

Attachment E4: Waste Handling & Operational Procedure

A Waste Handling and Operational procedure is attached.

When the facility is operational this procedure will be incorporated into the company's environmental management system.

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Procedure Title: Waste Handling & Operational Procedure		Procedure No:
Date issued:	Last revised:	Revision No:
Waste Licence Condition Number:		
Env. Off. Reference:		
Related procedures:		

Purpose

This procedure describes the methods for handling and processing waste to ensure process efficiency and control of environmental impacts

Scope

This procedure covers the processing of all organic wastes received at the facility and the maintenance of the process and ancillary services

Responsibilities

The Operations Manager is responsible for ensuring compliance with this procedure

Procedure

Green Waste Composting

- ◆ Green waste materials will be tipped outside in the designated green waste reception area.
- ◆ The green waste will be shredded to provide a green composting stream and a bulking stream for the catering wastes and organic fines.
- ◆ The green waste will typically be mixed 2 parts incoming waste to 1 part oversized material from the green waste ASPs.
- ◆ Water will be added to this mix to achieve the optimum moisture content for composting.
- ◆ The prepared green waste will then be taken to the ASP composting area, while the bulking stream will be fed by conveyor to the mixed waste reception hall for preparation of the mixed waste composting stream.
- ◆ The prepared material will be placed in one of two three-walled bays constructed of reinforced concrete (Aerated Static Pile composting).
- ◆ The ASP system is be divided into six pads comprising two primary pads, two secondary pads and two tertiary pads.

- ◆ One primary pad will be filled every ten days. The waste will remain on the primary pad for twenty days after which it will be moved to the secondary pad. Fresh waste will then be put on the primary pad and the process will begin again.
- ◆ The waste will remain on the secondary pad for twenty days before being moved to the tertiary pad. The waste will remain on the tertiary pads for twenty days before being ready for final processing prior to removal to the market.
- ◆ Temperatures on the pad will be automatically monitored on a daily basis so that the aeration system can be adjusted by increasing or decreasing the speed of the blowers and by adjusting the valve positions for each pad. If materials have dried out significantly, water will be added as materials are transferred from one pad to the next. If necessary, dampen the surface of the compost to preclude the generation of dust.
- ◆ The ASPs will typically be 3.5m high and the area of the bays will vary depending on stage of the process (primary, secondary or tertiary). However, depending on the exact nature of wastes received, the ASPs may be taller for drier, woody wastes but lower for wetter wastes. The finished compost will be stored to a height of 4.5m.
- ◆ After almost nine weeks of ASP composting the materials will be ready for screening.
- ◆ After screening, the products will be stored for up to three months. During this time, the batches will be tested and the product will cool and fully mature.
- ◆ The oversize from the green waste screening will be reused in the green waste composting process during summer months when some structural bulking materials may be needed, or as a structural bulking material for the catering wastes and organic fines.

Tunnel Composting

- ◆ The catering waste and organic fines will be delivered to the composting facility and tipped in the enclosed tipping area.
- ◆ The reception and preparation area includes bays for each waste type accepted at the facility (organic fines, catering wastes, timber or bulking material, green waste, screen overflow) and a quarantine area for unlicensed wastes deposited at the unloading area. The waste is off-loaded into the separate bays from the outside of the facility, through a raised opening.
- ◆ Material will be composted in two batch types:
 - Catering waste mixed with bulking materials
 - Organic fines mixed with bulking materials
- ◆ The organic fines/catering wastes will be mixed in a stationary auger mixer with structural bulking materials such as overs from the screening process and/or shredded wood waste from the green waste reception area. The proportions of wastes in the mixture will be designed to optimise the composting process. The incoming waste will typically be mixed 5 parts municipal fines to 2 parts wood and oversize material. This mixture will be wetted as necessary to achieve the optimum moisture content of 60-65% moisture, before it is introduced to the tunnels. Due to seasonal variations in the moisture content of the incoming fines, water will likely be added only during the summer months.
- ◆ From the auger mixer, materials will be loaded into the tunnels with the use of a front end loader or a slewing telescopic loading conveyor.

- ◆ The mixing process is critical to creating the ideal composting conditions and it is at this stage that the balance of nutrients, moisture and porosity is set to carry out the entire composting process. Achieving this balance will reduce odour and assure even heat distribution throughout the composting mass for thorough pathogen reduction within the tunnels.
- ◆ Organic fines will produce low grade compost. Catering wastes should produce high grade compost, unless there is significant contamination of the feedstock. The two batches will be kept in different tunnels and placed in different areas on the ASPs.
- ◆ Each tunnel accepts approximately 700m³ and will accommodate one day's raw material. Materials will be composted for two weeks in the tunnels. Temperature, oxygen and humidity conditions in the tunnels are controlled to achieve rapid composting of the waste.
- ◆ The tunnels will utilise a push-pull system of aeration where oxygen rich air is fed into the bottom of the tunnels and pushed through the composting piles. Another blower will be used to pull air out of the top of the tunnels and force the process air through biofilters for odour control purposes. Aeration will be controlled via a computerised process control system based on a temperature and oxygen feedback system with the capacity to reverse and re-circulate the airflow.
- ◆ Where composting temperatures are too high, aeration will be used to bring temperatures down to within the ideal composting range between 55°C and 65°C. The process control system is programmable so that a temperature of 70°C can be reached for an hour to meet the EU Animal By-Products Regulations if required. Such high temperatures are counter productive to the composting process by killing many of the beneficial composting bacteria, which in turn reduces the efficiency of the composting process. It is likely that the alternative approach of maintaining temperatures exceeding 60°C for two days will be sufficient for pathogen reduction. The precise nature of pathogen treatment will be agreed with the EPA and the Department of Agriculture prior to commencement of the process.
- ◆ All air and water emissions will be collected for treatment and reuse respectively, reducing adverse impacts associated with odours and bio-aerosols.
- ◆ After two weeks in the tunnels, the volume of the composting materials is expected to reduce by 20%. The material will be removed by a front-end loader and will be placed in one of three primary ASP pads, where it will be aerated for three weeks. Because the materials will still be relatively fresh and very active, a negative aeration system will be used so that all process air can be collected and forced through a biofilter.
- ◆ One primary pad is filled each week with the waste from five tunnels. After three weeks on the primary pad, material will be transferred to one of three smaller secondary ASPs, and material from the next five tunnels will be placed on the primary pad. The material on the secondary pad will be composted for a further three weeks. The compost will then be screened as described below.
- ◆ Three pads are provided for each ASP stage to allow the material on each pad to remain undisturbed for a full three week period.
- ◆ Screening of the composted wastes from the ASPs will remove oversized fractions from the final product and will grade the compost into different sized products as demanded by the market. The oversize material will be returned to the waste reception hall for bulking up the incoming waste. The graded products will be stored separately for loading in a storage area with one month's storage capacity.
- ◆ Approximately 40% by weight of all incoming material, will end up as compost and

overs. Air classifiers will be used to separate wood from overs materials such as film plastics, glass, ceramics, stones, metal, batteries and hard plastics. The reclaimed wood chip will be reused in new batches of mixed waste fines, while the remaining overs fraction will be disposed of off site. The proportions of the compost product, the recovered wood chip and the overs for disposal will change throughout the year because of the effect of seasonality on waste generation.

Maintenance

Tunnels: The composting tunnels and associated controls will be maintained in accordance with the specifications provided by the system providers.

Aerated pads: The aerated pads will be maintained in accordance with the specifications provided by the system providers.

Biofilters: The biofilters will be checked daily and the filter medium will be replaced at a frequency to be specified by the system providers.

On-site water treatment system: The water treatment system will be checked daily and maintained in accordance with the specifications provided by the system providers.

Further References

None

Record Forms

Process control print-outs.

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