Composting Position September 2004

Composting and the National Waste Plan 2003

The position on local authority composting is set out in the National Waste Plan 2003, launched in February 2003. The Plan recognises that composting is one of a range of activities that has a role to play in the delivery of landfill diversion targets for biodegradable municipal waste. The Plan states that in the short term the largest volume of composting would be undertaken using mixed waste to pre treat waste prior to landfill or to produce a material which could be put to a valuable use such as restoration of historic landfills or as part of the reclamation of contaminated land.

However the Plan also sets out that the longer term the target is for local authorities to move towards separate collection of biodegradable waste which would be composted in enclosed in bay or in vessel systems which would produce a compost suitable for use, without further control or treatment, in horticulture, agriculture or land reclamation. The Plan estimates that by 2020 about 290 000 tonnes per year of segregated household waste and up to 150 000 tonnes per year of garden and other green waste will be collected for composting.

Composting Standards and Regulation

SEPA has been asked to set out the circumstances in which it considered that compost produced from waste ceased to be waste. As part of this SEPA developed a standard for various parameters such as metal concentrations, pathogen levels and physical contaminants based on standards already adopted or, as in the case of the proposed directive on composting directive, in draft at Commission level. This work was subsequently superseded by the BSI Publicly Available Specification (PAS 100) for Composted Materials and the development of the Composting Association's voluntary Standards for Compost.

Taking all factors into account, including principals arising from European Court of Justice rulings on the definition of waste, SEPA's current position is that compost which is produced for a market, is able to meet the quality standards before any blending of the compost with other wastes, materials, composts, products or additives (where the standards are designed to ensure that the compost can be used with no adverse impact on the environment or human health), which has certainty of market and can be put to use without further recovery is likely to be taken to be fully recovered. The point at which the intent not to discard is demonstrated will vary in each case since at all stages, compost can become waste again or may remain waste if it is not used and is consigned to a disposal operation.

It is clear that existing quality standards cannot be met if mixed waste is composted because the standards are specific to source segregated materials. Accordingly SEPA developed a further indicative standard (see Appendix 1) that can be achieved with mixed waste composting systems. Comparative analysis of composts against the indicative standard must be carried out prior to any blending of the compost with other wastes, materials, composts, products or additives. SEPA and Scottish Executive still considers mixed waste derived composts to be waste and its further use is regarded as a recovery operation and will require to be permitted. The National Waste Plan states that SEPA and the Scottish Executive will ensure that the regulation of the use of mixed waste compost will be proportional to the risks. The risks must be assessed on a site by site basis by the applicant as part of the preparation of a permit application to SEPA. As an indication, Appendix 2 provides

an outline of the issues which may be considered within the risk assessment. Although no detailed proposals have yet been put forward it is expected that in the generality of cases mixed waste compost which meets the indicative standard is likely to be acceptable component of the restoration unless the site for restoration presents particular environmental risks.

On the basis that restoration of old landfill sites and reclamation of contaminated land are recovery activities the Scottish Executive stated in the National Waste Plan that where composted material is suitable for these uses it will accept that the material has been fully recovered in respect to the landfill directive diversion targets once it has been put to that use.

Current activity

Composted mixed waste not a soil substitute and it is not the only material to be used in restoration of old landfill or contaminated sites. It will be used in conjunction with other material such as soils, clays and inert material depending on the condition of the site being restored. The Scottish Executive has established a Group comprising of CoSLA, WRAP, Remade, SEPA, SESA and other interested organisations to take forward the development of protocols for restoration. Remade Scotland is currently undertaking the development work and preparing a report for the Group.

What should local authorities be doing

Local authorities should be looking carefully at their Area Waste Plans to determine what facilities they need now to deliver the plan. In doing so they should be –

- aware that composting mixed waste is not a long term solution
- aware that in the longer term they should be moving towards segregated collection of biodegradable material for composting as set out in the National Waste Plan 2003
- aware that composted mixed waste is not fully recovered and remains waste
- identifying where appropriate old, closed, sites which would benefit from restoration if that is part of their plan. In doing so they should bear in mind that not all sites will be suitable and that any proposal will need to ensure that there is no harm to the environment or human health.
- giving consideration as to whether planning permission is needed.
- be aware of the guidance on diversion targets given in the National Waste Plan 2003
- be aware of the BSI PAS 100 and Composting Association standards

SEPA
10th September 2004

Appendix 1

Table 1 Guideline Values for Composted Material derived from Mixed Waste Used in Landfill Restoration above the Cap

Parameter	Generic guidelines for landfill restoration	Method (specified where applicable)
Cd (mg/kg dm)	3 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Cr (mg/kg dm)	400 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Cu (mg/kg dm)	200 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Hg (mg/kg dm)	1 mg kg^{-1}	ISO/TC 190/SC3/WG1
Ni (mg/kg dm)	100 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Pb (mg/kg dm)	200 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Zn (mg/kg dm)	1000 mg kg^{-1}	BS EN 13650 (aqua regia extractable)
Impurities >2mm (excluding gravel and stones)	< 3% w/w of total air-dried sample	
Faecal coliforms	< 1000 CFU/g	

Notes

1. The generic standards above have been provided to assist operators in setting general objectives for composting processes and the applicant must consider these alongside the site specific risk assessment.

2. The potentially toxic elements (PTEs) levels, for metals, set out in Table 1 are drawn from guidance in CEN TC223 WG2 (CR13455: 1999), Recommended Safety Guidelines for Soil Improvers Section 4. It is considered that guidance levels of PTEs should seek to limit the amount entering the environment. To this end, the maximum levels of PTE are based on modifications of the suggested stabilised biowaste and class 2 compost standards, as set out in Annex III of the Biological Treatment of Biowaste 2nd Draft.

3. The PTE levels shall be established in accordance with the methods set out in Table 1, the value of mass kg-1 dry matter after normalisation to 40% organic matter having been calculated in accordance with the following equation:

$$PTE_{40\%} = \frac{PTE\ sample\ test\ result \times 60}{100 - organic\ matter\ sample\ test\ result}$$

where organic matter as %mass/mass of dry matter is expressed in accordance with BS EN 13039.

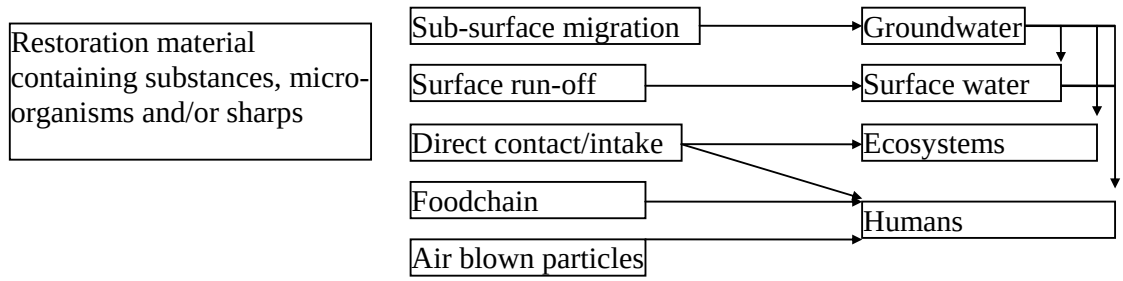
4. The impurities limits are based on Annex II of Biological Treatment of Biowaste 2nd Draft, which comes from CEN TC223 WG2 (CR13455:1999).

5. The microbiological parameter draws from research concerning human pathogens and environmental issues related to composting of non-green feedstocks. Prepared for the Oregon Department of Environmental Quality by TetraTech, Inc. ISG/E&A Environmental Consultants, Inc. August 2001 Section 6.6

Appendix 2 - Site Specific Risk Assessment

A risk assessment represents the structured gathering of information in order to form a judgement about the risks associated with restoration of a specific landfill site, given its environmental setting. The object should be to design a site closure plan which will meet legislative requirements, in particular which will not result in unacceptable harm to human health or the environment. The process of risk assessment is built around an iterative approach whereby initial information enables a picture of the site to be formulated. This picture, or conceptual site model, is refined as necessary through the collection of additional information, for example, through desk studies, walkover surveys or intrusive investigations. In some circumstances it may be possible to form a judgement based on a qualitative assessment, in others a quantitative assessment will be required.

It is important that the actual situation is defined before the risks are considered in detail, to ensure that all sources, pathways and receptors, and potential linkages between them, are considered. Typical linkages are highlighted below:



The first stage of any risk assessment should be to identify and assess the hazards present, that is to say material with the potential to cause harm to the receptors. Any material used in restoration should not pose a significant risk of harm to human health or the environment. Typical indicators of potential harm are highlighted below:

- water concentrations exceeding drinking water standards or environmental quality standards
- human intake exceeding the tolerable daily intake
- ecosystem intake exceeding the no observed effect concentration

The second stage in a risk assessment should be to consider how much, how often and for how long the receptor is exposed to the hazard, as well as the effect on the receptor of the exposure. This will enable a concentration to be estimated which can then be related back to the hazard assessment. Typical factors important in establishing exposure are highlighted below:

Receptor	**Considerations for exposure assessment**
Humans	• Proximity of restoration area to human populations • Extent to which particles/vapours are windblown, quantity of particles/vapours inhaled • Extent of uptake into foodchain (crops, milk) and quantity of affected food eaten • Extent of direct skin contact and ingestion with restoration material • Quantity of affected water drunk
Surface water	• Proximity of restoration area to surface water • Nature of surface area in particular: the condition of the surface (vegetated, compacted or cracked); whether the area is freely drained or waterlogged; the slope of the surface; and drains present • Identification of routes of entry - establish whether entry is likely and resultant concentration in surface water
Groundwater	• Proximity of restoration area to groundwater • Nature of the restoration area in particular: the condition of the surface (vegetated, compacted or cracked); whether the area is freely drained or waterlogged; the soil type, pH and depth of soil • Potential for leachate generation • Movement of leachate through unsaturated zone underlying restoration area - presence of preferential flowpaths (drains, fissures) or containment systems; geological barriers presented by the underlying soils and strata (thickness, permeability and sorption potential); and the mobility of any substances present (solubility, propensity for sorption and degradation). • Establish whether entry is likely and resultant concentration in groundwater
Ecosystems	• Proximity of restoration area to ecosystems • Exposure pathways • Transfer to higher organisms in ecosystem

The final stage in a risk assessment is to integrate the outcomes of the above two stages with risk estimation, in which the consequences and probability of the risk is considered, with risk evaluation in which the significance or seriousness of the risk is considered. The risk assessment should culminate in considering whether the risks are tolerable and the assessment may be reiterated using additional information to obtain a more informed view about the tolerability of the risk.