Options for oversize from composting processes

Notes of meeting between ORG members and the Environment Agency,
held on 28th January 2016 at Osborne Clarke, One London Wall, London, EC2Y 5EB.

Abbreviations used in these notes:
RS: Redwyn Sterry, Environment Agency.
JJ: Jeremy Jacobs, Organics Recycling Group.
JF: Justyna Franuskiewicz, Renewable Energy Assurance Limited.
COS: oversize material resulting from a composting process.
COS-fuel: COS that has been further treated such that it is ready for use as fuel, e.g. in a non-WID biomass combustion facility.

1. Background
Slides presented by JJ highlighted the circa 788,000 tonnes of COS generated by UK composting processes each year. Most markets that industry would like to supply are unavailable because of the waste status of COS (or no longer available because of enforcement actions taken by the EA), even when it has been further treated. One such market is supplying further treated COS for combustion in non-WID biomass facilities. Another is removing wood from ‘waste’ inputs delivered to composting facilities during waste preparation and further treating it so that it can be used as fuel in non-WID biomass facilities. Again, this material’s waste status is limiting better use of this resource.

Industry is frustrated by COS disposal costs and particularly by lack of clarity from the EA about what evidence is required in support of change. The meeting aimed to improve industry and regulator awareness about the current situation, opportunities, constraints, and steps that could be taken towards improving how these resources are used in England and Wales.

2. Waste status
The EA currently regards COS derived from waste as waste. This is because evidence has not been presented, to the EA’s satisfaction, that demonstrates that end of waste status has been achieved. Similarly, wood removed from ‘waste’ inputs delivered to composting facilities during waste preparation is regarded as waste by this regulator, even after it has been further processed to meet a fuel specification.

3. Key steps for obtaining a case-specific opinion from the EA
The most common way to seek regulator support for managing a waste-derived resource in a different way is to apply to the EA’s Definition of Waste Panel for a case-specific opinion. The Definition of Waste panel will consider whether the operator’s specific material has achieved end of waste status, is a by-product, continues to be a waste, or remains waste but the EA’s view is not to regulate it (usually in specific circumstances). Where the material in question (e.g. COS) arises from
a waste treatment process such as the composting (treatment) of waste it cannot be considered a by-product (by-product status is only relevant to manufacturing residues).

The application and assessment procedure is not like applying for a permit: there is no certainty of outcome and applying ‘should be seen as the beginning of a conversation’. The time scale varies depending on complexity, sufficiency of information and quality of conversation between the panel and the operator. The whole process can take weeks, months or, in exceptional cases involving fundamental disagreement, sometimes longer.

The operator submits his/her application to the EA’s Definition of Waste team. It’s then reviewed by Redwyn Sterry or Gareth Scott. If a reasonable case and supporting evidence has been made the application is taken to the EA’s Definition of Waste panel for consideration. This panel meets monthly to consider fuel and non-fuel cases and monthly. There’s usually one or two rounds of further information gathering before the panel comes to its final opinion. EA then provides its opinion about the material, and may also define the circumstances, in the form of a response letter. RS emphasised that the EA provides its opinion, taking account of the legal test for end of waste, this being influenced, in particular, by the OSS Ltd v. Environment Agency case law, but also other relevant case law.


Those considering making a case-specific application can use the tool or the forms available on the .gov website.

4. **Can we widen the scope of the Compost Quality Protocol or write a new one for COS and wood waste removed pre-composting?**

The EA’s ‘Definition of Waste’ team owns and administers the quality protocol documents. They’re not technical experts on QP detail. There’s no longer any funding available for development of Quality Protocols. Current work on existing QPs is only in terms of editorial style and appearance, not technical content.

Could industry fund further development of the CQP or another QP and would the EA charge for its time input, which would be necessary? RS thought this would depend on how much EA time would be required. He said an alternative option may be to agree an ‘industry led generic EoW position’ that does the same thing as a QP.

5. **Other ways to change how waste materials are regulated**

Options for change, supported by evidence, were discussed:

1. further treated COS allowed ‘Black Biomass’ non-waste status for specified use(s) [an industry led generic EoW position],
2. further treated COS retains waste status but regulator confirms position of not regulating it in specified use(s), or
3. further treated COS retains waste status but regulation is changed so there are fewer restrictions on its use as waste in specified circumstances. Similar options are available for woody material delivered to composting sites then removed during waste preparation, e.g. where it is further processed to meet a fuel specification for ‘white biomass’ for combustion in a non-WID boiler.

Option 1 would be handled by the EA’s ‘Definition of Waste’ team whereas options 2 and 3 would need to be explored via Defra’s Biowaste Regulatory Forum.

6. Potential uses for further treated COS and wood waste removed pre-composting
During the meeting a range of potential uses for further treated COS and wood waste removed pre-composting were discussed.

6.1 COS-fuel
Supplying further treated COS as a ‘black biomass’ fuel (abbreviated as COS-fuel) for combustion in non-WID biomass plants and non-WID gasification plants. Potentially large market (see section 7.6 about financial considerations).

6.2 Separated wood waste fuel
Supplying further treated wood waste separated pre-composting as a ‘white biomass’ fuel for combustion in non-WID biomass plants and non-WID gasification plants. Potentially large market.

6.3 Turning COS into mulch with product status
JF explained that the Compost Quality Protocol, PAS 100 and REAL’s Compost Certification Scheme rules allow composters to turn COS into a coarse, woody mulch grade which can become certified as a product if it’s quality is good enough. Rules do not specify the particle size: the producer is expected to determine, with feedback from potential customers, what would be fit for purpose. JF’s Powerpoint slides included examples of certified mulch product’s particle size ranges.

One member responded that it is costly and time consuming to further treat COS so that it complies with PAS 100’s limit of 10 % w/w stones > 4 mm in mulch. Effective removal of stones requires use of washing equipment, such as that used in the vegetable processing industry. With the exception of fine grade compost used in growing media or sports turf applications (both of these markets are small by volume), the % of stones > 4 mm is not problematic because the product (soil conditioner or mulch) will be applied to soil that already contains stones > 4 mm.

6.4 Surface material (over porous sub-layers) for trackways: e.g. covering layer on gallops. Regarded as niche market.

6.5 Fiberization for use as growing medium substrate: industry asked whether the William Sinclair Horticulture business that attempted this failed because the fiberized COS failed to achieve end of waste status. Discussion indicated that this wasn’t the cause. RS said that for many EoW applications, greater focus on risk assessment and the comparator material would be helpful. On-line information shows that WSH went into administration due to poor trading, overspend on
moving its principal operations to a new £50m site at Ellesmere Port and dual running costs incurred during the move.

6.5 Animal bedding after further treatment: the Animal and Plant Health Agency doesn’t allow use of materials derived from animal by-products. However, there could be potential for using further treated COS and/or the uncomposted woody material from composting sites that do not accept animal by-products.

6.6 Biofilter media: not discussed in detail. Regarded as niche market.

6.7 Cellulosic recovery processes: not discussed in detail. Regarded as niche market.

6.8 Export
Industry asked whether a different set of criteria apply for exporting COS. RS replied that the exporting operator would need to discuss this with the regulators in the destination country and the exporting country – both need to agree on whether waste regulations apply to its movement. In the case of burning of COS abroad we need to be clear whether the regulator is allowing derogation for burning COS as a waste or considered it not to be a waste at all - this might affect the regulations that were relevant to the export

7. Focussing on fuels

7.1 ORG members’ priority
The priority of members who attended the meeting appeared to be developing a specification for supplying COS-fuel for combustion in non-WID biomass plants and non-WID gasification plants.

Since the meeting, ORG’s view is that the use of pre-composting separated wood waste prepared for use as ‘white biomass’ fuel should be further considered further. From a quality point of view it may be preferable when compared with COS-fuel and all composting sites generate more COS than the amount they re-use as carbon-rich structural bulk fed back into the composting process. When used as ‘white biomass’ fuel, would its tonnage classification as ‘other recovery’ (see section 7.7 below) be a show stopping problem amongst local authority clients?

7.2 The Scottish situation
Regarding COS used as fuel in a Scottish non-WID biomass facility, SEPA does ‘not intend to regulate this material as waste’ (see ORG Powerpoint slide). RS said that SEPA’s opinion may be different from the EA’s because Scotland isn’t bound by the same case law as in England and Wales. The OSS Ltd v. Environment Agency case law is particularly relevant. The case resulted in an appeal being upheld against a decision that waste material prepared for use as a fuel only ceased to be ‘waste’ for the purposes of Directive 2006/12 when it was actually burnt.

7.3 What evidence is required in support of change?
JJ emphasised the importance of clarity about what evidence the regulator requires. RS clarified that for an EoW position or change of position to not enforcing a waste regulation in specific circumstances, the waste-derived material (e.g. COS-fuel and/or pre-composting separated and
chipped woody waste) would need to be as ‘clean’ as a suitable comparator material (e.g. COS-fuel compares favourably with say, virgin wood burnt in a non-WID boiler, the evidence gathering might not need to include gaseous emissions.)

In the case of combustion in a non-WID boiler, if COS-fuel is ‘dirtier’ than a ‘clean’ comparator, the EA would expect the gaseous emissions to be as ‘clean’ as they would if the facility were only burning a non-waste comparator material. Industry said that some non-WID sites combust a mixture of fuels, so in this circumstance are we expected to select just one comparator material? Industry mentioned that WID EfW facilities set fuel acceptance criteria that enable their gaseous emissions to stay within limits.

The types of test and thresholds/limits that may be required will be influenced by:
- the nature of the waste for which an EoW view or ‘we won’t regulate this waste’ position is sought,
- the comparator material it replaces, and
- what and how much risk the intended use of the EoW material / unregulated waste could pose to human health and/or the environment.

These issues would be considered as part of the necessary hazard scoping and risk assessment exercise.

Aspects of COS-fuel quality that should be considered in hazard scoping and also risk assessment if the hazard is applicable (non-exhaustive list):
- physical contaminants (e.g. glass, metal, plastic, other man-made fragments),
- potentially toxic elements,
- polyaromatic hydrocarbons (PAHs),
- herbicide residues.

In these notes it has been assumed that material sampled for testing and comparison with the comparator material should be the COS-fuel, i.e. compost oversize that has been further treated and is ready for use as fuel. If there is a need for testing COS before it is prepared for use as fuel, this needs to be made clear and accompanied by the reasons why.

7.4 **Non-WID biomass boiler types and scales**

Boiler types and scales for combusting COS-fuel and/or ‘pre-composting wood fuel’ need to be carefully selected. It was agreed that small, domestic boilers should be excluded.

7.5 **Choice of comparator material**

The EA considers what the waste is replacing or what’s similar to what it’s replacing, e.g. is the biomass facility burning wood or straw? They like to see that variations in concentrations of each relevant substance in the waste are quantified and understood.

Cherry-picking of characteristics from different comparator materials to make a ‘composite specification’ that’s easier for the waste material to compare well with is not acceptable. For example, this has happened in the case of coal where the operator has chosen characteristics of different coals to make up a specification that doesn’t represent any type of coal that actually exists but rather presents a non-existent, ‘worst case’ coal.

Industry highlighted BS EN ISO 17225:2014, ‘Solid biofuels — Fuel specifications and classes, particularly ‘Part 1: General requirements’ (which includes an informative annex which provides
typical values of solid biomass fuels, for a variety of materials) and ‘Part 4: Graded wood chips’ which sets out fuel quality classes and specifications of graded wood chips from a limited list of sources.

Industry said COS-fuel is similar to miscanthus and straw in terms of its ash content but not in all other respects. Stem/round wood has a lower ash content than COS-fuel. Bark and twig-sized material in COS-fuel means that it doesn’t compare well with ‘wood’. RS acknowledged that agreeing a comparator for COS-fuel may be more complicated than just choosing one type of wood. He pointed out that BS EN ISO 17225 hadn’t been written with waste materials in mind, so a specification for COS-fuel for non-WID combustion is likely to include characteristics and limits that this BS doesn’t cover. Industry said there’s a relationship between biomass boiler fuel acceptance specifications/acceptance criteria and the NOx and SOx emissions that can be expected when burning a spec-compliant fuel.

Post-consumer wood should be avoided as a comparator; it’s likely to be too costly to maintain proof of consistently acceptable quality. RS said that industry should avoid grade A woods as well as all other grades (B, C and D). This is because it is likely that post consumer wood, even grade A, may have had treatments and preservatives applied to it. Not all treatments and preservatives are visible to the naked eye.

N.B.: Industry seeks EA involvement in identifying all aspects of a specification for COS-fuel for non-domestic, non-WID biomass combustion and gasification facilities, including test types, applicable limits and what do if and when a sample of COS-fuel exceeds a limit.

### 7.6 Financial considerations

Much can be done to remove physical contaminants from COS and reduce it’s chloride content (e.g. put through water bath). However, there was concern that its treatment costs could be higher than what the markets will pay for further treated COS that achieves a fuel specification. Ten to fifteen years ago EfW facilities paid £10 to £15 / tonne for fuel. The question was raised whether market prices are and will be sufficient to cover COS treatment costs and its transportation to customers. Answers were unknown or not clear, though it was acknowledged that COS disposal costs are high on a per tonne basis.

### 7.7 Waste hierarchy implications

The tonnage claimable as recycled, otherwise recovered or sent to disposal needs to be taken into account. COS tonnages generated at composting facilities tend to be reported as recycled, while wood removed at the facility before composting tends to be reported as recovered. One member stated that most local authorities are declaring there’s no COS. Another member said that the fate of the COS should determine how it is classified, e.g. its use on land as a waste status soil conditioner is recycling but its use as fuel in WID EfW is ‘other recovery’.

### 7.8 Policy influences

One member questioned what government policy is likely to be in the near future and how this will influence regulation. More WID energy from waste facilities are expected to become operational in the UK, which could undermine industry efforts to supply COS-fuel and pre-composting separated
wood fuel to non-WID biomass and gasification facilities. These points weren’t answered during the meeting.

8 Quality of biodegradable wastes arriving at composting sites

Physical contaminants in biodegradable waste restrict the cost-effective options for managing COS. Routes by which biodegradable wastes arrive at composting sites were discussed, kerbside collected green and food wastes tending to have the highest levels of physical contamination (particularly non-compostable plastics). Where caddie/bin liners and sacks are used some local authorities have asked whether they have to use/recommend compostable products. Composting operators have replied ‘yes’. Plant/green wastes from Household Waste Recycling Centres seem to be the main source of stones.

At in-vessel and enclosed composting sites removal of anything other than large sized physical contaminants before completion of the sanitisation phase is unsafe on Health & Safety grounds and often impractical.

9 Actions

1. RS: consider to what extent the EA can become involved in hazard scoping, risk assessment, listing required tests and identifying limits (where they need to apply).

2. RS: consider how flexible the EA can be about choice of comparator material(s).

3. ORG: obtain and share info from member who offered information on typical fuel mixes for ‘larger boilers that can take more robust feedstocks’.

4. ORG: investigate policy influences associated with increased UK WID-EfW capacity in the near future.

5. ORG: share feedback with members and decide whether to establish a working group.

10 Delegates

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andy Sibley</td>
<td>Tamar Organics</td>
</tr>
<tr>
<td>Agnes Starnawska</td>
<td>Veolia</td>
</tr>
<tr>
<td>Ben Brown</td>
<td>WRM Limited</td>
</tr>
<tr>
<td>Ben Dyson</td>
<td>AWO Recycling Ltd</td>
</tr>
<tr>
<td>Bill Griffiths</td>
<td>Viridor</td>
</tr>
<tr>
<td>Dave Baldwin</td>
<td>Recogen</td>
</tr>
<tr>
<td>David Surtees</td>
<td>Hargreaves</td>
</tr>
<tr>
<td>Matt Taylor</td>
<td>Aquaenviro</td>
</tr>
<tr>
<td>Emily Nichols</td>
<td>REA Organics Recycling</td>
</tr>
<tr>
<td>Graeme Kennett</td>
<td>360 Environmental</td>
</tr>
<tr>
<td>Jakob Rindgren</td>
<td>ESA</td>
</tr>
<tr>
<td>Jeremy Jacobs</td>
<td>REA Organics Recycling</td>
</tr>
<tr>
<td>Jon Jones</td>
<td>Amey</td>
</tr>
</tbody>
</table>
Jo Fitzpatrick  Material Change
Justyna Franuszkiewicz  REAL
Karen Palmer  A.W. Jenkinson
Nigel Viney  Hargreaves
Redwynn Sterry  Environment Agency
Rob Symonds  CRJ Services
Robert Moody  Jack Moody Recycling Ltd
Simon Bullock  A.W. Jenkinson
Thomas Bedford  AWO Recycling Ltd