

Health Impact Assessment of Alternate Week Waste Collections of Biodegradable Waste

Enviros Consulting Ltd and Cranfield University

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Questions and Answers for local authorities

1. **What does the report say?**

The three most important points from this report are:

- Published research shows that there is *"no evidence that alternate week waste collection will cause any significant health impacts for residents, or that any health impacts are likely to be significantly greater than those associated with weekly collections."* This was corroborated by surveys of local authorities and residents
- A survey of 16 local authorities operating alternate weekly collections found that *"no significant difference was reported in the numbers of complaints before and after the scheme was implemented."*
- There might be increases in the incidence of insects and odours. Common-sense measures, such as keeping waste tightly wrapped and bin lids closed, can help to deal with any amenity issues.

The report's executive summary is provided at the end of this paper

The report can be downloaded in full from: www.defra.gov.uk/environment/waste/index.htm

2. **Who has written the report?**

The research was carried out by specialists at the Cranfield University Centre for Resource Management and Efficiency, and Enviros Consulting Ltd. Both organisations specialise in the health and environmental effects of waste management.

The principal report authors were Dr Mark Broomfield of Enviros Consulting Ltd, and Dr Gillian Drew of Cranfield University.

3. **Who paid for it?**

Ultimately, the project was funded by the Department for Environment, Food and Rural Affairs (Defra), the Government Department responsible for waste management.

The project was set up under the auspices of the South-East Waste Advisory Group. This is a group of local authority heads of waste management from authorities in south-east England. The project was funded from Defra's regional allocation to provide research relevant to the south-east region. This project was selected by the group for funding in 2005/6 and 2006/7.

4. **How much did it cost?**

The project cost was £38,565.

5. **What does it cover?**

The report looks at whether alternate week collections bring any significant risks for health, compared with the traditional weekly collection frequency. Specifically, the report looks at alternate weekly collection of residual and biodegradable waste (i.e. garden and kitchen waste).

The report looks at the risks to householders, rather than the risks to people working in the waste industry (e.g. collection crews).

The report focuses on the potential health risks which could result from odours, flies, moulds, and vermin such as rats.

The study was carried out by reviewing all the published research which the project team could identify. The project team went on to carry out three surveys. Firstly, local authority officers were interviewed. Secondly, household waste collection teams were interviewed. Thirdly, a survey of residents on both weekly and alternate week collection schemes was carried out, and the results were compared. There is more information at question 7 below.

6. Why was it carried out?

The initiative for the work came from the South East Waste Advisory Group in August 2005. The Group was aware of concerns which had been raised in relation to the possible risks to health which could be associated with separate collection of kitchen and garden waste. Discussions at the South East Waste Advisory Group indicated that there was no authoritative source of information in this area.

The members of the SEWAG decided to commission this study so that they could answer the questions being raised by residents of their boroughs. The members would also then be in a position to take any steps necessary to ensure that the alternate week collection schemes do not have any significant effects on the health of residents.

7. How was the work carried out?

This research has two main components: a literature review, and a set of three surveys.

The literature search was carried out by searching specific scientific research databases. The key references were selected and critically reviewed. The relevant information from each paper was analysed and summarised in the report.

The survey programme comprised three separate surveys undertaken during two phases (a winter and a summer phase). The first survey was *“a questionnaire-based survey of Local Authority Waste Management, Collection and Disposal Officers from other areas ... to compare their experience of both weekly and alternate week waste collections. The respondents were also asked to discuss any good practice advice they provided for their residents.”*

“Secondly, the waste collection operatives employed within the Wycombe District council area (the case study area) were surveyed ...”

“Thirdly, a survey of residents ... was carried out. ... In particular, issues such as the proximity of waste bin to homes between collections and the safety of the storage mechanisms (possible disturbances to storage include bins being tipped over and waste spreading in the streets), were examined. Structured questioning of residents was used to collect local socio-economic data, residents bin management strategies and any self reported health impacts associated with their own waste management.” (page 30)

8. I've heard that you get more rats with alternate weekly collections

The numbers of positive vermin sightings reported in the residents' survey were very low. This means that we can't be sure whether there were significantly more sightings under the alternate week collection scheme than the weekly collection scheme. A larger sample size would be needed to investigate this further.

The recent 2006 annual report of the National Pest Technicians' Association was widely reported in the national press. This reported included a comment that *“household refuse stored in black plastic bags and overflowing wheelie bins causes a 24/7 source of rodent food.”* The NPTA linked this to recycling initiatives without supporting evidence. Nevertheless, the NPTA's comment confirms that kitchen and garden wastes should be stored in appropriate containers. The NPTA's comment is equally applicable to weekly or alternate week collection patterns, and is consistent with the advice given in this study.

The risk of rodent problems with waste stored under weekly or alternate week collection arrangements can be minimised using steps such as those set out at Question 12 below.

9. *I've heard that you get more health problems with alternate weekly collections*

There has been a lot of publicity recently about the risks to health posed by alternate weekly collections. Our study found that there is no reason for alternate week collections to have any higher risks than weekly collections.

For example, sixteen authorities with alternate week schemes were contacted during the survey of local authorities. None of these reported any evidence for adverse health effects associated with alternate week collections. The survey of waste operatives and residents on weekly and alternate week collections found no indication of adverse health effects.

This is consistent with other research which shows that in general, waste management does not give rise to significant health or environmental issues.

The study findings indicate that dealing with waste in the home can occasionally give rise to amenity problems such as odours. These can occur with either weekly or alternate week collections. In both cases, some simple measures can be taken to deal with the problems – see Question 12 below.

10. *I've heard that your bins smell more with alternate weekly collections*

The literature review found that household waste is likely to generate more odours over a period of up to two weeks than over a period of up to one week. This was consistent with the findings of the survey of local residents – more odours were reported by people on the alternate week collection scheme than by people on the weekly collection scheme.

Odours from waste under weekly or alternate week collection arrangements can be dealt with using steps such as those set out at Question 12 below.

11. *I've heard that you get more flies with alternate weekly collections*

The literature review found that household waste could result in more flies over a period of up to two weeks than over a period of up to one week. The survey of local residents found more reports of insects among the residents on the alternate week collection scheme than the weekly collection scheme. However, this could have resulted from a bias in the pattern of reporting.

Flies associated with waste under weekly or alternate week collection arrangements can be controlled using steps such as those set out at Question 12 below.

12. *What are the report's recommendations for avoiding health or amenity effects?*

There are a number of simple common-sense steps that can be taken, as any householder would approach hygiene with any container in their home. These recommendations are useful whether you are on a weekly or alternate week collection system, and include the following:

- *“Maintain high hygiene standards in the waste containers (e.g. washing and disinfection of the waste container as needed) to reduce the risks of flies or mould.*
- *Reduce moisture in waste containers. This will help to control fly infestations and prevent anaerobic conditions in the waste container that could lead to odour problems.*
- *Householders could be made aware that there is no need to reduce the size of the biodegradable waste in the container before being placed in the bin (e.g. via shredding/chopping). This can be disadvantageous, because smaller waste particles encourage earlier biodegradation of material.*
- *Keep the waste container outdoors where possible. Containers should preferably be kept out of direct sunlight to reduce any fly infestations. This would also help to reduce micro-organism activity.*
- *Ensure that there are no shelter opportunities for rodents in the area inside or outside the house.*

- *Ensure that no waste is kept exposed, i.e. ensure that all waste is kept tightly wrapped or in containers.*
- *Place newspaper in the base of the garden or kitchen waste bin to avoid waste sticking to the bin. This also soaks up any percolate, reducing the potential for leakage from collection vehicles.*
- *Ensure that containers holding kitchen wastes are kept closed.*
- *Based on advice from WRAP, don't compost cooked food, dairy products, meat, fish or bones at home, because these wastes are more likely to attract rodents. Garden waste compost heaps or bins should be sited away from walls and fences to avoid providing a sheltered route for rodents." (page 60)*

13. Did the study have any advice for local authorities wanting to change to an alternate week collection scheme?

The report identified the following advice from local authorities using alternate week collection schemes:

- *"Communication with the residents is essential*
- *Educating the residents and having good fact sheets*
- *Website with postcode search facility to inform residents of when their collection occurs*
- *Using information stickers on bins*
- *Having staff available to visit residents to give advice and help*
- *Phasing in the scheme*
- *Good political support for the scheme*
- *Open days, site visits and school visits*
- *Using community forums to share information about changes to waste collection arrangements, and to receive feedback/suggestions for improvements*
- *Provide a quick response to complaints*

"In summary, the local authorities consider education, communication and political support the key elements of a successful alternate week waste collection scheme. These suggestions are supported by WRAP (2005)." (page 37)

14. What did this study not look at?

- The study did not examine medical documents regarding health impacts associated with waste collections. The residents were asked themselves to report any health impacts they may have experienced, but these reports were not supported by documented evidence.
- The study did not investigate the risks to health for waste collection crews – it concentrated on the potential health effects for householders.
- The study did not carry out any practical experiments such as sampling from waste bins. The study comprised a literature review and survey, as set out in Question 7.
- The study did not compare the differences between the waste collection schemes and containers used by different local authorities. The study used one collection system as a case study. Detailed analysis of different waste collection schemes was beyond the scope of the project.

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Executive Summary

This report was commissioned by Wycombe District Council and funded by the Defra Waste Implementation Programme (WIP). It provides a review of the potential for health impacts to occur from alternate week waste collection schemes, principally in comparison with weekly collection schemes. The study focuses in particular on separate biodegradable waste collection schemes using the scheme operated by Wycombe District Council as a case study. The study was carried out to investigate any issues relating to odours, insects, rodents and the risks of disease.

Literature review

This first task in the study comprised a review of the evidence available to report on the extent to which health impacts can occur from alternate week waste collection.

A limited number of documents cite health concerns with this collection method but these are not supported by direct evidence of health impacts. To deal with this, the study has considered whether lessons can be learned from research on the health impacts of waste management in a wider context, including waste collection, storage and processing.

Waste management operations demonstrate continuing improvement in compliance and generally acceptable impacts on human health and the environment. Where complaints are made, a significant proportion is in respect of odour. Experimental trials indicate that there is an increase in the production of odour from biodegradable waste within the first two weeks of degradation. In extreme cases unpleasant odours can cause symptoms such as nausea. However, the occurrence of nausea or other symptoms associated with very strong odours have not been linked to differences in the frequency of refuse collection. Odours from waste receptacles on a weekly or alternate week collection pattern can be readily controlled by taking the simple steps described below.

Rodents and flies are a potential concern because they can transmit disease and under some circumstances might be attracted to waste as a food source. However, there is no evidence in the literature to suggest that rodents or flies will necessarily increase with an alternate week waste collection, provided the waste is stored in an appropriate container. Similarly, there is no evidence to indicate that any changes in numbers of flies associated with different collection patterns could give rise to effects on health. The location of waste, and the way that it is stored are the main influences on the risk of rodents being attracted to the waste. Whatever collection pattern is used, simple hygiene practices can be used to prevent or reduce rodent and fly populations.

Airborne micro-organisms or bioaerosols occur naturally in most environments. High levels have been associated with large-scale waste management activities, as well as activities such as farming. Bioaerosols have been linked with ill-health, such as respiratory symptoms and gastrointestinal symptoms, but there is at present no clear understanding of a dose-response relationship. There is no evidence which indicates that alternate week waste collections will result in an increase in bioaerosol concentrations to levels which could pose any risks for members of the public.

In conclusion, the research literature provides no evidence that alternate week waste collection will cause any significant health impacts for residents, or that any health impacts are likely to be significantly greater than those associated with weekly collections. This is consistent with wider studies of the health effects of waste management, which indicate that waste management has at most a minor effect on health.

Surveys

The literature review was supported by three surveys. The aim of the "Local Authorities" survey was to determine whether Local Authorities have recorded significantly more health impacts from



alternate week waste collection schemes compared to weekly waste collection schemes. This survey was designed for local authorities on both weekly collection schemes and alternate week collection schemes.

Wycombe District Council has introduced an alternate week collection scheme, with separate collection of food and garden wastes, paper and other recyclables, and residual wastes. The second survey asked the Wycombe District Council waste operatives to compare the Council's alternate week collection scheme with the previously operated weekly collection scheme. The aim of the "waste operatives" survey was to determine whether the waste collection operatives noticed an increase in problems that may lead to health impacts since the introduction of the alternate week waste collection scheme.

Thirdly, structured questioning of a representative sample of Wycombe District Council residents was used to collect information on residents' bin management strategies and any self reported health impacts associated with their household waste. The residents' survey was undertaken in two phases, one in the winter and one in the summer, to capture any seasonal differences in their responses.

The results from the local authority survey reveal that although they have received complaints regarding odours, vermin and insects, no local authorities found evidence of health impacts associated with alternate week waste collection schemes. The authorities surveyed reported that introducing an alternate week collection scheme did not result in a significant increase in the number of complaints from local residents. The key elements of a successful alternate week waste collection scheme identified in the survey include communication with residents, education of residents, and political support for the scheme.

As the waste operatives are a visible presence among the residents, they frequently received comments from the residents. They were therefore asked if they had noticed any problems since the introduction of Wycombe District Council's alternate week waste collection scheme. The survey results show that although the operatives do receive complaints from the residents, they did not report any complaints relating to health impacts associated with Wycombe District Council's waste collection scheme.

The residents' survey found that residents on the alternate week collection scheme report more incidents of odours and insects than residents on weekly collections. However, because of the nature of the questionnaire-type survey, the evidence does not allow us to say whether this is linked to the scheme, or whether it is due to a bias in the data. The evidence suggests that no adverse health effects are associated with this alternate week collection scheme, consistent with the findings that waste management generally has a low or non-existent effect on health.

Any amenity issues can be managed by taking some common-sense steps:

- Keep the waste containers clean, for example by washing and disinfection when needed
- Keep moisture in waste containers to a minimum
- Not shredding or chopping kitchen waste before disposal – it is better to put waste into the bin in larger pieces
- Keep the waste container outdoors and out of direct sunlight where possible.
- Avoid giving shelter opportunities for rodents.
- Keep all waste tightly wrapped or in containers.
- Place newspaper in the base of the green waste bin
- Ensure that containers holding kitchen wastes are kept closed. It is best not to compost cooked food, dairy products, meat, fish or bones at home, because these wastes are more likely to attract rodents. Garden waste compost heaps or bins should be sited away from walls and fences to avoid providing a sheltered route for rodents.

Conclusions

The research indicates that no significant adverse health effects are likely to be caused by alternate week waste collections of residual and biodegradable waste. Provided common-sense steps such as those listed above are taken, any annoyance issues (e.g. due to odours or flies) can also be controlled.