

A Guide to Community Composting With Kitchen Waste

The collection and composting of catering waste in the UK is governed by the Animal By-Products Regulation (ABPR), which came into force on July 1st 2003. This is at first glance a very complicated piece of legislation but kitchen waste is perhaps the most important material that needs separating from the domestic waste stream. The State Veterinary Service enforces the regulations. This chapter covers the basics of the legislation and some related issues in choosing how to design catering waste related project.

1.1 Collecting Kitchen Waste

The collection of kitchen waste must be done via kerbside collections both from commercial and domestic premises. This is the only compliant method under the ABPR.

Because kitchen waste is naturally dense vehicles do not require any form of compaction. This means small vehicles such as Pedestrian Controlled Electric Vehicles are suitable for kitchen waste rounds as are small vans and both of these are particularly appropriate for urban areas. The only legislative concern is that birds cannot gain access to the material during the collection round. This means it must be a contained method with a closing door or hatch rather than an open trailer. This also means that material should be placed out for collection in a container like a caddy rather than a bag. Projects may choose to use a biodegradable bag in the caddy to keep it clean for the user, but this will increase running costs and recent studies have somewhat surprisingly shown that it does not affect participation rates in a scheme. If a project uses a biodegradable plastic bag make sure it has the Din Certo 'Compostable' logo.

Some schemes and in particular local authority run ones are choosing to collect the garden and kitchen elements of organic waste together. This makes sense if the authority or waste contractor has a widespread rural area to cover and an existing pool of compaction vehicles. This downside is that all the additional garden waste will have to be treated as kitchen waste therefore significantly increasing the tonnage that has to be composted in compliance with the ABPR. In urban areas it is recommended that the fractions be collected separately.

If the project intends to use a vehicle for a collection round that they also want to transport finished compost in, they will have to clean it thoroughly. If the project can, it is better to have separate vehicles.

1.2 Choosing a Processing System

The ABPR allows for the following processing options; in-vessel composting, anaerobic digestion (including biogas systems) and housed windrows. In-vessel and biogas options are likely to be more appropriate for community sector organisations. These are however very capital-intensive solutions. It is essential that a project understand the legislation before purchasing or leasing a piece of equipment. The equipment must be as compliant with the legislation as the supplier claims it is. As more systems get approved it will become possible to check that the system being considered has been approved at another site. This does not mean the project will automatically be approved, as it will still have to prove that it can work the system properly.

There is a wide range of systems available to suit every scale from ones that process around a tonne per week to very large industrial plants.

1.3 Time and Temperature Requirements

The most crucial part of getting approval under the ABPR is that the system can meet these time and temperature requirements. They are designed to ensure that you achieve a desired rate of pathogen kill within the compostable materials.

System	Minimum temp	Minimum time	Max particle size
Composting (in-vessel)	60°C	2 days	40cm
Biogas	57°C	5 hours	5 cm
Composting (in-vessel) or biogas	70°C	1 hour	6 cm
Composting (housed windrow)	60°C	8 days (during which windrow must be turned 3 times at no less than 2 day intervals)	40cm
Composting (EU Standard – in-vessel or biogas)	70°C	1 hour	12mm

These time, temperature and particle size requirements are called barriers in the legislation. A project can choose which barrier it wants to meet. This is the only time requirement in the legislation. It does not matter how long the composting phase is as long as 99.9% of the material reaches the temperature for the minimum time and that the maximum particle size has been guaranteed in that material. The only exception to this is the housed windrow category, where they accept the outer edges will never reach the temperature. This is why the legislation has a turning requirement, and it will be up to the project to prove that the windrow turner turns the heaps thoroughly.

It is also important to note how that heat can be produced. In most cases the legislation states that the heat must be principally generated as part of the thermophilic composting process, with the exception of biogas plants that are allowed to pasteurise material. Practically this means that there is a legislative preference for systems that meet the temperature requirement purely by the natural thermophilic properties of composting materials. External heat sources are allowed but the system must be able to prove that the temperatures recorded are principally from the compost and that it is a genuine composting process and not an oven. This will partly be proved by the Environment Agency or SEPA granting a waste management license or exemption thereof of the site as a composting process.

If you the project is in doubt about the ability of a preferred system to be compliant with the legislation, it is best that they contact the local State Veterinary Office as early as possible as they are generally taking a supportive role in the development of composting sites. The particle size must be guaranteed but it only has to be met in one direction. This means for example to meet the 70°C UK standard, material 10cm long by 15 wide is ok as long as it is only 6cm thick.

1.4 Meat Included Or Meat Excluded?

Projects are allowed to choose between collecting catering waste that contains meat and catering waste that does not. This has further implications on how the waste is treated.

If the project chooses the meat excluded option it will have to be able to demonstrate how it is telling the householders and or businesses participating in the scheme, that it is collecting meat free waste only and that it is educating its collection staff to refuse loads that are obviously contaminated with meat. They do accept, though, that a small amount of meat waste will inevitably get through, and this is not a problem.

The meat excluded option then requires that after the first composting barrier, the material is put through a further 18 day storage period, which can be outdoors and can include vermiculture. If the project chooses to collect meat included waste then they have to put it through a second processing stage. This cannot simply be keeping it in the same box and going for a second hour at 70°C or two days at 60°C. You must ensure that all the material has been moved to prevent any material remaining in a cold spot. This principally means the material will have to be moved from one barrier and put into another. This second stage could be an outdoor windrow, but this would still have to comply with the turning and temperature requirements for a housed windrow. The two barrier stages may be able to be carried out inside the same in-vessel system if it can be demonstrated that the time and temperature requirements were reached at separate times and that the material was completely mixed by something like an auger or other turning device. Such a system would also have to prove that leachate could not cause cross contamination.

One final point is that if the project chooses to go down the route of the European standard with meat included waste it will only have to put the material through one composting barrier. The difficulty with this standard is that it has a particularly small particle size, which means the system will be dealing with a very mushy material, because the kitchen waste will have to be shredded. This can be solved by the addition of a suitable material such as sawdust to soak up excess liquid.

1.5 Operational Procedure

The legislation requires a number of aspects of operational procedure. These principally revolve around preventing by-pass of the system so that untreated material cannot re-infect processed material. This means that the project will have to ensure that its site, staff and equipment are kept clean.

The most important of these are that the site has a dirty area where material is delivered to the site, an area for cleaning vehicles and a clean area where finished material is stored. Ideally there would be some kind of physical barrier between these areas, but at the very least they must be physically separated. The site should also be laid out so that drainage does not cause cross contamination by letting liquid from the dirty areas, flow into the clean.

The dirty area should be constructed in such away that if the material is not fed straight into the in-vessel unit it could be shut in some kind of sealed container. This should be rat and vermin proof. The site will also have to have a documented pest control programme for the site, and the site should have some kind of fence surrounding it.

1.6 Record Keeping

The project will have to keep detailed records of a number of aspects of the site's operation. The most important of these is that the process is meeting the time and temperature requirements. This requires temperature probes in the composting system and the records may be stored either on a computer or a hand written log. Computer based systems are fairly cheap and in most cases would be supplied with the in-vessel equipment. It is crucial that these temperature probes are checked regularly and are also recalibrated every three months.

The temperature records must be tied to a system, which shows the clear passage of material through the site. It must be possible to show who brought how much of what type of material (including whether it was source separated as meat free) on to the site on a specific day and that it actually was processed in accordance with the legislation and that the specific HACCP control points were met with relation to this material. This should include specific records, which show the pest control programme and site cleaning procedures are being carried out. All records will have to be kept for a minimum of two years.

1.7 HACCP Plan

HACCP stands for Hazard Analysis & Critical Control Point. It is a system of risk management that was developed by NASA because they were worried that random end of pipe sampling did not prevent the odd bit of contaminated food causing the distinctly unpleasant problem of food poisoning in a space suit. Since then a significant portion of the food production industry has adopted it and it is now part of the system for dealing with sewage sludge in the UK, which is how it came to be taken on board as part of the ABPR.

Essentially the project will have to draw up a risk analysis of the proposed site and process. The project will then decide what elements of the process are the critical points that control these risks and stop them from being a problem. This should be a plan that is constantly re-evaluated to ensure it is doing the job it is supposed to be.

The plan will cover every single aspect of the site and its operation so an example of a critical control point would be that the project regularly recalibrates temperature probes to ensure they are accurate. Another would be the building of a wall between the clean and the dirty areas to prevent cross contamination. If a critical control point is an action such as washing the floor the project will also need to record the fact that it does this.

Each HACCP plan will be individual, to the specific site, and the local state vet will probably work on it with the project to suggest improvements. The Composting Association have published a guide to HACCP plans and the CCN has some examples of HACCP plans that you can look at.

1.8 Finished Product Requirements

The project will have to test end product for Salmonella and also for Enterobacteriaceae if they treat any animal by-product other than catering waste. The site will go through an initial validation period that will include a much higher frequency of testing to ensure the site is working properly. In all probability in this stage every batch will have to be tested. Once the site has been approved the frequency of this testing will reduce and will vary from site to site, depending on the other elements of its HACCP plan.

All samples must be taken after the materials have been through the thermophilic (heat producing) stage(s) of the composting process, and will have to be sent to either an approved schedule 3 laboratory or tested at an on-site approved laboratory. If the sample fails the test, it is the project's duty to inform the state vets.

If the finished product is destined for an agricultural usage, they will either have to label the product or provide a clear leaflet, which states that, the farmer can not allow animals to have access to either the pasture land or feed crops, within two months for pigs and three weeks for other farmed animals from when the catering waste derived compost has been applied. It is the farmer's responsibility to keep records that prove this has been complied with.

1.9 Getting Approval for the Site

In most cases the chosen in-vessel system should have gone through a pre-validation process. Essentially this is what the manufacturer says the system can do and should focus on the ability to kill pathogens and to meet the time and temperature requirements, with a range of feedstocks. This will become increasingly simple as more and more systems are approved with the state vets becoming more familiar with systems and suppliers being able to point to fully operational compliant sites that use their systems. In the initial stages the onus will be on the project as the operator to prove that the chosen system can comply.

Once it has been proved that the system can in theory comply then the next stage is to prove that the project is capable of running the system correctly. This will initially involve the submission of site plans and the HACCP plan for the site. It is in their interests to start this process as early as possible so that state vets can bring up any problems early on and they can therefore be corrected easily. Once this has been completed the site can be set up and the state vet will carry out a site inspection.

If successful the site will initially be granted a temporary approval. This stage will include the heavier end product sampling frequency and the finished product will either have to be stored on site or sent for landfill, incineration or rendering until it has passed the tests and been given positive release accreditation.

If the site passes the end product testing then it can be issued with a full approval. In most cases the reality of the approval process will involve a lengthy dialogue with the state vet that includes a number of revisions of the HACCP plan.

Once the site has been approved the State Veterinary Service will continue to monitor that the project complies with the legislation by monitoring the site, with a number of site visits, where the records will be checked during the year. Every two years the project will have to re-apply for approval but if the site has not changed much this is a simple formality and the project will not have to repeat everything it went through to get an approval.

The project will also have to get either a full waste management license or an exemption from the Environment Agency or SEPA. In Scotland a project can not operate under an exemption if it is processing meat included kitchen waste.

1.10 Exemptions from the ABPR

If catering waste is produced on-site, composted on-site and the compost is used on-site, then that process is exempt from the requirements of the ABPR. This exemption is effectively an extension of the one for home composting and opens the door for community groups to develop simple projects in partnership with places like schools, colleges, hospitals and prisons. If a site is operating under this exemption then it will not have to seek approval from the state vets.

There are some exceptions, which include domestic households, to this exemption. If a site keeps chickens then the compost will have to be done in a contained manner, which prevents the chickens getting access to it, and if the site keeps any kind of ruminant then it is not allowed to compost kitchen waste at all.

Any site operating under this exemption that is not a domestic premises will still have to comply with the relevant waste management licensing criteria.

Further Information:

The system of getting approval under the ABPR is constantly evolving. Up-to-date information is available from the CCN and the Composting Association

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The Composting Association

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DEFRA / State Veterinary Service

Contact details for Local Animal Health Offices (State Veterinary Service):
<http://www.defra.gov.uk/corporate/contacts/ahdo.htm>

DEFRA ABPR website (Inc. DEFRA guidance notes):
<http://www.defra.gov.uk/animalh/by-prods/default.htm>

Scottish Executive

Scottish Executive website:
<http://www.scotland.gov.uk/about/ERADRA/LAH/00015760/EUABPCcontrols.aspx>

Local Animal Health Offices (Scotland) contact details:
<http://www.scotland.gov.uk/about/ERADRA/LAH/00015721/AHOMAP.aspx>