



## Composting and Biogas Process Validation and Monitoring Service

### Background

European Directive EC 142/2011 controls the approval of alternative composting and biogas plants taking in Category 111 animal material. This includes catering waste.

The alternative transformation process specified in EC 142/2011 permits the operator to set their own treatment parameters, provided they can demonstrate, by microbiological testing that the processing conditions result in minimal biological risk of the final product (compost or digestate) and that the system complies with all other aspects of the new regulation.

The operating company needs to agree a validation plan with the local APHA Veterinary Officer (VO). This will determine the precise requirements on which a judgement can be made on process validation, including biological reduction.

The validation service provided by APHA Scientific has been designed to fulfil the requirements of EC 142/2011 and fulfils the required parameters of *Salmonella* Senftenberg and Bovine Parvovirus, which is a thermo-resistant virus.

It should be noted that there is no requirement to use the validation service provided by APHA. Other operating companies are free to choose any validation service that meets their requirements.

### Composting Process Validation

APHA Scientific will provide *Salmonella* in special tubes. The Parvovirus is provided adhered to special membranes that are wrapped in a sealed bag. These preparations are transported to the plant in closed 'Biobottles' that comply with regulations on the transport of live bacteria and viruses.

Once at the validation site, the organisms are transferred to suitable containers or canisters. These assemblies are placed in the composting plant. Normally they are retrieved at the end of the process, although some companies also wish to remove them earlier to demonstrate earlier inactivation.

Also provided are control samples, one of which is retained in a refrigerator at APHA Weybridge and one of which is stored in a refrigerator on the test site. The VO may require a third for themselves. These controls are not treated and therefore can be used to verify the correct level of organisms has been used and that transport and storage have not had an adverse effect. After

processing, the test canisters together with the controls are returned to APHA Weybridge for testing.

On arrival at the Laboratory the Salmonella tubes and Parvovirus membranes are removed from the canisters. The bacteria and viruses are recovered and quantified. The process has to demonstrate a  $10^5$  reduction in viable Salmonella Senftenberg and a  $10^3$  reduction in viable Bovine Parvoviruses when compared with the untreated control samples.

The type of canisters used depends on the nature of the composting or biogas process and will be agreed at the time. They need to be robust enough to survive the process without rupturing. The canisters need to be placed at representative locations that take into account hot spots and cold spots. They must be visible enough to be recovered. The number and locations are agreed with the VO in the validation plan.

It is likely that the VO will require several runs to evaluate the process, so repeat testing is normally undertaken. Again, the precise details will be agreed in the validation plan.

APHA Scientific can assist companies by providing advice. We can arrange for plant visits for assessment and sample distribution and collection and may be able to supply canisters.

Temperature data loggers are included along with control samples to verify transport and storage temperatures are within acceptable limits and do not themselves affect the results. Additional loggers are available from us which may be included in the canisters to monitor temperature over time. APHA Scientific will download the data and pass it to the company for information and retention.

### **ISO 17025 Accreditation**

All APHA Scientific compost and biogas process validation services are accredited to ISO 17025. The results are supplied as a signed Certificate of Analysis.

### **Ongoing Monitoring Service**

APHA Scientific can also provide a service for monitoring compost and digestate for the absence of Salmonellae and *Escherichia coli*. Please ask if that is of interest to you.

### **Contact details**

**For further information and advice please contact:**

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