Leaf Litter Trials 2012- 2013

Background

In autumn 2011 the Environment Agency conducted a small scale trial with four local authorities to gather information about whether leaf litter from street sweepings was suitable for composting and subsequent land application. The trial detected the presence of metals such as nickel, copper, chromium, molybdenum, zinc and other contaminants. These materials would compromise compost quality and our current [guidance](http://www.environment-agency.gov.uk/static/documents/Business/12_04_03gdc_(LAS_streetsweeping_guide)_Wales_English.pdf) therefore remains unchanged.

We want to work with industry and local authorities to understand if there are circumstances where composting of leaf litter would produce a quality compost. In particular we wish to understand if there are circumstances where practical controls can reduce contamination. The treatment options for these wastes are set out in [guidance](http://www.environment-agency.gov.uk/static/documents/Business/12_04_03gdc_(LAS_streetsweeping_guide)_Wales_English.pdf).

Local authorities and their operators may contact AfOR (Association for Organics Recycling) who are willing to collate evidence. Trials are appropriate as relevant evidence cannot easily be sourced elsewhere (e.g. from previous trials, experience in other countries or a literature search. We plan to review evidence submitted with a view to considering the recovery options for this waste stream. This does not include leaf litter from parks and gardens. This is not considered to be street sweeping waste.

Aims

* Establish under what circumstances leaf litter from street sweepings can be used as a feedstock waste for recovery in composting sites.
* Understand what practical controls are needed to produce quality compost from this waste.
* Characterise leaf litter from street sweepings from various local authority collection across the country and understand the variation in contamination.
* Identify if any pre-treatment techniques reduce or remove contamination.
* Understand whether the output material from composting leaf litter is comparable with composts made from established feedstocks.
* Undertake comparative analysis with established feedstocks to understand the benefits and risks or potential harm that might result from using the output material on land.

Objectives

* Use a standard suite of analysis to assess the level of contamination of leaf litter feedstock and compare these to green waste feedstock.
* Establish if leaf litter from street sweepings can be used as a feedstock to produce compost.
* Identify any way in which the preparation and recovery of this waste can be enhanced.
* Assess the risk to receiving land of compost made from leaf litter.
* Identify knowledge gaps.

A site / operator will only be considered for inclusion if they can demonstrate that they will meet the general criteria set out below.

Trial applications should be submitted to AfOR by local authorities with full understanding and commitment to the trial criteria from the operator of the composting site. A form is provided in Appendix 2.

AfOR’s point of contact is Kiara Zennaro ([Kiara@organics-recycling.org.uk](mailto:Kiara@organics-recycling.org.uk)).

Trial Criteria

### We set specific and appropriate conditions for the duration of the trial in agreement with AfOR to ensure there is no harm to health or the environment.

This trial will take place for leaf litter from street sweepings collected between October 2012 and January 2013 subject to the following criteria.

**Exclusions**

This trial **DOES NOT** apply to street sweepings collected:

* from urban areas, where it is expected that grit or other contaminants would form a high proportion or majority of the waste.
* when the roads have been gritted.
* from gully pots (gully suckings).
* from areas where road resurfacing works are being undertaken.
* from areas where it is known that pollution has occurred (e.g. traffic accident).

**Which sites are appropriate?**

Exempt activities are excluded from this trial.

The trial must be undertaken on impermeable surface with a designated waste water and liquor storage.

Trials can only be carried out at sites permitted to accept waste code 20 03 03 in one of the following three scenarios.

* at a non CQP composting process that is allowed to treat 20 03 03 (as specified by the environmental permit or management system).
* at a CQP composting process that is allowed to treat 20 03 03 (as specified by the environmental permit or management system) under the Scheme derogation described in clause 4.2.5 of AfOR Scheme Rules (<http://www.organics-recycling.org.uk/Scheme_rules>).
* where other proposals for sites are made, these should be considered by the local area EA office to determine whether a local enforcement position for that site operating under the trial would be suitable.

**Input wastes**

* The trial involves the treatment by aerobic composting of separately collected leaf litter consisting of autumn leaf fall or plant material swept up from verges.
* Both the waste producer (the waste authority / local authority) and the compost operator must fully understand and commit to the criteria outlined in the trial.
* The trial applies to seasonal leaf litter from street sweepings (EWC code 20 03 03). This does not include leaf litter from parks and gardens. This is not considered to be street sweeping waste.
* Pre-screening to remove identifiable litter is acceptable e.g. cans, plastic items. The proportion of this contamination must be recorded and kept with route data.
* It is permitted to blend a proportion of the leaf litter with green waste to balance nitrogen requirements. You must produce evidence of blending rates by weight at a minimum of 30% leaf litter e.g. 30 tonnes leaf litter to 70 tonnes green waste. The leaf litter feedstock, as well as the untreated garden wastes that will be blended with the leaf litter, must be analysed in advance of treatment for the parameters outlined in Appendix 1. You are advised to obtain results of analysis prior to combining street sweepings with green waste. The resultant compost must also be analysed for the same suite of tests.
* The LA/operator should record how, when and where the clean leaf litter has been collected (e.g. reference / name or route, type of road if it has been collected from the pavement or from road side etc.) This should be documented alongside individual batches to help us to understand differences with locations etc It is envisaged that collection of road sweeping is a planned activity and routes are clearly designated allowing information to be clearly auditable
* Where the waste testing demonstrates high levels of contamination (please see Appendix 1) it is recommended that this material should not be composted or mixed with other waste. The results should be retained for the purposes of the trial.
* Details should be submitted (Appendix 2) when applying AfOR for a trial of leaf litter.

**Process control**

The following criteria must be followed for the process of composting:

* Leaf litter can either be:
  + composted by itself to produce a leaf mulch; or
  + blended with garden wastes to correct C:N ratio to produce a compost.
* STRICT Batch control must be undertaken and be auditable through all stages of the process. This includes leaf litter blended with green waste which must be in separate batches that must be clearly identifiable and traceable at all times.
* Batch control is matched and allows for the variability and homogeneity of the collection routes. This means that routes need to be similar when forming a batch to allow meaningful information. Example; urban collection with low route use will be matched to a similar collection area 50 vehicle movements or less per day.
* The proportion of leaf litter must be a minimum of 30% by weight (please note the requirement to analyse the untreated leaf litter feedstock, the untreated garden waste feedstock and the resultant compost).
* Each site / operator must state if the leaf litter is to be blended and ensure this is clear on submitted results. The blend should be given by weight not volume where possible. Where the operator cannot access a weighbridge the operator must demonstrate how this waste has been blended.
* Local authorities are encouraged to also test the green waste feedstock when blending the leaf litter. This will help us understand how leaf litter derived compost compares with other green waste feedstock.
* The operator must comply with any other relevant conditions of their permit.
* The compost must be batch controlled and tested to assess contamination.
* There must be a minimum composting time of 8 weeks to assess how any contaminants are treated over a specified time period. This allows us to consider results in a standard way.

Details and data from the preparation and processing of the material must be recorded (including residence time and monitoring data) and will be in line with agreed operational processes. All data will be submitted on conclusion of the trial. Under the QP certification scheme derogation, the CQP operator would be expected to

a) not to recirculate any liquor from the leaf litter batches into the CQP batches, OR

b) if they want to recirculate the liquor into any of the CQP batches, they will have to test the liquor prior to the trial and after the trial to see whether the quality of the liquor has been affected by the leaf litter and whether the liquor can be safely applied.

**Sampling methodology and frequency**

Samples should be taken according to AfOR sampling guidelines, which are based on BS EN 12579 (see document 32 at <http://www.organics-recycling.org.uk/page.php?article=1894&name=AfOR%27s+Compost+Certification+Scheme+template+documents>).

Batch formation must take into account the like for like (homogeneity) of the collection routes.

Analysis

The following information must be submitted by all sites / operators for each batch of leaf litter that is composted:

* Representative sampling to be taken of waste inputs and linked to auditable batch numbers following AfOR sampling Guidelines (see document 32 at: http://www.organics-recycling.org.uk/page.php?article=1894&name=AfOR%27s+Compost+Certification+Scheme+template+documents)
* Representative samples will be taken of completed batches of compost and linked to auditable batch numbers.
* Analysis must include all parameters outlined in Appendix 1.
* Analysis should be supplied as dry weight and in mg/kg to enable easy comparison. Results are expressed in the units listed in Appendix 1.
* Analysis and the analytical reports must be provided for :
  + leaf litter compost
  + leaf litter feedstock (if blended) and
  + finished composted waste.
* Details and data from the preparation and processing of the material, including residence time and monitoring data (as outlined in Process Control).
* Records of how, when and where the leaf litter was collected (as outlined in Input Wastes)
* Copies of analysis and not spread sheet summary should be submitted to AfOR.
* Analysis to be submitted as it is available and by **31 March 2013**
* Analysis of all materials will be at the expense of the local authority/producer.

**Use of trial waste**

* An alternative route for disposal or use at the end of the trial must be provided **on application for a trial.**
* There must be a clear plan for dealing with any residual waste or infrastructure on the site at the end of the trial to ensure these will not be abandoned.
* The output material from the trial will currently be classed as CLO for use under Standard Rules Permit 2010No5. This means it will not normally be spread on agricultural land or marketed as a quality compost. However, we will review the analysis and data from individual batches and make a technical decision if the analytical information is complete.
* Once recovered the material can be reported by waste authorities as diversion from landfill for LATS[[1]](#footnote-1) and LAS[[2]](#footnote-2). However for Welsh authorities the CLO will not count towards recycling targets because it is not a quality compost compliant with CQP. (England does not currently have recycling targets.)

**Market issues**

* The trial will not distort the market for quality compost while it is being carried out;
* The trial meets the relevant objectives of the Waste Framework Directive:

’… ensuring that waste is recovered or disposed of without endangering human health and without using processes or methods which could harm the environment and in particular without –

(i) risk to water, air, soil, plants or animals; or

(ii) causing nuisance through noise or odours; or

(iii) adversely affecting the countryside or places of special interest’;

Monitoring and feedback on the trial

**AfOR teams will:**

* Record and collate the information of operators wishing to enter the trial
* Ensure a site has the appropriate derogation if the site is a QP certified site to ensure the correct measures are maintained to ensure no cross contamination. The derogation will stipulate for each site additional measures and these may be audited by the Environment Agency
* AfOR will send a monthly returns trial participation list to the Environment Agency.
* Will receive submissions collect and collate data and submit to the Environment Agency as and when received and by 31 March 2013.

**Our area teams will**

* Check that the trial is carried out as specified in this document and derogation instructions this will be done as part of planned audits or inspections.
* Collect samples of input leaf litter for additional analytical suites at randomised locations.
* Ensure that the correct environmental permits are in place for treating waste.
* Ensure corrected and permitted use for end use of material produced.
* Report any issues of non-conformity to the Quality Protocol email account.
* Complete CAR forms and, as appropriate, audit reports which will be used as additional and supporting information.
* We will take our normal enforcement response where a site has received waste without prior permission.
* We will take our normal enforcement response where waste is used without the appropriate permission.

We welcome other submissions from industry to better understand this waste stream.

What happens after January 2013?

Our evidence team task and finish group will use information that you submit with AfOR to decide if we can recommend revising our position.

We will discuss the results with DEFRA, WRAP and industry next spring and we will provide an update on our progress in June 2013.

Possible timelines

October Trial commences

Weekly returns with entries from AfOR to EA.

January 31 Trial ends

March 31 All results supplied to AfOR

Mid April AfOR supplies data to EA

April and May AfOR and EA review results

June EA discusses results with Defra, WRAP and industry

After July EA reviews regulatory position for recovery of leaf litter from street cleansing

**Appendix 1 Analysis**

* All analysis must be submitted as dry matter analysis to enable ease of comparison
* Input waste data analysis comparisons and all TPH analysis should be made as listed
* PAS 100 results limits are appropriate to use as an end standard.

|  |  |  |
| --- | --- | --- |
|  | Input Waste | Finished material |
| Analysis Required |  | Upper Limit (PAS 100) |
| Nitrogen |  |  |
| Potassium / Potash |  |  |
| Phosphorus / Phosphate |  |  |
| Calcium total (mg/kg) |  |  |
| Magnesium Mg (mg/kg) |  |  |
| Sodium (total) (mg/kg) |  |  |
| Sulphur / sulphate |  |  |
| Loss on Ignition |  |  |
| pH |  |  |
| Arsenic (mg/kg) |  | For information |
| Mercury Hg (mg/kg) |  | 1.0 |
| Cadmium Cd (mg/kg) |  | 1.5 |
| Chromium Cr (mg/kg) |  | 100 |
| Copper Cu (mg/kg) |  | 200 |
| Fluoride Fl (mg/kg) |  | For information |
| Lead Pb (mg/kg) |  | 200 |
| Molybdenum MO (mg/kg) |  | For information |
| Nickel Ni (mg/kg) |  | 50 |
| Selenium Se (mg/kg) |  | For information |
| Zinc Zn (mg/kg) |  | 400 |
| Physical contaminants |  |  |
| Total Petroleum Hydrocarbons (TPH) (See Notes)   * Petrol Range Organics (PRO) C5-C10 * Diesel Range Organics (DRO) C11 – C25 * Other Range Organics (ORO) C25 – C40 | PRO – 1,000 mg/kg  DRO – 10,000 mg/kg  ORO – 1,000 mg/kg | |

Notes

* Please note that the laboratory should assess their chromatograms and indicate whether any Other Range Organics are caused by vegetation interference as opposed to weathered diesel.
* If this is not available and the sample is above the thresholds indicated then speciated Polycyclic Aromatic Hydrocarbons (PAH) should be provided.
* Analysis data should be submitted in full.

**Appendix 2**

This form should be completed and submitted to AfOR to register your interest in taking part in the trial. There should be as much information included as possible. Please ensure that you discuss who will undertake monitoring and submission of data.

|  |  |
| --- | --- |
| **Name of waste authority/ local authority** |  |
| **Name of operator** |  |
| **Operator Address** |  |
| **Permit Number** |  |

|  |  |  |
| --- | --- | --- |
| **Checklist Item** | **YES/NO** | **Where is this documented or recorded** |
| Leaf litter from dedicated street cleansing collections only |  |  |
| Leaf litter to be collected between October 2012 and 31 January 2013 |  |  |
| Producer (waste authority) agrees to take part and agrees to comply with the full trial criteria |  |  |
| Compost operator agrees to take part and agrees to comply with the full trial criteria |  |  |
| Operator’s treatment facility is a permitted (not exempt) site and can accept EWC 20 03 03 |  |  |
| If CQP site, derogation is in place - AfOR to include derogation in return. |  |  |
| If visible contaminants (e.g. plastic, metal, glass) removed prior to treatment, this will be recorded and an estimate made of what proportion of the feedstock they represent. |  |  |
| There are suitable risk assessment and mitigation measures in place on compost site. These need to be included in SOP or management systems. |  |  |
| Operator intends to blend the leaf litter with green waste and will provide additional details on percentage of leaf litter (minimum 30%), how this is measured and how it the blending is managed. |  |  |
| If blending is to take place, leaf litter feedstock will be tested prior to treatment to specified analysis suite. |  |  |
| All material produced will be batch tested to standard analysis suite. |  |  |
| The material will only be recovered as a waste under permit and to non-agricultural land. It will not be marketed as a quality compost. |  |  |
| There are suitable recovery outlets identified to accept material prior to starting the trial |  |  |
| Any residual waste or infrastructure on the site at the end of the trial will be properly managed and not abandoned. |  |  |
| All data relating to leaf litter collection, composting process and analytical data to be submitted to AfOR as available and at the latest by 31 March 2013. |  |  |

1. Landfill Allowances Trading Scheme (England) [↑](#footnote-ref-1)
2. Landfill Allowances Scheme (Wales) [↑](#footnote-ref-2)