Understanding biofilter performance and determining emission concentrations under operational conditions

Short project description for expressions of interest

Sniffer code: ER36
Expected start date: Mid/late January 2013
EOI close: 7 November 2012 at 12:00 noon

Background

The UK environment agencies\(^1\) are responsible for regulating all commercial biowaste treatment facilities, including open windrow (with or without negative aeration), in-vessel composting (IVC), anaerobic and aerobic digestion (AD), and mechanical biological treatment (MBT). Part of that responsibility is to ensure that the levels of bioaerosols (including bacteria, fungi and fragments of organic material) arising from the facilities are kept sufficiently low so that they do not exceed recommended concentrations downwind of the facility or at the nearest sensitive receptor. The agencies also have a duty to ensure that any risk of odour impacting adversely on the surrounding population is acceptably low.

Many of the contained biowaste treatment plants rely on biofilters as their main form of odour and bioaerosols abatement. Therefore, it is essential that a better understanding of biofilter performance and operation is obtained to ensure a robust, evidence-based process is used for the regulation of, and granting of permits for, biowaste treatment facilities. The agencies are, in particular, receiving a growing number of applications for permits to operate enclosed processes (e.g. in-vessel composting (IVC) and mechanical biological treatment (MBT) facilities).

Therefore, there is an urgent need to develop a robust evidence base against which we can assess how effective these proposals are likely to be. The environment agencies need to be able to make risk-based decisions about whether or not proposed designs and maintenance schedules will ensure that biofilters effectively control emissions. Furthermore, with the IED and its implementation in January 2013, there is a need for regulators and others to understand the implications and the standards required for biofilter emissions – both as preparation for IED and as an input to potential BREF standards.

Aims

The work covered in this specification is intended to improve our understanding of biofilter operation and performance by addressing key evidence gaps highlighted in a critical review very recently completed for the Environment Agency. The work will involve using a combination of desk-based studies (literature review, data assessment), laboratory-scale testing, and on-site (field) measurements.

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\(^1\) Environment Agency for England and Wales (EA), Scottish Environment Protection Agency (SEPA), and the Northern Ireland Environment Agency (NIEA).
**Project work**

This work will determine the extent to which abatement methods incorporating either open or enclosed biofilters reduce both bioaerosols and odour emissions. This project is limited to enclosed biowaste treatment operations that incorporate a biofilter(s) into their abatement system.

The contractor will be expected to undertake odour and bioaerosol sampling from (enclosed) biowaste facilities across England. We do not anticipate that the contractor will have difficulty securing sample sites. The Environment Agency, in cooperation with the Association for Organics Recycling, circulated a message to biowaste facility operators asking for their cooperation. Thus far, the response has been positive with operators willing to be part of the project.

Given the broad range of skills required to carry out the required work, we would welcome applications from consortia of relevant experts, provided that one member of such consortia takes on the role of lead contractor with others acting as sub-contractors.

**Primary end users:** regulatory permitting officers in the three UK environment agencies and the technical, policy and advisory staff who support them.

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2 All sampling must be undertaken by accredited providers (or those that can demonstrate they are working to reach accreditation). All sampling will be at biowaste facilities in England or Wales.