MONTGOMERY E.H.S.

Odour Management Plan

Submitted to Limerick County Council in respect of

Proposed Expansion of Poultry Growing Operation of Pat Kenny, Coolanoran, Newcastle West, Co. Limerick

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PAT KENNY

ODOUR MANAGEMENT PLAN

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Document No. ..... ES_P01_012-02

Rev	Description	Origin	Review	Changes/Amendments	MEHS Approval	Date
1	Draft	MM	TM	Draft for POC	Yes	14/07/11
2	Final	MM	TM	Issue for LCC	Yes	17/07/11
3	Re-Issued	MM	TM	Re Issued	Yes	18/07/11
4	Final	TM	MM	Issue for planning	Yes	23/03/12

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Issue Date:	Report	No.:	Rev.:
23/03/12	P012_010-3	01	04

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March 2012

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1.0 Introduction

This Odour Management Plan outlines the methods by which Pat Kenny will systematically assess, reduce and prevent potentially odorous emissions from the proposed poultry growing operation at Coolanoran, Newcastle West, Co. Limerick.

The Odour Management Plan will serve to aid the decision-making process on the choice of controls, general site design, and operational practice in line with current industry best practice. The odour management plan is a working document with the specific aim of ensuring that:

- Odour is considered as part of routine inspections;
- The risk of unplanned odour releasing incidents or accidents that could result in annoyance is minimised;
- Odour is primarily controlled at source by good operational practices, the correct use and maintenance of plant, and operator training; and
- All appropriate measures are taken to prevent or, where that is not reasonably practicable, to minimise odorous emissions to air from the installation that may be considered offensive at locations outside of the installation boundary. The methodologies presented take account of Environment Agency (EA) guidance documentation, as detailed below:
    - Environment Agency Technical Guidance Note H4 – Odour Management

This Odour Management Plan addresses the impact of odour release and the control measures employed to mitigate the risk. These are supported through monitoring procedures to identify both elevated levels and review complaints should they arise. The complaints management procedure including the management responsibilities are also addressed

This document outlines the methods by which Pat Kenny will systematically assess, reduce and where possible prevent potentially odorous emissions from his proposed poultry growing operation.

1.1 The Applicant

The Kenny family has been operating poultry growing operations on a continuous basis since 1992 in the area. The proposed site will operate two houses on a 7 to 16 week cycle.

The production cycle is normally six batches per year. A batch is of 35 to 38 day duration depending on kill at weight required by the processing plant. Thereby the houses are filled on average 32 weeks a year and empty 20 weeks per year.

1.2 What standards of odour control are expected?

1.2.1 What standard of control are we aiming for?

In the case of odour, pollution is considered in terms of causing offence to the sense of smell, i.e. causing annoyance to people who live in the area or are there for some other reason, through exposure to odour.

The point at which `pollution' in the form of offence to the sense of smell is occurring, it is taken to be the point at which there is `reasonable cause for annoyance'.

The aim of the legislation is to achieve `no reasonable cause for annoyance' by persons beyond the boundary of the installation, i.e. sensitive receptors, as far as is possible using Best Available Techniques.

1.2.2 Who are sensitive receptors?

Sensitive receptors are primarily people in dwellings, hospitals, schools and similar premises, but can include people frequenting open spaces, for example, parkland. The person in control of the installation would not normally be considered to be a sensitive receptor. Persons who live in close proximity in tied housing may be sensitive receptors (consider the families of the farm workers). If such properties are rented to people who do not work on the farm, the tenants are likely to be sensitive receptors, even if they rent with the knowledge that there is an odour source nearby, or recognise that odour is a feature of the rural environment.

In any particular situation however, the interpretation of the courts will be the decisive factor.

1.2.3 What is `no reasonable cause for annoyance'?

The amount of annoyance should not be assessed only by means of the number of complaints. You should still use best practice to keep odour levels as low as reasonably possible where people live close by, even if complaints are rarely received.

The legislation requires that the amount that you spend on taking measures to reduce odour should be in proportion to the annoyance caused or potential to cause annoyance. Good practice should be adhered to at all times by all installations, but if a large number of complaints are received, or the installation is close to a built up area then you may have to expend more effort to reduce odour. BAT covers management techniques (i.e. Best Practice), as well as hardware, to control odour.

1.2.4 Standards for new installations

Pat Kenny plans to employ BAT from the outset and this will include:

- Watering systems
- Feeding system
- Covered water storage tanks
- Feed Storage systems
- Litter storage
- Storage of carcases
- System for unloading and loading of birds

1.2.5 Complaints

Odour complaints relating to an installation may be received directly by the Local Authority. The Local Authority will investigate the complaint and if there is found to be a breach of the planning conditions, a notice may be served, requiring the operator to address the issues or proceedings may be instigated.

1.2.6 Overarching Management Responsibility

Pat Kenny (or Deputy) will have responsibility for ensuring that nuisances and hazards arising from the poultry houses due to odour are minimised. During operation of the site, meetings will be held as required and at minimum quarterly intervals for site management to discuss current and planned site operations with

respect to their potential for generating odorous site emissions. Identified actions arising from the meetings and responsibilities for their completion will be recorded within the meeting minutes.

In promoting proactive management of the risks arising at the site, during active disposal of litter, Mr Kenny will obtain from recognised sources a three day forecast of meteorological conditions at the site at the start of each working week and then again in the middle of each working week. Details of the forecasted conditions will be assessed against proposed activities for the period of forecast and management/monitoring actions appropriate as required. Key data to assist Mr Kenny will be the assessment of wind speed, wind direction and potential pressure falls.

1.2.6 Temporary Odorous Activities

On occasion it is necessary to undertake temporary actions that are likely to cause potentially significant odorous emissions (e.g. storage of litter outside), Mr Kenny will contact the Local Authority and other interested parties before such actions are taken to advise them of the operation being undertaken and that any odour will be of a temporary nature. Where practicable, such actions should only proceed when the prevailing wind direction is away from sensitive receptors and appropriate odour control measures will be implemented in accordance with the Odour Management Plan.

2.0 Management of odour

2.1 General aspects of odour management

2.1.1 Overview

An Odour Management Plan gives an overview of the principles for odour reduction and containment as they relate to Mr Kenny proposed poultry farm. The poultry growing operations mean that preventing odour generation at source is rarely possible as animals are inherently odorous. However, there are many things that can be done, often at low cost, to minimise odour or to prevent it reaching neighbours.

In most cases, attention to housekeeping and good operational practices should be capable of achieving a significant reduction in the level of exposure experienced at sensitive receptors.

When poultry operations have implemented all reasonable measures and it has not succeeded in reducing emissions to the point where the exposure of sensitive receptors (local residents) is unacceptable then the next stage of abatement technology will be considered. This will require odorous air from the poultry house to be contained at source and extracted to an abatement system with minimum fugitive losses. Bio-filters or absorption `scrubber' systems (chemical or biological) are the most technically viable due to cost and ease of operation. The implementation of 'bio-filters or srcubber treatment systems is considerably more expensive.

2.1.2 Using location/siting as a means of odour control

The location of the proposed development was selected to move the poultry houses away from the residential dwelling.

2.1.3 Complaints procedure

A procedure will be established for verifying and responding to complaints about odour as part of the site operation.

The establishment of a procedure covering complaints can:

- improve relationships with neighbours;
- Identify sources of odour and prevent future problems.

The procedure will include a response within 48 hours of receipt of a complaint, including a discussion with an explanation to the complainant.

2.2 Sources of odour

2.2.1 Livestock housing

The odour associated with poultry growing tends to be related to ammonia. Hydrogen sulphide can also be present. High ammonia concentrations usually accompany high odour concentrations in broiler buildings where litter is in poor condition (too wet). The presence of high ammonia is only a part of the overall odour issues.

2.2.2 Wash water and Litter

Odour arises primarily from the presence of wash water / litter and the biological changes which take place as it decomposes and also the body odour of the livestock. Some odour also arises as a result of cleaning and disinfection of sheds - from the removal of accumulated litter and also from fumigants used. Storage of wash water / litter in the open is also a source of odour.

2.2.3 Dust

An important mechanism in the release to atmosphere of odour may be the presence and subsequent emission via the ventilation system of suspended dust particles originating from bedding, feed and the birds. Odorous compounds may be adsorbed onto these particles and the particles themselves may decompose releasing volatile compounds.

2.2.4 Factors affecting the release of odour

The level of odour emissions from intensive livestock installations is dependent on a number of factors, principally:

- size of operation;
- the type of building/ventilation;
- type of operation and the rearing cycle;
- the feeding regime;
- the way in which the operation is managed;
- storage arrangements for wash water and litter;
- Land spreading practices.

The impact of those emissions on the local environment depends upon:

- proximity to local housing and other sensitive receptors;
- The nature of the local topography and prevalent weather conditions.

2.3 Aspects of odour management common to all operations

2.3.1 Selection and use of animal feed

Below gives a guide on the selection and use of poultry feeds at different stages in the rearing cycle in order to reduce nitrogen excretion. A high protein diet increases the nitrogen and sulphur content of litter, contributing to emissions of ammonia to air and potentially other odorous compounds when the litter undergoes anaerobic degradation.

The feed systems available now are significantly improved compared to the feeder installed in the existing houses at other facilities in the area.

2.3.2 Feed delivery, milling and preparation

Good housekeeping measures include:

- avoiding accumulation of waste feed;
- cleaning up spills;
- Avoiding overflow and spillage from feed and drinking systems.

The addition of odorous by-products such as whey and fish meal to feed will not be used by Mr Kenny's proposed poultry operation as these may increase the odour level of the feed (and accumulated spillages will smell more).

Mr Kenny proposed operation avoids the purchase of finely ground feeds and long feed drops onto floors should be avoided because they increase dust emissions. As odours may be absorbed onto particulate matter and then carried out of the building via the ventilation system.
Odours arising from storage of feed is minimised by employing purpose built silos.

The delivery of the feed to the storage areas and from the storage container to the feeding station is through a closed system to minimise the generation of dust.
The poultry operation will not conduct any mixing and milling of dry foodstuffs.

2.3.3 Disposal of carcasses

Carcasses will be removed frequently by Wards Waste on at least a weekly basis to prevent odour-related annoyance and be covered to prevent access by birds or rodents using plastic bags or lidded bins where possible.

The Animal By-Products legislation specifies the requirements for carcass disposal and Ward Waste are licensed by the Department of Agricultural. The carcasses are delivered to a rendering plant for rendering.

2.3.4 Ventilation and humidity

Ventilation rates are determined by the needs of the animals and vary with season. Mr Kenny's proposed poultry houses will be naturally ventilated odour will be carried out of the houses with exhausted air and the exhaust rate will be highest when the outside temperature is high. This generally occurs in the summer months when the potential to cause odour annoyance is highest.

Ventilation systems should be run at the optimum rate for the number of animals present. Insufficient ventilation capacity can lead to excessively high room temperatures which increase wash water and litter decay rates and hence odour emissions.

2.3.5 Atmospheric dispersion of odours

Once odorous emissions leave the source they undergo dilution and dispersion in the atmosphere downwind of the installation. Where odours are released at height, they are likely to be more effectively dispersed than those released at a low level or, inadvertently, from open doors.

The design of ventilation systems is a specialist field but in general terms roof (apex) vents produce better dispersion of odorous releases than those positioned along the side of buildings (side wall vents).
Mr Kenny after each batch will ensure that dust deposits around the ventilation discharge points are cleared away on a regular basis to prevent excessive build-up.

2.3.6 Dirty water management to prevent stagnation

In any process or operation stagnant water can be a source of odour. The following measures can help to ensure that dirty water (water contaminated by livestock excreta) is disposed of quickly and unintentional areas where water could accumulate and stagnate are minimised:

- Fit kerbs to concrete aprons to direct dirty water into collection tanks;
- Enclosing dirty water collection systems;
- Emptying and cleaning dirty water collection systems to avoid allowing anaerobic conditions to develop in settled sludge;
- Maintaining drains and concrete areas;
- Dealing quickly with dirty water generated when buildings are cleaned out at the end of the cycle.

2.4 Odour management in poultry rearing

2.4.1 Odours from poultry housing

Odours from poultry houses come from a number of sources. They are mainly caused by the breakdown of droppings and litter. Other sources of odour are from animal feed and waste food spilt onto floors. A major means of minimising odour emissions is through the use of good agricultural practice. Odour mitigation methods will be similar for all different poultry operations.

The UK Defra Code of Good Agricultural Practice for the Protection of Air advises that the following factors contribute to the emission of odours from poultry sheds:

- Build-up of Litter on concrete around buildings;
- Removal and disposal of dead animals;
- Drain maintenance;
- Bedding cleanliness;
- Management of drinking systems, with particular emphasis on frequently adjusting nipple and drip cups to bird eye level to avoid spillage and wet litter;
- Stocking density;
- Litter moisture content;
- Insulation of the buildings and the long term maintenance of that insulation;
- Ventilation and heating system;
- Type of heating;
- Composition of the feed, particularly its oil and fat content and its protein content.

Mr Kenny's proposed poultry operation will be a well-run operation with good housekeeping practices as listed above. There are many improvements in the feed and watering systems available for poultry houses since poultry units where first built in the limerick area in the 1980's and 1990's. The proposed houses will have installed new and improved feed and water systems.

2.4.2 Minimising odour arising from animals and the poultry housing

Odour from litter and manure based systems may be minimised by increasing the dry matter content of the litter or manure, by both preventing spillages of water and providing a drying mechanism. If the dry matter content is 60% or above, ammonia emissions are minimal. New buildings should be able to meet this criterion.

2.4.2.1 Dust

Dust emissions may be a problem particularly for larger birds. Odorous compounds may be adsorbed onto dust particles and the particles themselves may decompose releasing volatile compounds. It is therefore important to:

- Control the generation of dust within the house through management of litter moisture content and air quality.
- Minimise the amount of dust emitted from buildings.
- Ensure dust deposits around ventilation discharge points are cleared following the empting of each batch to prevent excessive build up. Minimising dust production through good housekeeping and animal husbandry would be cost effective, in addition to the obvious welfare benefits.
- Collect the water discharging from cleaning operations in sealed tanks.

The odour emission from a building can be dependent on particulate emission. Data published by Van Geelen suggests that removing the dust fraction from an odorous stream reduces the odour concentration by about 65%.

2.4.2.2 Litter quality

Litter quality is affected by:

- Temperature and ventilation;
- Drinker type and management;
- Feeder type and management;
- Litter material and depth;
- Condensation;
- Stocking density;
- Feed formulation and quality;
- Bird health.

The proposed house will have systems to minimise ventilation and heating requirements. The new houses ventilation will be designed to remove air moisture and thereby improving litter quality.