collected with mixed cans, but other reasons include a lack of clear data from the contractor used and lack of information from the authority.



## London Borough of Barnet

- **London Borough**
- **Collecting aerosols, car batteries, household batteries, engine oil and mobile telephones**
- **Placed in or next to kerbside box**
- **Contractor is May Gurney**

### Authority Profile

- Waste Collection Authority.
- London Borough, urban population.
- As of March 2008, 135,600 households and over 20,000 multi-occupancy properties.
- Dry recycling rate of 18.26%

### Kerbside Recycling Collection Materials

The authority collects a range of materials at the kerbside. It operates a two box system of kerbside sorted materials.

In a black box:

- paper;
- glass;
- textiles;
- **mobile telephones**<sup>15</sup> (collected and sent to charity);
- **household batteries**<sup>16</sup>.

In a blue box:

- mixed plastic bottles;
- cardboard;
- aluminium and steel cans;
- foil, and;
- **aerosols**.

Next to the boxes

- **car batteries**;
- **engine oil**<sup>17</sup> (in a sealed bottle).

### Origin of Service

The contractor offered to collect the majority of the materials. More recently public demand has led to the introduction of plastic bottles and cardboard collections.

### Frequency of Collection(s)

There is a weekly collection of residual, recyclables and, in most areas, green/kitchen waste. All waste collections are on the same day of the week for an individual property.

### Hazardous Waste Storage on the Vehicle

Each collection vehicle has a container below the main body for the carriage of household batteries, car batteries and oil. This is bunded to contain spillages. Aerosols are not separated from cans, so are carried mixed. The limited number of mobile phones collected does not have a specific area on the vehicle and is generally carried in a secure cab box.

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<sup>15</sup> Very low levels of arisings – below 1 tonne

<sup>16</sup> Between April 07 and March 08, 171.52 tonnes collected from kerbside, 33.06tonnes collected from HWRC.

<sup>17</sup> Approximately 10 tonne collected, opposed to 7.5 tonne at HWRC site

## **Multi-Occupancy Building Provisions**

There are over 20,000 multi-occupancy households in the borough. For properties containing up to 12 residences, the service provision is largely the same as that for other households. Above this number, communal recycling bins for some materials are provided. However it is not possible to collect any batteries, engine oil or mobile phones in these bins, due to space constraints. It is hoped that household hazardous wastes from these properties are captured by the HWRC site.

## **Bulky Waste and On Request Collections**

Bulky waste collections are carried out by an in-house council team. Chemicals are directed to the HWRC site and where this is not possible the London 'Toxic Taxi' is utilised. There is a fee payable for bulky waste collections.

## **Public Relations (PR) and Public Uptake**

The public relations effort on the recycling service has been extensive. This has been led by a recent expansion to the collections but also by the authority operating a compulsory recycling scheme for paper, cans and glass. Currently, the recycling of other materials is not compulsory; however there are no barriers to other materials being made compulsory.

The authority carries out an active participation monitoring programme, and has seen an increase in participation figures by targeting education in areas where recycling performance is poor. The authority literature uses photographs and illustrations to indicate the correct wastes for recycling and includes printing pictorial information directly on the sides of the recycling boxes.

## **HWRC Site Provision**

There is one HWRC site in the borough. This site can accept chemicals and asbestos, along with normal household wastes.

## **Forthcoming Changes**

Cardboard and plastics have recently been added to the kerbside collection scheme. The authority is not considering additional materials at the present.

## **Issues and Successes**

The borough has a high turnover in population, necessitating regular promotion of the current recycling service to new residents and distribution of large quantities of literature.

Studies on recognition rates of materials which can be placed for recycling, suggest that recognition rates for household hazardous materials are lower than other more commonly collected materials, such as paper. The authority does not report any abuse of the system from commercial operators. Data suggests that the volume of used engine oil collected at the kerbside is higher than that collected by the HWRC site.

### **Collection key points:**

- **batteries (household and car), aerosols, engine oil and mobile phones collected;**
- **low public recognition for the kerbside collection of some hazardous wastes from residents;**
- **no current public demand for the collection of additional hazardous materials;**
- **limits to how many more materials may be collected at the kerbside on current vehicles;**
- **compulsory recycling scheme in place for some materials, but not household hazardous;**
- **large volume of materials reported to be collected at the kerbside, some of which are greater than that collected at HWRC sites.**

# Doncaster Council

- **Unitary Authority (Metropolitan Borough Council)**
- **Collecting aerosols and mobile phones**
- **Kerbside sort scheme**
- **Contractor is SITA (but previously third sector organisations)**

## Authority Profile

- Unitary Authority.
- Between 50-75% urban area.
- As of March 2008, approximately 129,600 households and some 120 multi-occupancy properties.
- Dry recycling rate 18.41% in 2007 – 08.
- Collecting 417kg/hh/a dry and green recyclables.

## Kerbside Recycling Collection Materials

The authority operates a kerbside sort collection for a range of materials. The scheme utilises a single green box for:

- paper;
- glass;
- aluminium and steel cans;
- foil;
- **aerosols**;
- textiles and shoes;
- ink cartridges; and
- **mobile telephones**.

Additionally all types of plastic bottles can be collected if placed in a large clear sack.

## Origin of Service

The scheme has evolved over a number of years. It was previously operated by third sector organisations<sup>18</sup> who were permitted to keep profits from the scheme and therefore targeted more valuable waste streams.

## Frequency of Collection(s)

There is a weekly collection of recyclables. Additionally there is a special kerbside collection service for bonded asbestos and hazardous chemicals, such as pesticides.

## Hazardous Waste Storage on the Vehicle

Aerosols are stored with the steel and aluminium cans mix. Mobile phones are stored in a secure box in the vehicle cab.

## Multi-Occupancy Building Provisions

There are around 120 multi-occupancy properties in the borough. These properties are not serviced by the kerbside sort scheme. However there are plans to offer a service to these properties in future.

## Bulky Waste and On Request Collections

There is a kerbside, on request collection of hazardous chemicals and bonded asbestos. When a householder contacts the authority they are asked for details of the wastes. They are informed they may have to wait for a period of time before the waste can be collected and anecdotal evidence suggests householders are usually happy with this. The number of requests is monitored and when enough requests for a days work, or a period of three months has elapsed, a collection is arranged with a

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<sup>18</sup> Doncaster Community Recycling Partnership and North Doncaster Kerbside Recycling

specialist contractor and householders are notified of the collection date. This service was introduced as a result of public pressure, as there is restricted provision for these materials at HWRC sites.

For bulky waste, a third sector company called Doncaster ReFurnish collects re-useable bulky items whilst SITA collect any items for disposal.

### **HWRC Site Provision**

There are six HWRC sites in the borough. However not all sites collect a full range of hazardous waste (wastes accepted vary between the sites), but only one of these sites accepts bonded asbestos.

### **Forthcoming Changes**

From October 2009 a cardboard collection will be introduced together with the roll out of recycling provision for multi-occupancy premises.

### **Issues and Successes**

The Council has previously used two third sector companies for kerbside sort only. The groups were originally grant funded and had service level agreements with the Council, until the services could be tendered in accordance with European regulations. The Council has recently re-tendered its three collection contracts as one contract. This has recently been won by a large private sector company.

### **Collection key points:**

- **aerosols and mobile phones, with an on-request collection of other hazardous materials;**
- **limited HWRC site provision for hazardous materials.**

## North Tyneside Council

- **Metropolitan borough council with elected Mayor**
- **Introducing a new recycling scheme**
- **Collecting household batteries and aerosols**
- **Grey bin with incorporated caddy for batteries and glass.**
- **Contractor is in-house**

### Authority Profile

- Unitary Authority.
- Around 50% urban area.
- As of March 2008, approximately 93,000 households, and over 5,000 multi-occupancy properties.
- Dry recycling rate of 15.27% in 2007 – 08.
- Collecting 283 kg/hh/a of dry and green recyclables.

### Kerbside Recycling Collection Materials

The authority operates a co-mingled recycling scheme. The recycling bins have a separate caddy inside.

The main body of the bin is used to collect:

- cardboard;
- paper;
- mixed plastic bottles;
- **aerosols**;
- aluminium and steel cans; and
- textiles.

The separate caddy is used to collect:

- glass; and
- **household batteries.**

It is requested that the textiles and batteries are bagged.

### Origin of Service

This is a new scheme replacing a previous kerbside sort box scheme operated by SITA. The materials collected are broadly similar. The contractor is in-house and new vehicles have been specified based upon this new collection scheme.

### Frequency of Collection(s)

Recycling collections are fortnightly with weekly residual waste collection.

### Hazardous Waste Storage on the Vehicle

Household batteries go into a cab-based secure box and glass into a separate body compartment. Aerosols remain within the co-mingled waste mix.

### Multi-occupancy Building Provisions

Communal wheeled bins are provided for the segregated collection of card, plastic bottles, cans, tins and glass. Most of the multi occupancy buildings in the borough are 3 – 4 storey developments, with only one high rise block.

### Bulky Waste and On Request Collections

The authority has recently introduced a charge for bulky waste collections. The collection contractor is in-house. The uptake of this scheme has declined since a charge was introduced. The general public are encouraged to take this type of waste to the HWRC sites which offer a free disposal service.

General public enquiries relating to hazardous household chemicals are directed to private waste management companies. Asbestos is accepted at HWRC sites if it is double bagged and sealed. Once accepted this waste then goes straight from the HWRC site to a transfer station.

### **Public Relations and Public Uptake**

There has been widespread and varied publicity for the new scheme in order to raise awareness of the scheme changes.

### **HWRC Site Provision**

There is a HWRC site operated by the authority, which accepts asbestos and household chemicals.

### **Forthcoming Changes**

None.

### **Issues and Successes**

Very little contamination of recyclates is reported by the MRF. This is thought to be due to the retention of a weekly residual collection service. The take up rate for battery recycling is currently low but this service is still provided for public relations reasons and to meet public demand.

Members of the public have asked for the inclusion of tetra packs, mixed plastics and envelopes in the recycling service, but not additional hazardous wastes.

### **Collection key points:**

- **co-mingled collection with caddy for glass and batteries;**
- **any additional materials would require storage space on vehicles not designed for them;**
- **low levels of contamination of recyclates reported;**
- **good public participation rates;**
- **public demand is for additional non-hazardous waste collections not for hazardous materials;**
- **limit to what more can be separated by the MRF utilised.**



# Northumberland County Council

- **Unitary from 1<sup>st</sup> April 2009**
- **Free of charge monthly household collection service for hazardous materials**
- **Generally collect asbestos, garden chemicals and photographic chemicals**
- **Contractor is Cleansing Services Group Ltd (CSG)**

## Authority Profile

- Unitary Authority from 1<sup>st</sup> April 2009.
- Northumberland County covers a predominantly rural area with approximately 50% of the population living in 5% of the county.
- As of March 2008, 144,600 households, with multi-occupancy comprising a small proportion.
- Dry recycling rate of 25.96% in 2007 – 08.
- Collecting 421kg/hh/a of dry and green recyclables.

## Collection Materials

The household hazardous waste collection service does not designate a list of acceptable wastes. Instead it is an 'on request' free collection service for hazardous materials that can not be taken to the HWRCs, particularly household chemicals and asbestos. There is a "flexible" limit to the amount of these wastes that can be collected for free. This is:

- asbestos - no more than 12 sheets (6ft x 2.5ft) per property.
- chemicals - 90kg per household.

Asbestos must be double bagged, wrapped in plastic and taped. It is limited to a weight that two men are able to lift into the collection vehicle. The Authority offers the bagging and wrapping of asbestos collected from the homes of the elderly or disabled, if necessary.

## Origin of Service

The collection was set up approximately 8 years ago primarily to collect asbestos. The scheme was an alternative to modifying the environmental permits of existing HWRC sites to enable them to accept hazardous wastes. Approximately 80% of collections are asbestos related<sup>19</sup>. Household garden chemicals and photographic chemicals account for the remaining collections.

## Frequency of Collection

A once monthly collection service is provided. These collections are booked with the authority via the call centre or the website. On the website there is a 12 month list of collection dates and associated dates by which requests should be made.

## Hazardous Waste Storage on the Vehicle

Usually one CSG vehicle is used for 2 days per month, but this can vary depending upon the geographical spread of, and demand for, collections. The type of vehicle and its storage capacity is dictated by the nature of the collections in a specific round.

Approximately 30 collections are made per collection round (i.e. per month).

## Bulky Waste and On Request Collections

The Council charges for bulky waste collections which are carried out in house.

## HWRC Site Provision

There are no provisions for the collection of asbestos or household hazardous chemicals at any of the thirteen HWRC sites within the county although oils, large WEEE and automotive batteries are

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<sup>19</sup> In April 2007 - March 2008, 46.5 tonnes was collected for disposal

amongst the household wastes accepted. The collection system helps offset the costs that would be associated with varying the environmental permits (previously waste management licences) at the HWRC sites and related annual subsistence fees.

### **Public Relations and Public Uptake**

The collection scheme is advertised by specific leaflets at HWRC sites and on the authority's website, as well as within other recycling services leaflets. There is a springtime push in PR for waste management schemes.

There does not appear to be an increase in the uptake of the collection scheme after campaigns as the scheme is used on a need basis. There appears to be some seasonality in requests for collections, particularly for garden chemicals in spring/summer. There is a small amount of clustering of the HHW collection by word of mouth in areas where there are older garages for example.

The Council carries out a user satisfaction survey for the HHW collection service. The results are collated and reported on each year. Satisfaction is high:

- 2005/2006- 92.4%
- 2006/2007- 94.2%
- 2007/2008- 93.2%

Initial complaints regarding the scheme were related to the ad-hoc element of the collection, when there were no set collection dates. There is now a publicised list of dates when collections can be booked in. Increasing the frequency of the collection is considered to be too expensive based on the typical level of arising. There are occasional requests for a fixed time for collection.

### **Issues and Successes**

The HHW collection scheme is seen by the council as a pragmatic way of addressing a problem and has proved very successful.

There is seasonality to the uptake of the scheme with increased demand in the spring and demand dropping off in the winter.

There is rarely 'abuse' of the scheme but tradesmen may direct householders to use the scheme as a means of disposal of their HHW arising from building works being carried out on their property, according to the user satisfaction survey.

#### **Collection key points:**

- **monthly on request collection of asbestos and hazardous household chemicals offered to all households;**
- **regular date for collection known in advance;**
- **mainly collects asbestos in both tonnage and number of collections.**
- **chemical types and volumes determined at time of booking;**
- **high level of satisfaction with system**

# South Gloucestershire Council

- **Unitary Authority**
- **Collecting aerosols, automotive batteries, household batteries and engine oil**
- **Placed in or next to kerbside box/sack**
- **Contractor is SITA**

## Authority Profile

- Unitary Authority
- 80% urban population, 70% rural geographically.
- As of March 2008 approximately 107,000 households, and roughly 4,000 multi-occupancy properties.
- Dry recycling rate 22.82% in 2007- 08.
- Collecting 534kg/hh/a of dry and green recyclables.

## Kerbside Recycling Collection materials

The authority operates a fortnightly kerbside sort scheme using a box and sack system. In a green box:

- glass;
- cans, foil and **aerosols**;
- textiles and shoes and
- **household batteries** (in separate clear carrier bag within box).

In a green sack:

- newspapers and magazines.

Householders are asked to place the following items next to their green box:

- **single automotive batteries**<sup>20</sup>;
- **used engine oil** (in a sealed container).

## Origin of Service

Collections for the majority of hazardous wastes were introduced by a previous contractor. SITA introduced the household battery collections. This expansion was because of the detrimental environmental effect of batteries in landfill sites.

## Frequency of Collection(s)

The authority operates an alternate weekly collection for both recyclates and residual wastes.

## Hazardous Waste Storage on the Vehicle

Each collection vehicle has a single banded container below the main body for the carriage of automotive batteries and used engine oil. Aerosols are not separated from other cans, so are carried mixed. Household batteries are stored in a small box in the main body of the vehicle.

## Multi-Occupancy Building Provisions

Wherever possible, individual green boxes are supplied so that residents may benefit from the collection of the full range of materials. Where this is not practical, mini recycling centres are provided. These do not generally include provision for hazardous materials. There are approximately 4,000 multi occupancy properties in South Gloucestershire.

## Bulky Waste and On Request Collections

SITA South Gloucestershire Ltd operates the bulky waste collections. Residents are charged £15 per collection, but residents are encouraged to take hazardous materials to "Sort It!\*" centres at HWRC sites<sup>21</sup>.

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<sup>20</sup> Between April 07 and March 08, 52.16 tonnes from kerbside collections, 128.57tonnes from HWRC sites

## **HWRC Site Provision**

The authority provides four HWRC sites, all of which accept engine oil, automotive and household batteries and three of which accept asbestos.

## **Forthcoming Changes**

The authority is currently increasing the range of paper that it accepts via the kerbside scheme to include Yellow Pages and directories. It is also looking at the potential for collecting plastic bottles at the kerbside. It is not planning to collect more hazardous materials at the kerbside.

### **Collection key points:**

- **established recycling scheme;**
- **recent promotion push due to expansion of non-hazardous recycling;**
- **commercial vehicle or multiple automotive batteries, are not collected from households.**

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<sup>21</sup> Sort It!\* is a waste management partnership project operating between SITA and South Gloucestershire Council

# Teignbridge District Council

- **District council**
- **Collecting aerosols, household batteries, mobile telephones and printer cartridges**
- **Placed in kerbside box**
- **Contractor is in-house**

## Authority Profile

- Waste Collection Authority.
- Rural district council, with over 80% of population located in rural settlements or market towns, however a popular tourist area.
- As of March 2008 there were approximately 56,400 households and in 2001 there were 7000 multi-occupancy properties.
- Dry recycling rate of 20.57% in 2007 - 08.

## Kerbside Recycling Collection Materials

The authority collects a range of materials at the kerbside. It operates a two box system of kerbside sorted materials. In a green box:

- glass;
- HDPE plastic bottles;
- **mobile telephones** (collected and sent to charity);
- **household batteries**<sup>22</sup>
- printer cartridges.

In a black box:

- paper
- aluminium and steel cans;
- foil; and
- **aerosols.**

## Origin of Service

Teignbridge has collected fractions of municipal waste for over 15 years, with the system evolving gradually over that period. Household batteries have been collected in advance of the implementation of the Batteries Directive. Mobile phones and printer cartridges have a positive net value for recycling.

## Frequency of Collection(s)

The council operates an alternate weekly system of residual or recyclables and green/kitchen/thin card waste. All waste collections are on the same day of the week for an individual property.

## Hazardous Waste Storage on the Vehicle

Each collection vehicle has a container below the main body for the carriage of household batteries, mobile phones and printer cartridges. Where excess levels are collected or if an alternate vehicle is being used, materials may be carried in the cab. Aerosols are not separated from cans, so are carried mixed.

## Multi-Occupancy Building Provisions

The authority provides multi-occupancy buildings with a recycling service generally by means of a set of linked wheelie bins for items. Where the recycling store is secure, an additional caddy is supplied for batteries, mobile phones and printer cartridges, although this is not universal.

Holiday camps and holiday homes are provided with a recycling service where they are contracted to use the authority's waste collection system. The system is as complete as possible for this type of arising.

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<sup>22</sup> Between April 2007 and March 2008, 4.45tonnes were collected at the kerbside

## **Bulky Waste and Ad Hoc Material Collections**

Bulky waste collections are carried out by third sector organisations. Collections are arranged via the authority. The third sector organisations recover and recycle what they can. No on-request hazardous collections are offered.

## **Public Relations and Public Uptake**

There has been a large amount of public relations resource given to the recycling service. Some of this is specialised to cater specifically for the holiday market needs. Specific guidance is supplied to holiday properties receiving the local authority waste collection service and compliance with the scheme is monitored. There is active participation monitoring of green waste bins and residual waste by the council, which aims to target the education of residents and particularly holiday makers in areas of poorer recycling performance.

## **HWRC Site Provision**

There are three HWRC sites in the district<sup>23</sup>. One site can accept chemicals and asbestos, along with normal household wastes, the other two are smaller and open at weekends only. The authority also contracts out a skip service which visits 30 locations in the district annually for collection of other wastes, with a target for the contractor of 65% recycling.

## **Forthcoming Changes**

The council is currently trialling a mixed plastic bottle service and is looking into textile recycling, with the aim of reducing levels of these in the residual waste stream.

## **Issues and Successes**

The authority has a large number of holiday homes and holidaymakers, which may affect the authority's recycling rate. Their standard recycling scheme is applied where possible to holiday properties that utilise the authority's waste collection scheme, and compliance of properties within the scheme is monitored.

The income from items such as printer cartridges and mobile phones is used to offset the costs of other parts of the scheme. The third sector organisation used for bulky waste collection is also incentivised to direct materials for reuse rather than disposal.

### **Collection key points:**

- **household batteries, aerosols, mobile phones collected;**
- **good collection rates for most items;**
- **no current public demand for additional hazardous materials;**
- **mobile phones (and printer cartridges) have a positive recycling value.**
- **monitoring of green waste and residual waste collections undertaken driving increased recycling;**
- **some PR specifically aimed at holiday homes, including specific information for inclusion in "welcome packs";**
- **some multi-occupancy properties included within the household hazardous waste kerbside collections.**

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<sup>23</sup> The HWRC sites are provided by Devon County Council

# Warwick District Council

- **District Council**
- **Collecting aerosols, car batteries, household batteries and engine oil**
- **Placed in or next to kerbside box and sack scheme**
- **Contractor is SITA**

## Authority Profile

- Waste Collection Authority.
- Roughly a 50:50 urban/rural split, with most of the urban population in 3 main towns.
- Approximately 60,000 households, 11,000 multi-occupancy properties and 6,000 terraced houses.
- Dry recycling rate of 16.65% in 2007 – 08.

## Kerbside Recycling Collection Materials

The authority operates a box and sack system of kerbside sort. In a red box:

- paper;
- glass;
- cans, foil and **aerosols**
- **household batteries** (in separate clear carrier bag within box)

In a red sack:

- mixed plastic bottles;
- cardboard.

Householders are asked to place the following next to their red box:

- **automotive batteries**<sup>24</sup>;
- **used engine oil** (in a sealed container);
- textiles.

## Origin of Service

The majority of the hazardous waste collection system was established by the previous contractor, May Gurney. When the authority discovered that household batteries were also accepted at the same site where car batteries were being taken, they requested these materials to be added to the collection.

## Frequency of Collection(s)

Alternate weekly collections are in place. During recycling week the recyclables box and sack, plus a wheeled bin collection of green and food waste, are collected on the same day. About 6,000 town centre terraced properties have access to the recycling box scheme but have remained on a weekly residual sack collection.

## Hazardous Waste Storage on the Vehicle

Each collection vehicle has a container below the main body for the carriage of automotive batteries and used engine oil. This is bunded to contain spillages. Aerosols are not separated from cans, so are carried mixed. Household batteries are stored in a small box in the main body of the vehicle.

## Multi-Occupancy Building Provisions

Flats and some multi-occupancy properties are offered bulk containers and the council is moving towards providing communal recycling facilities by means of wheelie bins for some recyclables, mainly glass, paper/card, cans and aerosols only due to space constraints.

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<sup>24</sup> Between April 2007 and March 2008, 7.73 tonnes collected at the kerbside

## **Bulky Waste and On Request Material Collections**

The contractor operates a chargeable bulky waste collection, collecting up to 5 items per household per collection. No asbestos or any hazardous chemicals are collected. Any requests for collections of hazardous materials are directed to Warwickshire County Council or a specialist contractor.

## **Public Relations and Public Uptake**

Recently public relations campaigns have been associated with the roll-out of the alternate weekly service, which has seen a significant rise in recycling and composting performance. Scheme publicity information is clear and comprehensive. Recent user satisfaction surveys recorded 72% satisfaction with the waste service. There has not been any specific publicity surrounding hazardous materials.

## **HWRC Site Provision**

There are two Warwickshire County Council HWRC sites in the district, with the larger one of these accepting some hazardous materials and promoting facilities for accepting compact fluorescent lightbulbs.

## **Forthcoming Changes**

The introduction of plastic and cardboard collection has taken place recently and in response to public demand. This required some fleet re-configuration. The authority is looking to carry out promotional work on the household battery recycling undertaken, to include specialist collection bags as used in the recent WRAP trials<sup>25</sup>.

## **Issues and Successes**

The collection vehicle has a compartment for collection of automotive batteries and oil, and if there is no room left during a round for automotive batteries or oil, the crew are instructed to request a supervisor to collect these materials.

The transient student population have proved hard to reach and are poor participators in local waste reduction and recycling initiatives. Waste audits are carried out in areas of high residual waste production and poor recycling performance; this is effective but highly time intensive.

The contract requires that recycling of collected materials takes place in the UK; recycling routes for collected aerosols, batteries and oil are notified to the council. Although around 16 tonnes of batteries (car and household) and engine oil were collected in 2008/09, the contractor does not report the figures for these materials individually. There have been no apparent instances of abuse of the car batteries and engine oil collections, possibly because these specify small quantities only.

Waste management staff are interested in widening the hazardous waste recycling scheme to small WEEE items and compact fluorescent light bulbs.

### **Collection key points:**

- **established recycling scheme;**
- **change of contractor has occurred although basic scheme remains;**
- **recent promotion push due to expansion of non-hazardous recycling;**
- **expanded to collect household batteries due to outlet source already being utilised for car batteries.**

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<sup>25</sup> WRAP Household Battery Collection Trials April 2005 – March 2008  
[http://www.wrap.org.uk/downloads/Batteries\\_report\\_-\\_final.75cae5ab.6153.pdf](http://www.wrap.org.uk/downloads/Batteries_report_-_final.75cae5ab.6153.pdf)



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