

INSPECTORS REPORT

WASTE LICENCE REGISTER NUMBER: 117-1

Facility: Greenhills Compost Limited, Carnagh Upper, Kilcogy, Co. Cavan

Recommendation: The recommended Proposed Decision as submitted to the board is approved.

(1) Introduction:

Greenhills Compost Ltd. (GCL) is one of five companies in Ireland who produce compost for the mushroom industry. In total there is seven such compost producing facilities in the country. The facility is located in a rural area in the south of County Cavan and there is one private residence within 100m of the facility and approximately 8 dwellings within 1km of the facility. **A facility location map is provided in Appendix 1.** The facility has been operating for the past ten years in its current location and it supplies compost to mushroom producers almost nationwide. The waste materials being accepted at the facility include chicken litter and gypsum. As with all of the mushroom compost production facilities the production of the compost has been a “low-tech” process in the past and the operation has given rise to many complaints and submissions in relation to odours. The facility currently produces approximately 25,000 tonnes of Phase II compost per annum. An illustrated description of the main phases of the process carried out at this facility is outlined below:

Phase I

- There are four main ingredients in the production of the mushroom compost; wheaten straw, chicken litter/horse manure, gypsum and water.
- The initial stage of the process is to pre-wet the straw bales and these bales are subsequently broken up and mixed with chicken litter/horse manure and gypsum.
- The straw provides a source of carbon, the chicken litter/horse manure provides a source of nitrogen and the gypsum acts as a conditioning agent in the mix to prevent it from becoming too “greasy”.
- The initial mix of materials are formed into windrows and are left outdoors for up to five to six days and then are moved onto aerated pads which are located within confining walls but are not covered.
- Water is added when the material is being turned during Phase I. Virtually all of the process water used at the facility is collected and re-used in the process.

Phase II

- Following a period of up to one week on the aerated pad the material is removed and placed into fully enclosed and aerated pasteurisation tunnels. Phase II is the pasteurisation phase of the process with the compost warming up to 57°C for 8-hours. Once the material has been left in these tunnels for approximately one week the material is removed and sent for inoculation with mushroom spawn (grain covered with mushroom spores) and packing for removal off-site.
- The composting process as currently operated by the applicant is altered and adjusted slightly on an ongoing basis by altering the amount of aeration and time spent at each phase.

Phase III composting is when the Phase II compost (inoculated with mushroom spawn) is placed in aerated bunkers to initiate mushroom growth. Phase III composting is not carried out at this facility.

There are a number of environmental issues pertaining to the operation of the facility including odour, discharges to surface water and groundwater, noise emissions, potential for the spread of disease and dust emissions from the facility. Each of these issues is addressed in the relevant sections below.

The facility is required to hold a waste licence as >1000m³ of material is being composted at the facility at any one time. The facility will be licensed for Class 2 of the Fourth Schedule of the Waste Management Act, 1996:

“Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)”

EIS Required	No
Number of valid submissions received	60

FACILITY VISITS:

DATE	PURPOSE	PERSONNEL
29/10/99	Site Notice Check	Margaret Keegan
18/01/01	Transfer of Licence Application	Kealan Reynolds & Margaret Keegan
22/05/01	Site Familiarisation	Kealan Reynolds
11/12/01	Odour & Site Assessment	Kealan Reynolds and OdourNet UK Ltd.

(2) Facility Development

Infrastructure

The recommended Proposed Decision requires that a significant level of infrastructure be provided at the facility. The required infrastructure is primarily for the control of emissions to the atmosphere, to groundwater and to surface water. The applicant will be required to expand their existing telemetry system at the facility to provide for the process and water storage monitoring requirements as per Condition 3.17 of the recommended Proposed Decision.

i) Control Of Emissions to Air: Condition 3.11 of the recommended Proposed Decision outlines the infrastructure required for the control of odours from the facility. The enclosure of the composting process is to be completed on a phased basis. Within twelve months of the date of grant of the licence the bale breaking line, blending line and chicken litter shredding are to be enclosed. Within eighteen months the remainder of the composting process (Phase I and Phase II) are to be enclosed. Phase II is currently enclosed with just some further enclosure works required at the

filling/unfilling area associated with Phase II. Following the enclosure of the process the applicant will be required to provide an air collection system within the constructed buildings (24 months) and within thirty-six months of the date of grant of this licence all of the collected air emissions must be treated by an appropriate odour abatement system to be agreed with the Agency. All of the infrastructural works regarding the control of odour emissions from the facility are due to be completed with thirty-six months of the date of grant of the licence.

There are a number of additional infrastructural requirements included in the recommended Proposed Decision that pertain to odour control. Condition 3.13 requires that all process water storage tanks be enclosed within twelve months of the date of grant of the licence and Condition 3.11 requires that an odour filtration system be installed at all of the outlet vents on the process water storage tanks. Condition 3.7 requires that all areas used for the storage of chicken litter shall be fully enclosed. Condition 4 of the recommended Proposed Decision sets out conditions to control the operation of the facility in a such a manner that odour emissions shall be minimised.

ii) *Control of Emissions to Surface Water:* Condition 3.5.4 of the recommended Proposed Decision requires the applicant to provide a 150mm high bund wall (of suitable construction) around the part of the facility used for the production of compost (the dirty yard area). This is required as there is potentially a lot of standing water in the dirty yard area and during periods of heavy rainfall there is an increased risk that this contaminated water may flow into the nearby stream. The recommended Proposed Decision also requires the applicant to assess the integrity of all tanks and pipelines at the facility to ensure that there are no fugitive emissions to surface water from the process. Condition 3.12 provides a system for the management of surface water at the facility and Condition 5.4 requires that the only emissions to surface water from the facility are through the surface water management system as referred to above.

iii) *Control of Emissions to Groundwater:* The composting process has taken place on concrete yards since the process commenced at the facility and during inspections of the facility it was noted that there was a number of cracks and faults in such surfaces. Condition 3.5 of the recommended Proposed Decision requires the licensee to assess the yard area with a view to ensuring that there is no movement of contaminated water into groundwater.

(3) Odour Control

The primary source of odours in this process arises from the Phase I activities. There is minimal odour emissions from the Phase II process. OdourNet UK Ltd. completed an assessment of the odour emissions from the facility on behalf of the Agency and a copy of this report is included in **Appendix 2**.

The study modelled the estimated odour emissions from the facility in its current state of operation and also modelled the odour emissions in the case where the process had been enclosed and abatement technologies had been installed and commissioned. The report estimates that 50% and 33% of total odour emissions from the facility are from

the Phase I composting process and the process water storage tanks, respectively. The odour modelling completed by OdourNet UK Ltd. provided isopleth figures modelled on the basis of 98 percentile for a 1-hour average limit concentration of $60\mu\text{g}/\text{m}^3$. The contours therefore represent the area where the maximum hourly average ground level concentration will be greater than $60\mu\text{g}/\text{m}^3$ for more than 2% of the hours in the year. On the information provided it is estimated that up to 25 private residences may currently be negatively impacted upon by odour emissions from the facility. The contours show that the enclosure and application of odour abatement to the air emissions from the composting process together with the control of emissions from the process water tanks will ensure that odour emissions from the facility will be significantly reduced.

Even with the installation of the infrastructure required by the recommended Proposed Decision it is likely that there will still be one residence adversely impacted upon. Having regard to this the applicant is required to assess the need for additional measures at the facility, following the enclosure of the process and the treatment of emissions, to further reduce odour impact beyond the boundary of the facility.

(4) Nuisance & Noise Control

- i) Dust:* The enclosure of the bale breaking and blending line along with the chicken litter shredding area is required as per Condition 3.11 of the recommended Proposed Decision. The enclosure of this part of the process should mitigate against any significant dust emissions from the facility. The enclosure of the chicken litter and gypsum storage areas shall also mitigate against dust emissions. Condition 7.1 and Schedule E of the recommended Proposed Decision provides for dust deposition monitoring at and around the facility.
- ii) Vermin & Pests:* The potential for vermin and pests to create a nuisance at and around the facility will be greatly reduced once the chicken litter storage area and the composting process have been enclosed. Condition 6.3 of the recommended Proposed Decision requires the applicant to implement a vermin control programme at the facility.
- iii) Noise:* The nature of the composting process means that a lot of air handling equipment is in use at the facility (air extraction & aeration fans) and such equipment when installed outside a building can give rise to tonal noise emissions. For this reason and given the close proximity of a private dwelling to the facility, Condition 3.14 of the recommended Proposed Decision requires the applicant to provide a noise attenuation barrier along the boundary of the facility. In addition where it is technically feasible all fans and vents located outdoors shall be enclosed so as to minimise noise emissions.

(5) Waste Types and Facility Operation

Waste Types: The applicant will be restricted to the acceptance of chicken litter and waste gypsum at the facility and will be limited to the existing quantity of waste being

accepted at the facility on an annual basis, this being 6,000 tonnes of chicken litter and 500 tonnes of Gypsum.

Facility Operation: Condition 4 of the recommended Proposed Decision provides for the day to day operation of the facility. Condition 4.1 requires the development of waste acceptance procedures at the facility and it will ensure that all wastes arriving at the facility are inspected prior to use and that they are handled in an acceptable manner.

(6) Emissions to Groundwater

The facility is located on the site of a disused sand and gravel quarry and the existing surface at the facility is primarily concrete, however some cracks do exist which may allow the vertical movement of contaminated water off-site. The limited groundwater analysis carried out as part of the waste licence application did not show that the facility was having any significant impact on the local groundwater. There are a number of private residences which have private wells for domestic use and water from a number of wells in the area is used for by livestock. The recommended Proposed Decision requires the applicant to monitor all groundwater wells within 250m of the facility. In addition the recommended Proposed Decision requires that additional groundwater wells be provided to assess the quality of the groundwater downgradient of the facility. Condition 7.1 of the recommended Proposed Decision requires the applicant to carry out monitoring of the groundwater as set out in Schedule E.

(7) Emissions to Surface Water

The limited information submitted in the waste licence application showed that the surface water quality in the vicinity was quite good with the exception of B.O.D. results from sample taken immediately upstream of the facility. However, in information received from the Northern Regional Fisheries Board it was noted that surface water discharges from the facility was causing the growth of fungus in the stream adjacent/through the facility. Following the completion of the surface water management infrastructure as referred to in Section 2 above there shall be a single surface water discharge point from the facility to the stream located at the facility. The stream that flows through the facility drains into the River Erne which in turn flows into Lough Gowna which is an important course angling fishery in the region and it is a pNHA. Condition 7.1 of the recommended Proposed Decision requires the applicant to carry out sampling and analysis of surface water discharges from the facility as well as analysis of the stream upstream and downstream from the facility. Condition 7.8 of the recommended Proposed Decision requires the applicant to carry out biological monitoring of the stream that runs through the facility.

(8) Other Significant Environmental Impacts

Disease Control: There is a potential for the spread of disease or infection from the facility from two main sources; a) airborne microbes moving off-site from the composting process and b) microbes may enter the facility in chicken litter and could subsequently move off-site as windblown matter or by vermin (e.g. foxes, rats). The recommended Proposed Decision contains a number of measures to prevent the potential off-site movement of such microbes and these included the following:

- All incoming chicken litter must be inspected and any carcasses must be removed from it and disposed of in an appropriate manner.
- All chicken stored at the facility is required to be stored in fully enclosed structures
- All chicken litter shredding areas and the composting process are to be enclosed and the air emissions be collected and treated thus preventing the potential off-site movement of airborne microbes.

In addition to the items above the applicant will be required to carry out monitoring for airborne microbes at a number of locations around the facility.

(9) Air, Water and Waste Management Plans

The Waste Management Plan for the Northeast Region as adopted does not refer specifically any future plans or policies for the mushroom composting sector. There are no Water Quality Management Plans or Air Quality Management Plans in place for the area in question.

(10) Recommendation

The recommended Proposed Decision contains a number of conditions which will significantly improve the environmental performance of this facility. In reaching a decision on the waste licence application for this facility, I have had regard to the following:

- The current state of the mushroom production process in operation at this facility which is, in principal, a ‘low tech’ operation with very limited controls on emissions to the environment.
- The current operation has given rise to a significant number of odour complaints at and in the vicinity of the facility and will continue to do so in its present state as is evident by the number of submissions received from local residents and as noted by Agency Inspectors on a number of occasions.
- The OdourNet UK report that was produced on behalf of the Agency to assess the most significant issue with the mushroom compost production sector i.e. odour. The findings of this report are incorporated into the recommended Proposed Decision.
- The requirement that Best Available Technology be employed at the facility
- The technologies currently being used in other EU member states.

(11) Submissions/Complaints

60 valid submissions were received in relation to this waste licence application. A summary of the issues raised in the submissions received is provided below. The contents of the submissions have been taken into account in drafting the recommended Proposed Decision.

1. Odour Emissions:

The majority of the submissions received referred to the obnoxious odours that emanate from the Greenhills Composting facility. Local residents consider that odours generated at the facility have had a detrimental impact on their day to day lives in the vicinity of the facility. Families cannot enjoy life as they often have to keep windows closed in their houses due to odour emissions from the facility.

Comment

the facility is currently giving rise to significant odours in its immediate vicinity and the recommended Proposed Decision provides for the control of emissions from the facility over a phased time period. The recommended Proposed Decision provides for the enclosure of the composting process at the facility and the subsequent collection and treatment of air emissions from the facility (Condition 3.11). It is predicted that the current estimated zone of influence around the facility will greatly decrease following the enclosure of the process and the treatment of collected air emissions. The applicant is also required to submit a report to the Agency following the completion of the works as required by Condition 3.11 and this shall assess the need for additional measures to be taken.

2. Surface Water:

Concerns have been expressed in the majority of the submissions received, including submissions from the Northern Regional Fisheries Board and local Angling Clubs regarding the potential impacts the facility is having and has had on the local surface water network. Anecdotal evidence has been supplied to suggest that the environmental quality of the local surface water network has significantly deteriorated since composting operations began at the facility. A stream runs through the facility and enters the River Erne that in turn drains into Lough Gowna. Concerns have been expressed regarding the overflow of contaminated water into the stream and also regarding the indirect discharge of contaminated water into the stream via leaking tanks and pipelines. It is stated in submissions that Greenhills Compost Ltd. have been previously prosecuted by the Northern Regional Fisheries Board for unauthorised discharges to the nearby stream.

Comment

The limited information submitted in the waste licence application regarding surface water quality in the stream adjacent to the facility would indicate that the facility is not having a significant impact on the local stream. However the applicant was prosecuted in 1999 by the Northern Regional Fisheries Board for discharges of deleterious matter from their facility into the nearby stream. Condition 3.12 of the recommended Proposed Decision requires the applicant to provide a surface water management system at the facility. The provision of such a system should ensure that no contaminated water generated at the facility will enter the local surface water network. In addition the applicant is required to provide a 150mm high bund wall around the dirty yard area and also assess the integrity of all storage tanks and pipelines in use at the facility. Condition 7 of the recommended Proposed Decision requires the applicant to carry out surface water monitoring and the applicant will be required to notify the Northern Regional Fisheries Board should there be any unauthorised emissions to surface water from the facility.

3. Noise

Concerns have been expressed by residents who live in the vicinity of the facility that noise emissions from the facility are clearly audible at their properties and that the noise emissions interfere with their day to day life. The noise emissions are emanating from air extraction/handling fans and from vehicle movements at the facility.

Comment

The recommended Proposed Decision sets out noise level at noise sensitive locations. In order to ensure that noise levels from the facility are minimised Condition 3.14 of the recommended Proposed Decision requires that all air ventilation systems and outdoor motors are enclosed where possible and that an acoustic barrier be constructed along the boundary of the facility adjacent to the nearby private residence.

4. Visual Intrusion

Local residents are concerned about the physical appearance of the facility on the local landscape. The area around the facility is a quiet rural environment and local residents consider that the siting of a large industrial like facility in the area is unfair and is a scar on the local landscape. It is considered that the heaped piles of compost and the associated machinery and structures on the facility are not in keeping with the surrounding environment and that emissions of steam and gases from the facility are clearly visible from a number of roads in the locality.

Comment

Condition 4.3 of the recommended Proposed Decision requires the applicant to submit plans for the screening of the facility. Compliance with this condition will minimise the visual impact that the facility will have on the surrounding environment. The applicant will be required to assess the need for additional screening at the facility on an annual basis.

5. Loss of Amenity and Tourism

The facility is located in a rural area that has been used for many years by local families as a source of recreation and enjoyment. Locals can no longer enjoy a walk in the country or swimming in the nearby river. The local rivers and lakes have always attracted anglers and this branch of tourism has added greatly to the local economy. There have been many cases of anglers complaining about the odours from the facility and the deterioration of water quality beside the composting facility. The nearby Lough Gowna is a National Heritage Area and the potential negative impacts on local rivers and streams would in turn have a negative impact on Lough Gowna.

Comment

The facility to which the waste licence application relates is an existing one and has been in operation for over 10 years at this location. Compliance with the conditions of the recommended Proposed Decision should ensure that impact which this facility will

have on the local environment including Lough Gowna will be significantly reduced over time.

6. Vermin and Pests

A number of submissions received referred to problems encountered in the vicinity of the facility with vermin and with fly infestations during summer months. Foxes have also been referred to as pests in the vicinity of the compost facility as they enter the facility and drag out carcasses from the chicken litter storage area.

Comment

Environmental nuisances such as vermin and flies are controlled by Condition 6.1 of the recommended Proposed Decision. In addition Condition 3.7 requires that all chicken litter storage areas at the facility are fully enclosed and this should ensure that the food source for rats and foxes is no longer available. The applicant must also implement a pest control programme at the facility as per Condition 6.3.

7. Loss of monetary value to local properties

Local residents have stated that due to the proximity of their property to the compost facility the value of their property has significantly dropped. Also a local landowner had some sites on the market and no interest was shown in the sites and this was likely to be due to the proximity of the facility.

Comment

The issue of property value does not come under the scope of this waste licence application.

8. Planning Permission

A number of the submissions referred to the planning status of the facility and included reasons why planning should not have been granted to the applicant.

Comment

The issue of planning permission is a matter for the Planning Authority to consider.

9. Proximity to local housing

There is a private residence located approximately 70 yards from the boundary of the composting facility and it is considered that the composting facility is located too near to this private residence. The specific issues that the local resident has to deal with on a daily basis are dealt with under the specific headings (e.g. odours, noise). In addition it is noted in the OdourNet UK Ltd. report that was completed on behalf of the Agency stated that regardless of what measures the applicant takes at the facility that one private residence will always remain with the 60u/m³ and this is unacceptable.

Comment

The issues referred to here have been dealt with in the responses outlined above.

10. Comments on the OdourNet UK Ltd. report

A number of local residents received a copy of the OdourNet UK Ltd. report and provided comments and observations to the Agency in the form of a written submission. It is noted (a) that the extent of the current predicted impact based on odour dispersion modelling is quite extensive and includes quite a few residences, (b) it is considered that the applicant should be made to enclose the process and treat all air emissions as recommended by the report. The submissions also state that (c) the OdourNet UK Ltd. report concludes that “odours from this facility are always going to be an issue as it remains within the area where the exposure is in excess of the proposed limit value”. In addition one submission stated that (d) the Odournet UK study omitted information on ammonia emissions from the facility and the impact of ammonia on local watercourses, flora and fauna was not assessed. It was also stated that (e) the methodology used in the Odournet UK report was incomprehensive.

Comment

Item (a), (b) and (c) and the issue of odour impact and odour control/management have been dealt with earlier.

In relation to items (d) and (e) the Odournet UK report did include information on ammonia emissions from the facility and these related specifically to air as was the specification for the report. The issue of risk to surface water has been addressed above.

11. Roads

It is considered by some local residents claim that the local road network would not be able to cope with the continued movement of heavy traffic on a daily basis and that the road infrastructure would deteriorate with time.

Comment

The issue of traffic control beyond the boundary of the facility is a matter for the local planning authority.

12. Groundwater

Concerns have been expressed regarding the potential movement of contaminated water from the facility into the subsurface beneath the facility and ultimately into the local groundwater. The local groundwater resources are used for domestic and agricultural use and it would be unacceptable if contaminants from the composting facility were to end up in local drinking water supplies.

Comment

Condition 3.5 of the recommended Proposed Decision requires the applicant to ensure that there are no conduits for the vertical movement of contaminated water off-site and Condition 3.5.4 requires the applicant to provide a 150mm high bund wall around the dirty yard area of the facility. Condition 7.1 and Schedule E of the recommended Proposed Decision sets out the requirements for the applicant to monitor groundwater

quality downgradient of the facility. In addition 7.6 of the recommended Proposed Decision requires the applicant to monitor the quality of groundwater at any private wells within 250m of the facility.

13. Health and Disease Control

Local residents have expressed concerns in relation to the potential health impacts and the control of disease from the composting facility. Health concerns have been expressed in relation to the continuous air emissions from the facility and in particular the presence of Ammonia in the air emissions. It is claimed that the emissions from the facility may contain all sorts of compounds that are a danger to human health.

Concerns were also expressed regarding the control of the spread of disease from the facility and in particular diseases that may originate in the chicken litter.

Comment

No evidence has been submitted to the Agency regarding the negative impact of the activities at the facility on animal or human health. The recommended Proposed Decision contains a number of conditions that should minimise the impact which the facility will have on human and animal health over time. The enclosure of the process should minimise the potential for the off-site movement of airborne microbes. Also, Condition 7 and Schedule E of the recommended Proposed Decision provides for the monitoring of airborne microbes at the facility.

14. Dust

Due to the storage of chicken litter and gypsum at the facility and the continuous turning and movement of straw and compost materials at the facility it is considered that dust emissions from the facility may have an impact on local residents.

Comment

The enclosure of the composting process and the enclosure of the chicken litter and gypsum storage areas should ensure that dust emissions are minimised at the facility. Given the high volume of water used in the process, dust emissions emanating from the compost material are generally not an issue.

15. Accuracy of the Waste Licence Application and the requirement to submit an Environmental Impact Statement

Some submissions received stated that some of the waste licence application was misleading and that it was full of misrepresentations and misleading information. It was also requested that the applicant should be required to submit an EIS as part of the waste licence application.

Comment

The Waste Licence Application was deemed to be in compliance with the requirements of the Waste Management (Licensing) Regulations, S.I. 133 of 1997. The applicant was not required to submit an EIS under National and European legislation.

Signed _____
Kealan Reynolds
Inspector
Environmental Management and Planning

Dated:

APPENDIX 1

Site Plan

APPENDIX 2

OdourNet UK Ltd. Report