Freedom of Information report on waste management
# Freedom of Information report on waste management

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## Acknowledgements:

The RCN wishes to thank the contribution of the following to the development of this report.

- FOI respondents.
- Mick Fanning, Associate, WSP Group.
- RCN Roundtable attendees.
Nurses make up approximately 70 per cent of the health care workforce in the United Kingdom and are therefore the largest producers of clinical waste. They are both the purchasers and users of consumables. Nurses are responsible for the management of waste as producers and participants in waste disposal procedures. This is reinforced by the International Council of Nurses (ICN) which highlights that ‘in order to fulfil their role and take on their responsibilities, nurses must understand the hazardous consequences of improper waste handling, the ‘cradle to grave’ waste cycle and methods that mitigate the negative impact of waste on the environment’ (ICN 2009).

The Royal College of Nursing’s (RCN) Frontline First campaign, launched in 2010, serves to highlight where waste occurs within health care systems and how innovations can contribute to efficiency and cost savings at local and national level. RCN members contacted the Frontline First campaign to raise concerns over local segregation of waste, in particular, inappropriate and overuse of the infectious waste stream resulting in unnecessary financial costs to NHS organisations.

A Freedom of Information (FOI) survey was developed to provide a snapshot of waste segregation of three main waste streams for bagged waste (municipal, offensive and infectious waste) and comparative costs for the period 2008-09 and 2009-10. These streams were selected as a starting point to raise awareness and influence changes in practice that could result in environmental benefits and net savings for the NHS.

Report highlights

- A total of 271,811 tonnes of bagged waste for the three categories was produced by the participating organisations during 2009-10 at a cost of approximately £65,500,000.
- Sixty per cent of the waste recorded was classified as municipal; 39 per cent was classified as infectious. Just one per cent of the waste recorded was classified as offensive waste.
- A 20 per cent reduction in bagged infectious waste could represent a potential year on year saving of approximately £8,840,000 per annum for hazardous (infectious) waste processing costs. Assuming this waste is reclassified as offensive waste, the net saving would be approximately £5,500,000. Additional savings could be made by reclassifying part of this waste was as municipal waste where appropriate.
- Forty five per cent of organisations declared reporting on waste management at board level annually, with 13 per cent declaring no reporting at board level at all.

Whilst nurses have been highlighted as the largest producers of waste, they are not the only producers, and any efforts to manage health care waste effectively must be approached and managed from an organisational perspective. This is required in order to capture and manage all relevant issues impacting on waste management (including treatment and disposal) such as the built environment, placement of waste bins, collection times, audit, purchasing of consumables and specialist knowledge of waste processes and statutory requirements.

Key recommendations

On the basis of the results of the FOI survey data and the contributions from experts and stakeholders in the field, the following key recommendations have been made.

- Organisations should consider the value of appointing or sharing dedicated waste managers to work within and across organisations to address waste management issues and improve waste outcomes to deliver financial and environmental benefits.
- The established guidance on the compaction of offensive waste requires review. Previous guidance issued by the Health and Safety Executive (HSE) and in Health Technical Memorandum 07-01: Safe management of health care waste (HTM 07-01 edition one) does not recommend the compaction of offensive waste unless in accordance with the conditions of a waste management licence or permit. Since this guidance, there have been changes to legislation permitting the compaction of non-hazardous waste without the need for a permit or exemption from permitting. If a protocol can be established with support from the Environment Agencies and HSE/Northern Ireland Health and Safety Executive (NIHSE) this processing enhancement may support and increase the use of the offensive waste stream.
• Waste classification and segregation procedures and the use of robust audits to support compliance should form part of the health care facility’s enhanced waste policy and therefore become a strategic objective at board level. This is already the case in many trusts. This would improve classification and thereafter segregation of health care waste supporting a greater emphasis on communication and education of staff. NHS boards should review the frequency of waste reporting to boards and enter discussions on levers and barriers to full implementation of HTM 07-01 and investigate any opportunities for cost savings.

• Further work is needed to progress waste minimisation objectives. For example, decisions made at the procurement stage should include a consideration of associated waste costs when items are redundant. This includes the impact of disposable equipment with cost and carbon benefits considered alongside efficiency and reprocessing risks.
Chapter 1: Introduction

This report presents the findings of the Freedom of Information survey (FOI) on waste management in the NHS which was conducted by the Royal College of Nursing in November 2010. It looks at the waste management of three categories of waste: municipal waste (non-hazardous), offensive waste (non-hazardous) and infectious waste (hazardous waste). For the purpose of this survey the respondents were asked to report on the management of these waste streams collected in bags i.e. excludes the management of health care wastes such as sharps contained in rigid containers.

It presents the amount of waste in tonnage that has been produced by the participating organisations from 2008-09 and 2009-10 and the costs to treat or dispose of the waste over that time. An analysis of the methods of waste treatment or disposal that are used by the organisations is outlined. The report also covers the reporting of waste disposal at board level.

Context for undertaking the FOI survey

Nurses make up approximately 70 per cent of the health care workforce in the United Kingdom and are therefore the largest producers of waste, as both purchasers and users of consumables. Nurses are responsible for the management of waste as producers and participants in waste disposal procedures. This is reinforced by the International Council of Nurses (ICN) which highlights that ‘in order to fulfil their role and take on their responsibilities, nurses must understand the hazardous consequences of improper waste handling, the ‘cradle to grave’ waste cycle and methods that mitigate the negative impact of waste on the environment’ (ICN 2009).

The RCN has contributed to the current revision of Health Technical Memorandum HTM 07-01: Safe management of health care waste. In addition to generic professional and specialist advice the RCN contribution focused on two key areas: the implications of waste carriage by community health care staff and enhancing the understanding of the risk assessment process for infectious waste. This work highlighted the value of robust and appropriate segregation of health care waste in order to reduce potential unnecessary financial costs and support organisations compliance with HTM 07-01 and relevant statutory requirements.

The work also highlighted where waste occurs within health care systems and how innovations can contribute to efficiency and costs savings at local and national level. RCN members contacted the campaign to raise concerns over local segregation of waste, in particular, inappropriate and overuse of the infectious waste stream resulting in unnecessary financial costs to NHS organisations.

An FOI survey was developed to provide a snapshot of waste segregation of three main waste streams for bagged waste (municipal, offensive and infectious waste) and comparative costs for the period 2008-09 and 2009-10. These streams were selected as a starting point to raise awareness and influence changes in practice that could result in environmental benefits and net savings for the NHS.

The following report outlines the findings of the FOI survey and discusses implications of the findings in terms of potential financial savings and compliance with statutory requirements.

Headline figures

- A 65 per cent response rate was achieved from 287 NHS organisations across the United Kingdom.
- A total of 271,811 tonnes of bagged waste for the three categories was produced by the participating organisations during 2009-10.
- It cost £65,336,004 to treat or dispose of this waste during 2009-10.
- Sixty per cent of the waste recorded was classified as municipal; 39 per cent was classified as infectious.
- Just one per cent of the waste recorded was classified as offensive waste.
- Forty five per cent of organisations declared reporting on waste management at board level annually, with 13 per cent declaring no reporting at board level at all.
- A one per cent reduction in bagged infectious waste could represent a potential year on year saving of approximately £442,000 per annum for hazardous (infectious) waste processing costs. Assuming this waste is reclassified as offensive waste, the net saving would be approximately £272,000.
A 20 per cent reduction in bagged infectious waste could represent a potential year on year saving of approximately £8,840,000 per annum for hazardous (infectious) waste processing costs. Assuming this waste is reclassified as offensive waste, the net saving would be approximately £5,500,000. Additional savings could be made by reclassifying part of this waste as municipal waste where appropriate.

Note: this report and the associated recommendations are based on informal data submitted by NHS organisations in the absence of national comparative data on the report subject. Caution should therefore be applied to some of the data, where this cannot be verified by cross reference with existing information.

Definitions of waste types discussed in this report as per HTM 07-01 Version 1

Municipal waste: also known as household waste is typically the same as waste that would be generated in the home environment e.g. packaging, crisp packets, flowers, used hand towels etc.

Offensive waste: human hygiene waste e.g. soiled incontinence pads (where no risk of infection is present), sanitary waste, soiled personal protective equipment that does not present a risk of infection etc.

Infectious waste: any waste that includes blood or body fluids or which may pose a risk of infection from a patient known to or suspected of having an infection e.g. blood soaked dressings, waste soiled with pus.
Chapter 2: Overview of respondents

This chapter presents a brief overview of the numbers and types of organisations that have participated in the survey.

Numbers of respondents

A total of 287 organisations participated in the survey, representing a 65 per cent response rate. The total number of FOI requests made was 441 (415 England, 14 Scotland, 5 Northern Ireland and 7 Wales). Table 1 presents a breakdown of responses based on whether they are from England, Wales, Scotland or Northern Ireland.

Table 1: Numbers of responses by country

<table>
<thead>
<tr>
<th>UK Countries</th>
<th>Count of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>263</td>
</tr>
<tr>
<td>Wales</td>
<td>6</td>
</tr>
<tr>
<td>Scotland</td>
<td>13</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Responses</strong></td>
<td><strong>287</strong></td>
</tr>
</tbody>
</table>

Source: RCN survey 2010

Types of respondents

The organisations that responded to the survey are a diverse range of NHS authorities, health boards and trusts from across England, Scotland, Wales and Northern Ireland. They include primary care trusts, acute trusts, foundation trusts, care trusts and mental health trusts. GP practices were excluded from the survey. Table 2 shows the different types of health care organisation that responded to the survey.

Table 2: Types of health care organisations that responded to the survey

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of organisation</th>
<th>Count of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>Foundation/acute trusts</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>Primary care trusts</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Care trusts</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mental health trusts</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>8</td>
</tr>
<tr>
<td>Wales</td>
<td>Welsh health boards</td>
<td>6</td>
</tr>
<tr>
<td>Scotland</td>
<td>Scottish health boards</td>
<td>13</td>
</tr>
<tr>
<td>Ireland</td>
<td>Northern Ireland health and social care trusts</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>287</strong></td>
</tr>
</tbody>
</table>

Source: RCN survey 2010
Chapter 3: Quantity of waste produced

This section of the report presents the amount of waste that was produced by the responding NHS trusts from the periods 2008-09 to 2009-10.

Total overall waste recorded

A total of 271,811 tonnes of waste were reported by the participating organisations during 2009-10. Of this total amount, 161,710 tonnes (59.5 per cent) of waste were recorded as municipal waste, 106,435 tonnes (39.2 per cent) were recorded as infectious waste, and just 3,667 tonnes (1.3 per cent) were recorded as offensive waste.

These figures are an increase from the waste recorded in 2008-09. The overall figure for waste produced increased by 2.1 per cent from 266,065 tonnes in 2008-09 to 271,811 tonnes in 2009-10. Municipal waste increased by 1.8 per cent, infectious by 1.2 per cent and offensive by 81.8 per cent. The reason for the dramatic increase in offensive waste is probably due to an increasing awareness of the need to classify some wastes as offensive. Offensive waste was just 2,017 tonnes in 2008-09 compared to 3,667 tonnes in 2009-10.

The recording of offensive waste is particularly low. This is most likely due to a large proportion of the organisations not segregating offensive waste as a separate stream, in these cases it is probably recorded as part of infectious or municipal waste. Out of the 287 participating organisations, just 54 (18.8 per cent) recorded any offensive waste classified as such during this period. Fifty six (19.5 per cent) stated that they do not use the category offensive waste and 177 (61.7 per cent) either gave no answer or put zero.

Figure 1: Total waste reported (tonnes)

Source: RCN survey 2010
The figures below present a breakdown of the amounts of waste produced by England, Scotland, Wales and Northern Ireland during the 2008-09 and 2009-10 periods. The pie charts display the small proportion of offensive waste compared to infectious and municipal. In both Scotland and Northern Ireland no offensive waste was recorded.

**England**

Two hundred and sixty three NHS organisations from England participated in the survey. They make up the vast majority of the survey respondents and consequently dominate the overall results. A total of 223,470 tonnes were produced in 2009-10 in England. This is a 1.5 per cent increase from 2008-09.

**Scotland**

A total of 13 of a possible 14 health boards from Scotland participated in the survey. In 2009-10 they produced 22,098 tonnes of waste. This is actually a decrease of 16.3 per cent from 2008-09.
Wales

There were six responses from trusts in Wales, the maximum possible. They produced 10,859 tonnes of waste in 2009-10. This is a decrease from 2008-09 by 2.3 per cent.

Figure 4: Waste recorded by organisations in Wales (tonnes)

Source: RCN survey 2010

Northern Ireland

Five trusts (the total possible) from Northern Ireland participated in the survey. They produced 3,087 tonnes of waste in 2009-10. This is an increase of 86.9 per cent from 2008-09. One reason for this increase could be that reporting improved during the 2009/10 period.

Figure 5: Waste recorded by organisations in Northern Ireland (tonnes)

Source: RCN survey 2010
Chapter 4: Costs of waste collection and disposal

This section presents the costs of collection (transport), treatment and disposal of the waste. It presents both the overall costs and the calculation of cost per tonne to enable a comparison between types of waste. From data provided it is assumed this includes landfill tax for municipal and offensive waste where applicable and hazardous waste administration costs for infectious wastes.

Overall costs

A total of £65,336,004 was reported as spent on waste treatment or disposal of bagged municipal, offensive and infectious waste during 2009-10 by the organisations that participated in the survey. This was a slight increase of 2.3 per cent since 2008-09 when the figure was £63,817,815.

In terms of comparing overall costs, the cost for treatment or disposal of infectious waste was far higher than municipal waste. The cost for infectious waste in 2009-10 was reported at £44,197,197 compared to £19,775,523 for municipal waste. The overall costs for disposing of offensive waste were £1,363,283 during 2009-10. This appears marginal compared to the costs for disposing of municipal and infectious waste; however, this is largely due to the lack of recording of data on the offensive waste stream. Just 53 organisations (18.4 per cent) recorded costs for the offensive waste stream. The response rates to the survey questions on both municipal and infectious costs were much higher at 244 and 248 respectively.

Figure 6: Overall costs for municipal, offensive and infectious waste disposal reported

![Bar chart showing costs for municipal, offensive and infectious waste](image)

Breakdown of costs by country

Costs per tonne

In order to compare the relative costs for treatment or disposal of municipal, offensive and infectious waste, the costs per tonne has been calculated from data submitted. Analysis shows that the cost per tonne for infectious waste is over three and a half times more expensive than municipal waste. In 2009-10 it cost an average of £437 for infectious waste compared to £121 for municipal waste and £349 for offensive waste. For the latter it is assumed this cost per tonne relates to offensive (tiger striped) bags collected loose and transported in bulk i.e. not compacted, mainly to landfill.

Figure 7: Costs of waste produced in each UK country 2009-10

Figure 8: Cost per tonne of waste

Source: RCN survey 2010
Range in costs for waste disposal

Analysis of the survey figures show that there is considerable variation in costs for treatment or disposal per tonne across the NHS organisations within each of the waste streams. The table below presents the range of costs recorded by the trusts from a UK perspective. Significant anomalies have been removed in order to present the most accurate picture.

Table 3: Variations between trusts in costs of disposing waste

<table>
<thead>
<tr>
<th></th>
<th>Municipal</th>
<th>Offensive</th>
<th>Infectious</th>
<th>Municipal</th>
<th>Offensive</th>
<th>Infectious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>£1,978</td>
<td>£3,387</td>
<td>£7,171</td>
<td>£1,887</td>
<td>£4,746</td>
<td>£4,900</td>
</tr>
<tr>
<td>Lowest</td>
<td>£24</td>
<td>£51.92</td>
<td>£42</td>
<td>£31</td>
<td>£78</td>
<td>£37</td>
</tr>
<tr>
<td>Median</td>
<td>£125</td>
<td>£370</td>
<td>£490</td>
<td>£122</td>
<td>£469</td>
<td>£501</td>
</tr>
</tbody>
</table>

Source: RCN survey 2010

Municipal waste

In 2009-10 the costs for treatment or disposal of municipal waste ranged from £31/tonne to £1,887/per tonne. The median cost was £122/tonne.

The chart below shows that the majority of trusts pay approximately £100-£150 per tonne. It also shows that a sizable proportion of trusts are paying far higher than this.

Figure 9: Range in costs (per tonne) for treatment or disposal of municipal waste in 2009-10

Source: RCN survey 2010
Offensive waste

The cost for disposal of offensive waste in 2009-2010 ranged from £78-£4,746, with a median of £469. The chart below shows that range of costs is quite staggered across the organisations, though it is noticeable that most organisations pay in the range £200-£600 per tonne.

Figure 10: Range in costs (per tonne) to dispose of offensive waste 2009-10

Source: RCN survey 2010

Infectious waste

The cost for treatment or disposal of infectious waste in 2009-2010 ranged from £37-£4,900 per tonne, with a median of £501. The following chart shows that the majority of the costs are in the range £400-£600 per tonne with some trusts paying far more than this.

Figure 11: Range in costs (per tonne) for treatment or disposal of infectious waste 2009-10

Source: RCN survey 2010
Analysis into the reasons for the variations in costs reveals there is little difference in costs per tonne between the different types of organisation or region. The most noticeable factor that appears to influence cost is the quantity of waste produced. The more waste that is being disposed of, the cheaper it is to process it. This indicates that economies of scale can reduce the costs for managing these wastes. Figure 12 shows the correlation between quantity and costs.

**Figure 12: Correlation between quantity of waste and costs of disposal (per tonne)**
Chapter 5: Methods of treatment and disposal

Methods used to treat or dispose of the different types of waste were recorded in the survey. Respondents were asked to select from a list of possible methods for processing each waste stream. Respondents were able to choose more than one method for each waste stream.

**Municipal waste treatment and disposal**

The options for municipal waste treatment and disposal in the survey were landfill, energy from waste, materials recovery (MR) and source segregated recycling. Seventy seven point one per cent of the organisations disposed of at least part of their municipal waste via landfill. A large proportion of the participating organisations also made use of at least one form of recycling. Fifty point four per cent of the organisations recycled some of their municipal waste using source segregation; however, details on the quantity and type of recycling were not included in the survey. Thirty three point six per cent used MR and 21.8 per cent used energy from waste. Two point seven per cent of the organisations stated that they used other forms of disposal for municipal waste, in particular, incineration.

For clarification, the term incineration is used to describe the thermal destruction of waste in the presence of oxygen i.e. combustion. Incinerators processing infectious wastes usually operate a higher temperature than those processing municipal waste. In some of these waste treatment operations energy can be recovered from the combustion process, this is then commonly referred to as an ‘energy from waste’ facility.

For the treatment of infectious wastes other technologies can be used to render these wastes safe, often referred to as non-burn or alternative treatments e.g. autoclave or steam auger.

Material recovery of municipal waste refers to waste treatment operations where mixed municipal waste is mechanically processed to separate component fractions of the waste stream e.g. ferrous metals by ferro-magnet. These plants are often referred to as material recovery facilities (MRF).

**Municipal waste treatment and disposal: breakdown by country**

Table 4 breaks down the responses by England, Scotland, Wales and Northern Ireland for treatment or disposal of municipal waste. It shows that the proportions of organisations from each country using the various methods are relatively similar. The majority were using landfill. In Northern Ireland the use of MR is more common than the use of source segregated recycling, whereas in England, Scotland and Wales, source segregation recycling appears more widespread.

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1 Please note that energy from waste and incineration have been recorded as separate methods of waste disposal.
Despite a very small response rate for information on quantity and costs of offensive waste, a larger proportion of respondents completed the survey questions on the methods used to dispose of it. One hundred and twelve organisations (39 per cent) provided this information, compared to 57 (20 per cent) of organisations that had provided information on how much offensive waste was produced. This could possibly be due to a misunderstanding on the classification for these wastes, confusion with sanitary wastes or possibly there is a recognition the offensive waste is co-mingled with infectious or municipal wastes.

The options for disposing of offensive waste provided from the survey were landfill and energy from waste. Figure 14 presents the percentage of trusts that report using each of the types of disposal. The organisations had the option of choosing more than one option. Twenty three point nine per cent (69 organisations) use landfill to dispose of offensive waste with 6.6 per cent using energy from waste, and 11.8 per cent using other forms, primarily incineration. Incineration has been categorised as a separate form of disposal to energy from waste.

Offensive waste disposal: breakdown by country

The results for offensive waste disposal have also been analysed by country: England, Scotland, Wales and Northern Ireland. Table 5 below shows that the primary option for each country is landfill.

Energy from waste was only recorded in England. Other methods, particularly incineration, were used in Wales.
Table 5: Methods of disposal for offensive waste broken down by UK country
(each respondent could select more than one waste disposal option)

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>Landfill</td>
<td>66</td>
<td>25.2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Energy from waste</td>
<td>19</td>
<td>7.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>31</td>
<td>11.8</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total possible</td>
<td>263</td>
<td>13</td>
<td>6</td>
<td>5</td>
<td>287</td>
</tr>
</tbody>
</table>

Source: RCN survey 2010

Compacting offensive waste

Respondents were asked whether or not they compact offensive waste. The vast majority (92 per cent) did not compact offensive waste at the time of the survey. However a small proportion (3.5 per cent) that is 10 trusts, were compacting offensive waste. The organisations that are currently compacting waste are eight acute trusts, one PCT and a mental health trust.

Four additional trusts have plans to compact offensive waste in the future and a further 10 are in discussion about the possible options for compaction.

Figure 15: Compacting of offensive waste

Source: RCN survey 2010

Infectious waste treatment and disposal

There were two options for infectious waste disposal, alternative treatments and incineration. The majority of respondents (77.2 per cent) use incineration whilst some (54.3 per cent) also reported using alternative treatment. A smaller number i.e. 96 organisations (34 per cent) use a combination of both incineration and alternative treatment.
Infectious waste treatment and disposal: breakdown by country

Table 6 breaks down the responses by country and shows that in England and Scotland incineration is more regularly used than alternative treatment. In Wales and Northern Ireland it is the reverse: alternative treatment is used more regularly than incineration.

Table 6: Methods for treatment or disposal of infectious waste broken down by UK country (each respondent could select more than one waste disposal option)

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
<th>Total responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>Alternative treatment</td>
<td>139</td>
<td>52.9</td>
<td>8</td>
<td>61.5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>205</td>
<td>77.9</td>
<td>12</td>
<td>92.3</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: RCN survey 2010
Respondents were asked to declare how regularly they report on waste management at board level. Response options were monthly, quarterly, annually, never or other. All but seven trusts answered this question (280 trusts). The results showed that almost half of the organisations (44.8 per cent) report on waste at board level on an annual basis. Seventeen per cent report on a quarterly basis and 8.7 per cent on a monthly basis. Thirteen point five per cent of the organisations recorded other because they report on an ad hoc basis as and when it becomes necessary. Thirteen per cent do not report at board level at all.

![Figure 17 Reporting on waste at board level](image)

Table 7 presents a breakdown of the trusts’ responses based on their country. The responses from each of the countries are relatively similar with the largest response for each of the countries being annual reporting.

<table>
<thead>
<tr>
<th></th>
<th>England</th>
<th>Scotland</th>
<th>Wales</th>
<th>Northern Ireland</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>24</td>
<td>9.1</td>
<td>0</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>Quarterly</td>
<td>47</td>
<td>17.9</td>
<td>1</td>
<td>16.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Annually</td>
<td>113</td>
<td>43</td>
<td>4</td>
<td>66.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Never</td>
<td>36</td>
<td>13.7</td>
<td>1</td>
<td>16.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>13.7</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Not answered</td>
<td>7</td>
<td>2.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total responses</strong></td>
<td><strong>263</strong></td>
<td><strong>100</strong></td>
<td><strong>6</strong></td>
<td><strong>100</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

Source: RCN survey 2010
Chapter 7: Discussion

Current guidance on the management of health care related waste is provided in HTM 07-01: Safe management of health care waste. This UK-wide document represents best practice and, whilst not mandatory, compliance with this document enables health care organisations to be compliant with their statutory obligations for managing health care waste taking into account interpretation in line with the relevant jurisdiction e.g. England and the devolved nations.

Total amount of waste produced

Data submitted by 65 per cent of potential respondents provides an indication of the proportion of waste produced across the UK for bagged municipal, infectious and offensive waste categories. The following discussion acknowledges data from a UK perspective and the trends within this. England, as the largest respondent, is referred to where appropriate in order to highlight the benefits of changes to the current system which could benefit both the environment and financial costs associated with waste management. The current Department of Health (England) system for recording waste produced by health care organisations is the Estates Return Information Collection (ERIC). This system does not differentiate between categories of waste highlighted in this report and other categories of infectious wastes e.g. infectious sharps or anatomical. ERIC categorises waste by treatment/disposal route i.e. high temperature disposal of waste, non-burn treatment (alternative treatments), landfill and waste recovery. Therefore, a like-for-like comparison for either tonnage or processing cost arising from this survey with the ERIC data is generally not possible. One comparison worthy of note is the cost per tonne for processing infectious waste. Whilst this survey only considers bagged infectious waste and the ERIC data include this and other types of infectious wastes e.g. sharps containers, the cost per tonne reported is similar i.e. for 2009-10, ERIC suggests £463/tonne compared to the £437/tonne from the findings of this survey.

Data acquired as a result of FOI requests indicates a large proportion of waste is treated as infectious or municipal with relatively low use of the offensive waste stream across the UK. In practice much of the waste produced by health care organisations is not infectious (as defined in HTM 07-01). This document provides specific criteria for the assessment of waste including guidance on how to classify waste according to the relevant categories (including infectious and offensive waste). The report highlights discrepancies in reporting of offensive waste by respondents as demonstrated by a larger proportion of respondents completing survey questions on the methods used to dispose of it (112 organisations (39 per cent), compared to 57 (20 per cent) of organisations that provided information on how much offensive waste was produced). The RCN acknowledges that caution should be applied to the accuracy of the data reported by respondents; however the low reported use of the offensive waste stream appears to reflect current practice as reported by its members.

Low use of the offensive waste stream implies waste is sometimes not correctly classified or segregated and probably treated as either municipal or infectious waste. In practice, the use of the infectious waste stream for items potentially not infectious is most common as health care staff tend to segregate based on caution.

Any misclassification of offensive waste can result in an unnecessary dependence upon high temperature incineration or alternative treatments resulting in additional costs associated with the relatively high charges for treating hazardous wastes. The compaction of offensive waste when segregated introduces potential significant cost and transport related carbon savings associated with the reduced transport burden from the site of production.

Low use of the offensive waste stream in practice may be due to a number of issues as discussed below.

Disposal of offensive waste

The primary disposal method for offensive waste reported by responding trusts was landfill. There are a number of initiatives under investigation to offer alternatives to landfill, including energy from waste technologies. Managing offensive waste can be costly due to minimum charge levies applied at certain landfill sites and transport costs associated with movement of this waste, sometimes loose in bulk. A question on the compaction of offensive waste was deliberately included in the FOI request to identify how widely this is used or available. Compaction of offensive waste can improve on site handling and storage demands and reduce transport costs i.e. it allows waste contractors to carry more waste than can be transported if non-compacted, up to a five-fold increase in some cases. The report highlighted that only 3.5 per cent of trusts reported compaction of offensive waste.
In practice, access to compactors for use with offensive waste is limited due to the need to ensure complete containment within the compactor, necessitating a sealed unit. Whilst landfill of offensive wastes is not considered the best long term solution due to decreasing landfill capacity and the opportunity to seek energy recovery options, in the short term it provides a legal and efficient option reducing the demand placed on hazardous waste disposal or treatment facilities in processing non-hazardous waste as hazardous waste.

Storage of waste in health care premises
In line with current waste management regulations and best practice guidance, the mixing of hazardous waste in storage is not permitted (i.e. mixing infectious with other hazardous or non-hazardous wastes). Most organisations continue to use only two bagged waste streams (municipal and infectious), although some separate dry recyclable wastes from the municipal waste disposal bag. These organisations have systems in place to manage these on a day to day basis, increasing internal collections to hospital main storage facilities at times of increased production. The widespread use of a further bagged waste stream (offensive) may be viewed as problematic by many organisations due to issues with the built environment and space for an additional (offensive) dedicated waste storage area in the organisation’s waste compound. The correct classification, segregation and processing of non-hazardous health care wastes can reduce the quantity and associated costs of processing hazardous infectious wastes.

Risk assessment by staff at clinical level
HTM 07-01 provides the definitive guidance for decision making with respect to waste segregation. A definition of infectious waste is based on the premise that the waste concerned poses a known or potential risk of infection, regardless of the level of infection passed. It also states that waste generated from health care practices or produced by health care workers is considered to be infectious unless an assessment has taken place.

Within health care, an underlying principle of practice called ‘standard infection control precautions’ is used. This principle, which developed as a result of concern over AIDS in the early 1980s, aims to protect patients and staff from infection due to blood borne viruses (e.g. HIV/ Hepatitis B and C) that may be present in blood or body fluids. As it is not always possible to tell who may be carrying HIV or hepatitis viruses, blood and body fluids from all patients is treated as infected and therefore managed via the infectious waste stream. Over recent years this principle has been extended to embrace a wider assumption, based on caution, that it is not possible to tell which patients may be colonised or carrying microorganisms capable of causing infection on their skin. Such a principle is frequently associated with MRSA or other multi-resistant organisms associated with health care.

Whilst the principle of caution remains appropriate for blood (including wound exudate, and other blood contaminated body fluids), the anticipated revision of HTM 07-01 will provide additional guidance and examples for staff to use in their assessment to help segregate waste more efficiently from patient populations where a risk of infection has been excluded (e.g. maternity patients who have had ante-natal screening and blood/blood products transfusion waste). (Note: this assumption is dependent on the absence of other risk factors for infection being present.)

As an example, this permits the majority of waste from these two large patient populations to be re-segregated as offensive waste as opposed to infectious, presenting potential financial savings to organisations.

The principle of assuming all patients are carrying ‘harmful’ micro-organisms is not borne out in reality, with risks associated with such waste not supported by evidence in practice (excluding sharps injuries sustained via inappropriate segregation). The most recent prevalence study of health care associated infections in 2006 identified an average prevalence rate of 7 per cent across the UK countries for in-patients (Smyth et al 2008). Additionally, a small proportion of patients will have a community acquired infection (e.g. pneumonia, urinary tract infection, etc) or could be ‘suspected’ of having an infection at any one time. Whilst such figures serve as a basis for discussion only, as the total burden is unknown, it highlights that whilst the number of infections may vary from time to time, it does not represent the significant burden that is often presumed as a result of current waste segregation.

Overcoming poor practice in segregation of waste
Poor practice in the segregation of waste is known to be a problem in some health care organisations. Municipal waste can frequently be found in infectious or offensive waste bags including newspapers, drinks bottles, flowers, cans and supplies packaging. As previously mentioned,
many health care organisations currently use two main waste streams for bagged waste, despite availability of a further offensive waste stream. Informally, discussions with health care staff have highlighted numerous perceived difficulties in successfully introducing the offensive waste stream. This includes:

- the need for additional training for relevant staff groups to support compliance of waste segregation
- inclusion of additional waste audits in addition to a large number of existing health care audits
- non-compliance of mobile staff from other areas resulting in penalties for permanent wards/departments (e.g. physiotherapists, medical staff, porters and visitors)
- a perceived additional workload imposed by the introduction of the offensive waste stream
- practical issues (previously highlighted) including waste storage facilities at local and organisational level, additional transport by portering or support staff and the need for additional waste containers.

Clinical waste disposal, transfer and treatment permits in England and Wales require waste producer audit information from the health care organisation concerned for pre-acceptance requirements specified in the EA guidance on the permitting of clinical waste (EPR 5.07). For Scotland and Northern Ireland this is considered best practice. Pre-acceptance audits require producers of health care wastes to establish robust systems for the classification and segregation of health care wastes to avoid infectious waste being mixed in, for example, with offensive/municipal wastes. This requirement places additional audit and assurance obligations on health care organisations, as the waste contractor at the permitted site receiving the waste will not be able to process clinical waste from health care premises that have not provided the contractor with pre-acceptance audit report based on the requirements of EPR 5.07. This highlights the growing emphasis and focus on the use of the offensive waste stream.

**Making savings on waste**

The safe and compliant compaction of offensive wastes can both halve the cost of processing and potentially reduce the transport burden and associated carbon impact fivefold.

Based on FOI figures for 2009-10 waste arising, even a one per cent reduction in bagged infectious waste could represent a potential year on year annual saving of approximately £442,000 for hazardous (infectious) waste processing costs. A 20 per cent reduction represents a potential year on year annual saving of approximately £8,840,000 for hazardous (infectious) waste processing costs.

If we assume all of this reduction is based on reclassification as offensive waste and assume a compacted processing cost of £160/tonne, the year on year annual net saving could be approximately £272,000 and £5,500,000 respectively. Further savings could be possible if reclassification of appropriate waste to municipal was undertaken.

The anticipated revision of HTM 07-01 guidance will advise that waste contaminated with faeces or urine should be treated as offensive unless a risk assessment classifies it as infectious waste. This will allow the opportunity for further financial savings to be made as a result of strengthening the risk assessment approach to waste segregation.

**Reporting to board**

The frequency of board reporting varied between respondents, with most organisations undertaking annual reporting (48 per cent). Although HTM 07-01 requires ‘ownership of the policy at the senior managerial level’ interpretation in practice may vary, with ownership sometimes delegated to operational personnel e.g. estates staff, as opposed to the board. Increased board awareness of waste, associated cost savings and barriers to implementation to support compliance could be a lever for improvements in practice at organisational level.

**Roundtable meeting on health care waste management**

A multi-disciplinary roundtable meeting was held at the RCN on 16 December 2010. The meeting was supported by RCN staff and members and representatives from the waste trade association (SMDSA), waste managers, infection prevention nurses, Health Protection Agency and other interested parties.

The meeting provided a unique opportunity for all interested parties to discuss current waste practices, compliance with HTM 07-01 and EPR 5.07 and carbon saving strategies. Although the majority of the discussion focused on issues in England, many of the principles for consideration that arose from the rich debate are applicable to the UK as a whole. Recommendations arising from the meeting relevant to this report have been included.
Implications for nursing

The International Council of Nurses position statement (ICN 2010) clearly outlines the role the natural environment plays in global health and the associated risk of health care waste. As such, nurses have a responsibility to not only reduce the impact of waste but to influence clinical and policy decisions on health care waste through their respective professional representative bodies.

Whilst nurses have been highlighted as the largest producers of waste, they are not the only producers, and any efforts to manage health care waste effectively must be approached and managed from an organisational perspective. This is required in order to capture and manage all relevant issues impacting on waste management (including treatment and disposal) such as the built environment, placement of waste bins, collection times, audit, purchasing of consumables and specialist knowledge of waste processes and statutory requirements. The RCN roundtable discussion highlighted the value of employing dedicated waste managers to work with nursing and other staff groups to support consistent waste management practices and reinforcement of expectations for individual responsibilities of each member of staff. The financial benefits of employing a dedicated specialist waste manager was clearly highlighted at the meeting, with savings generated through effective waste management paying for the position, and contributing to additional financial savings. Nursing teams, as the largest producers of waste, would undoubtedly benefit from the expertise and support of dedicated waste managers in their workplaces. The use of innovative local systems such as local ward/department waste leads has also been shown to work well in some organisations (roundtable discussion) and is a role that should be explored further.

Recommendations

Based on the FOI findings, the following recommendations have been made for all UK health care organisations and governments to consider.

- Amount, categories and disposal/treatment or fate of waste should be recorded nationally to allow improvements in waste management to be identified and benchmarking of waste management between organisations. This should include the type and amount of reuse and recycling of waste that is undertaken.
- The established guidance on the compaction of offensive waste requires a review. Previous guidance issued by the HSE and in HTM 07-01 edition one does not recommend the compaction of offensive waste unless in accordance with the conditions of a waste management licence or permit. Since this guidance, there have been changes to legislation permitting the compaction of non-hazardous waste without the need for a permit or exemption from permitting. If a protocol can be established with support from the Environment Agencies and HSE/NHSE, this processing enhancement may support and increase the use of the offensive waste stream.
- Waste classification and segregation procedures and the use of robust audits to support compliance should form part of the health care facility’s enhanced waste policy and therefore become a strategic objective at board level. This is already the case in many trusts. It would improve classification and thereafter segregation of health care waste supporting a greater emphasis on communication and education of staff. NHS boards should review the frequency of waste reporting to boards and enter discussions on levers and barriers to full implementation of HTM 07-01 and investigate any opportunities for cost savings.
- Realistic objectives for short-term improvements in managing specific waste streams should be set including reductions for bagged infectious waste, an increase in the use of the offensive waste category and a greater recycling/recovery rate for municipal wastes, all based on improved classification and segregation.
- The management of waste should be considered from a health economy perspective, with local health and social care organisations working together to agree consistency for ways of working, waste expectations and consistency in provision of colour coded waste bags for use by health care staff.
- Further work is needed to progress waste minimisation objectives. For example, decisions made at the procurement stage should include a consideration of associated waste costs when items are redundant. This includes the impact of disposable equipment with cost and carbon benefits considering alongside efficiency and reprocessing risks.
- Waste minimisation should be a core element of waste policy and objective targets set for waste reduction, based on a practical action plan arising from a review of waste...
management activities, waste mapping, related health care activity and purchasing procedures.

- Organisations should consider the value of appointing or sharing dedicated specialist waste managers to work within and across organisations to address waste management issues and improve waste outcomes to deliver financial and environmental benefits.

- The FOI should be repeated in one year to assess what changes in the management of health care waste have occurred since this report.

References


Annex 1: Questionnaire

Dear Sir or Madam,

This is a request under the Freedom of Information Act 2000 to ascertain information regarding clinical waste. Please could you provide the following information relating to the amount, cost, methods and reporting of the disposal and treatment of clinical waste.

The questions below relate only to municipal (non-hazardous household), non-hazardous offensive and hazardous infectious bagged waste streams (not sharps).

1. The total amount of waste (in weight) produced by the organisation:

<table>
<thead>
<tr>
<th>Waste Stream</th>
<th>Tonnes 2008/9</th>
<th>Tonnes 2009/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal (black bags)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offensive (tiger stripes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious (orange or yellow)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Associated costs for collection and treatment/disposal of these wastes:

<table>
<thead>
<tr>
<th>Waste Stream</th>
<th>£ 2008/9</th>
<th>£ 2009/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal (black bags)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offensive (tiger stripes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infectious (orange or yellow)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Which methods of waste treatment/disposal are you currently using?

<table>
<thead>
<tr>
<th>Waste Stream</th>
<th>Possible methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious</td>
<td>Alternative treatment/incineration</td>
</tr>
<tr>
<td>Municipal</td>
<td>Landfill, Energy from Waste, MRFs (material recycling facilities), source segregated dry recyclables e.g. glass paper, plastic bottles, cans</td>
</tr>
<tr>
<td>Offensive</td>
<td>Landfill or energy from waste</td>
</tr>
</tbody>
</table>

4. Do you currently compact offensive waste? Y/N

If no – do you have plans to use compaction in the next financial year?

5. How often does your organisation report on the management of waste at board level?

Annually/quarterly/monthly/never