

Appendix C – Air Emissions Mitigation Options

C.1 Air Emissions Mitigation Options

Local Air Pollutants

Sources of local air pollutants associated with the proposed waste site will include road traffic and site plant/equipment. Options for mitigating road traffic emissions are limited and include:

- Design of site access and egress points and approaches to minimise queuing and disruption of base traffic flow.
- Limiting public access to sites in more congested areas to times of the day outside of peak travel periods.
- Ensuring that waste site operator/contractor vehicles are maintained in good working order. All road licensed vehicles - when new – should comply with Euro III as a minimum.
- At site, all vehicle engines should be turned off as soon as possible after parking.
- Regularly cleanse access/egress points and hard-standing areas on site to prevent accumulation of potentially dusty materials (reduces fugitive emissions of PM10). Appropriate means include vacuum sweeping and wet sweeping.

Options for mitigating site plant/equipment:

- All engines should be turned off when plant/equipment is not in use.
- Exhaust ports should point upwards, at a suitable height to ensure proper dispersal of pollutants, and away from the ground and dusty surfaces.
- All off-road plant/equipment should be regularly maintained and any with visible emissions except briefly at start up should not be used.

Ammonia

Ammonia emissions are associated with the anaerobic decomposition of organic wastes. Mitigation typically involves:

- Careful management to ensure maintenance of aerobic conditions in waste operations (not applicable in the case of the anaerobic digestion waste treatment process where aerobic conditions are undesirable).
- Controlled air extraction and filtration (activated carbon or biofilter) prior to venting to ambient air.

For composting operations, reference should be made to Environment Agency 'Technical Guidance on Composting Operations' (October 2001, version 3)⁷⁹.

Bioaerosols

Bioaerosols comprise fungal spores and bacteria suspended in air. They are naturally occurring. Some are pathogenic. The principle anthropogenic source in rural areas is agriculture. Compositing and mechanical biological treatment operations will generate bioaerosols, some of the organisms that may be emitted are known pathogens (such as *Aspergillus* sp.) that can adversely affect human health.

For composting operations, reference should be made to Defras 'Good Practice and Regulatory Guidance on Composting and Odour Control for Local Authorities (March 2009). Additional information on mitigation is provided in the ADAS report on 'Bioaerosol Monitoring and Dispersion from Composting Sites' (2 parts, August 2005).

Examples of mitigation:

- For open air windrow composting, maintenance of moisture levels above a defined minimum threshold (e.g. 30%) should lower the risk of fugitive bioaerosol emissions.

⁷⁹ www.netregs.gov.uk/netregs/processes/636862/?version=1&lang=_e

- Avoid/Prohibit turning/disturbance of windrow material during dry, windy conditions
- All feedstock mixing carried out within a building with closed doors. Building fitted with dust suppression spray system.
- Feedstocks to be delivered by sheeted vehicles.

Odour

Odour is a highly subjective phenomenon, with detection and perception – in-terms of degree of offensiveness – varying between individuals; however, odour associated with waste can generally be assumed to be offensive or very offensive. An odour will be due to the olfactory sense experiencing - more often than not - a cocktail of compounds; consequently, odour control measures should be designed to prevent, remove or neutralise the release of those that may be typically expected given the nature and quantity of the waste the site will be handling.

Relevant guidance on odour prevention and reduction can be found in the Environment Agency technical guidance note IPPC H4 'Horizontal Guidance for Odour, Part 2 – Assessment and Control'⁸⁰. Information on Environment Agency regulation and permitting of odour from waste facilities can be found in H4, Part 1 and in the document: "Internal Guidance for the Regulation of Odour at Waste Management Facilities" (July 2002, version 3)⁸¹.

For composting operations, reference should be made to Environment Agency 'Technical Guidance on Composting Operations' (October 2001, version 3)¹.

Examples of mitigation:

- Confining handling areas in buildings with controlled atmospheric environment (e.g. negative pressure with waste air extraction and treatment).
- Aeration of waste material (e.g. leachate) to prevent development of anaerobic conditions.
- Shelter belt or wind fence screening.
- 'In-pipe' abatement equipment (various types including scrubbers, filters, thermal and dosing systems) for air extract systems.
- Application of neutralising agents using directed spray units. These may be used 'in-pipe' to treat waste air streams, or in the open air on site.

Nuisance Dust

Generation of nuisance dust can be minimised by application of industry best practice measures. Measures that may be appropriate include:

- Hard paving of operational site areas, including access roads, and surface stabilisation (e.g. seeding or planting) of open non-working areas.
- Regular inspection and cleansing of paved site areas and access roads to remove deposits of debris and dirt. Typical means of cleansing include vacuum sweeping and water flushing.
- Enforcing site speed restrictions (below 20mph recommended).
- Physical screening of material handling and storage areas using either appropriate dense vegetation or barriers to create a sheltered zone.
- Wherever practicable materials should be handled and stored in purpose built buildings with filtration of air venting to the external environment. Negative pressure systems may be appropriate to minimise risk of dust release. Dust curtains should be located at entrances and exits to reduce egress of dust.
- For open air windrow composting, maintenance of moisture levels above 30% should lower the risk of fugitive dust emissions.

⁸⁰ www.environment-agency.gov.uk/yourenv/consultations/367609/?version=1&lang=e

⁸¹ www.environment-agency.gov.uk/commondata/acrobat/odour3.0.pdf

- Restricting site activities that have greatest potential for dust generation to periods of appropriately low wind speeds.
- Use of water sprays (e.g. rain guns) to maintain stockpiles in a damp condition.
- Use of water misting systems to physically remove dust from the air above material storage/handling areas.
- Plant and machinery should be equipped and maintained to avoid dust generation. For example, plant should be fitted with exhaust outlets pointing away from potentially dust surfaces (generally upwards).
- Use of mobile crushing and screening plant will be subject to prescribed controls under the Local Air Pollution Prevention and Control (LAPPC) regime (refer to Process Guidance Note 3/16 (04) Secretary of State's Guidance for Mobile Crushing and Screening). The operator of such plant will require a licence from the relevant local authority.
- Transport of all waste/recyclable/recovered materials in suitable containers to prevent loss of debris and dust during transit to and from the site. Typical measures include use of sheeting systems for loads in open containers and enclosed skips.
- Lorry cleaning facilities may be appropriate at the larger waste sites (e.g. landfill).

For composting operations, reference should be made to Environment Agency 'Technical Guidance on Composting Operations' (October 2001, version 3)¹

