

Composting – Odours and Bioaerosols Emissions-Regulatory Role of the EPA

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Cré Meeting

Waste legislation-Composting

- **Waste Management Acts, 1996-2003**
- **Waste Management (Licensing) Regulations, S.I. 395 of 2004**
- **Working Document “Biological Treatment of Biowaste” 2nd Draft (Biowaste Directive)**
- **Air Pollution Act 1987**
- **EC1774/2002 Laying-health rules re animal by- products not intended for human consumption (ABP Directive)-**DAF are the CA****

Waste Licence Applications – Compost Facilities

Classes of Activity:

4th Schedule of WMA 1996-2003, Recovery Activities

- Class 2: Recycling or reclamation(including composting
- Class 13: Storage of waste intended for submission.....

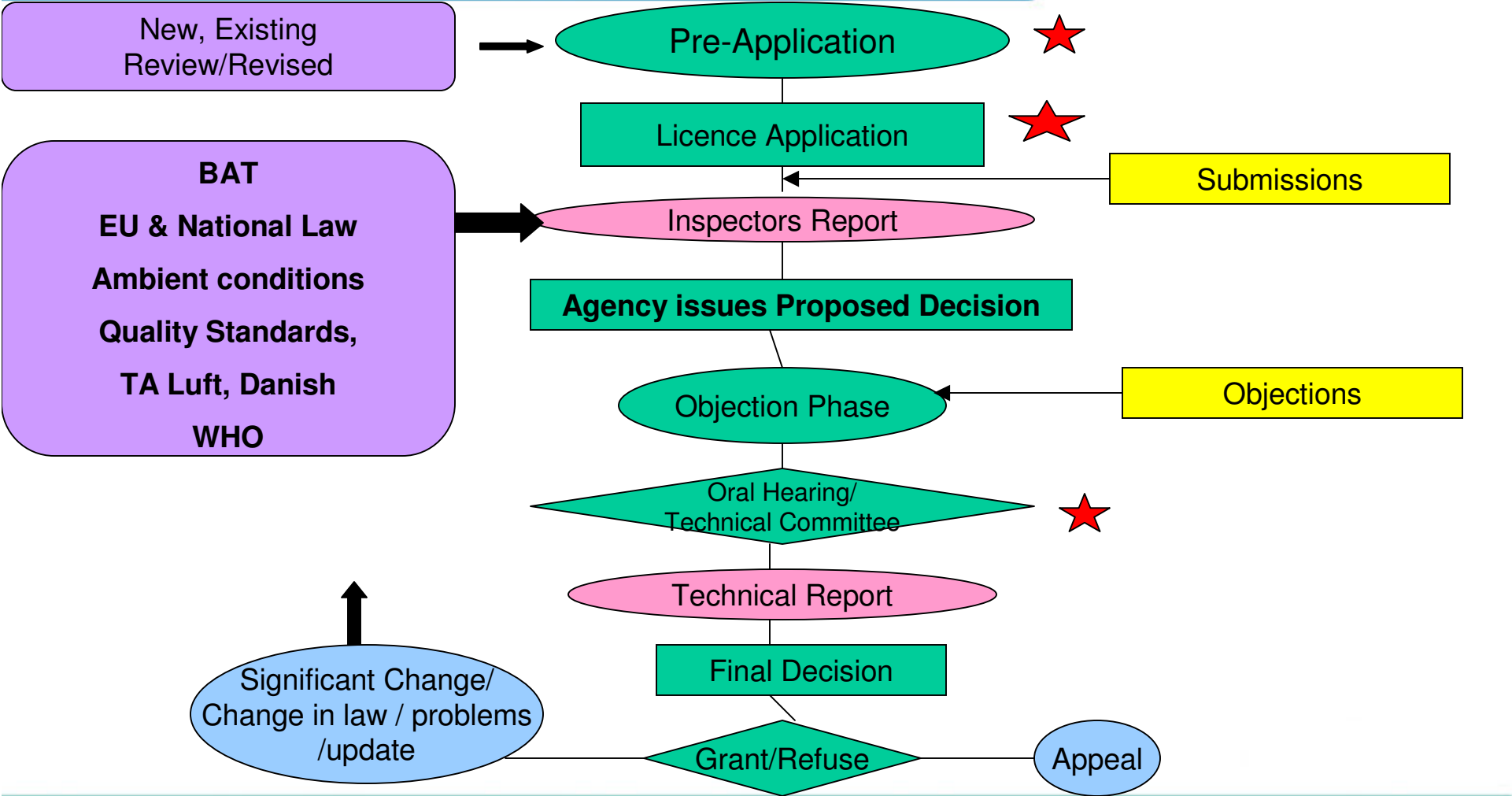
3rd Schedule of WMA 1996-2003, Disposal Activities

- Class 6: Biological treatment..... results in mixtures which are disposed of...
- Class 13: Storage prior to submission to any activity.....

EPA and Composting..contd..

- **EPA-Publishes and funds reports on key issues**
- Bioaerosols and Composting - A literature evaluation-draft report-Cré Members
- BAT guidance –odours- to be completed.
- BAT guidance for the waste sector: Waste Treatment Activities (Composting) to be completed.
- National Waste Database
- Assessment and Evaluation of Outlets of Compost Produced from Municipal Waste

Waste-Composting Licence Application Process



Licensed Compost Facilities in Ireland - update

- Limited no of composting facilities-licensed
- Planning Issues-DCC-St Anne's Park, Raheny
- Local opposition—composting facilities
- Many composting facilities are integrated with Transfer Station/Landfill
- Many permitted facilities may move into licensable quantities over the next number of years

Concerns re Bioaerosols from composting sites

- Bioaerosols-culturable-nonculturable-dead cells-toxins-aerosolised.
- Emerging concern-composting green waste-potential-negative effects on public health & workers.
- Concern-re spores of the fungus *Aspergillus fumigatus* (AF).
- AF-Group 2 pathogen-Biological Agents at Work Leg.- can cause human disease & might be a hazard to workers-unlikely to spread to the community-effective treatment available
- Most reported cases of aspergillosis-occurred in immunocompromised individuals.
- Instances of aspergillosis -healthy individuals -rare-even-occupations associated –exposures-high concentrations of airborne AF

Continued

- No occupational standards for bioaerosols-difficult to quantify the risk-lack of a defined dose-response relationship.
- 2-3 cases of human illness-caused by exposure to AF arising from composting sites-3,400 yard waste composting facilities, over 300 bio-solid composting facilities-in the U.S.
- While the risks to vulnerable individuals such as immunocompromised is greater from AF there is no evidence that the risk attributable to living near a composting site is greater than exist already anyway. Dr M. Hogan, Medical Expert-Bord Pleanála OH –Oct 04

Monitoring requirements- bioaerosols

- Background levels of bioaerosols-in order to establish background concentrations
- Monitoring of emissions to air-mesophilic bacteria and AF levels-annual

Operational controls - Bioaerosols

- Important-maintain-proper composting environment-minimise AF
- Moisture –windrows-50-60%.
- Clean site/damping down of yards/ surfaces.
- No turning in high wind speeds
- Training of facility operators- dust & bioaerosol
- Turning-2-3/week-decrease-AF-windrows.
- Negative pressure-emissions- pass-abatement equipment

Set –Back Distances-bioaerosols-composting sites

- 1994-Published-concentrations-AF-ambient levels-72 -152m-boundary-composting facilities.
- Recently-200 m-AF & mesophilic bacteria-background levels.
- UK EA - 250m. <250 m-RA -required.
- **EPA-<200m-nearest receptor-RA-required**

Concerns re Odour from composting sites

- Materials handling-composting process-reception/preparation, decomposition/maturation and final preparation or finishing, can give rise to diffuse emissions of odours.

- Potential sources of odour emissions arise during:
 - delivery of feedstock material;
 - preparation of materials, e.g. shredding;
 - exhaust air from closed/in-vessel decomposition;
 - anaerobic conditions in windrows or piles;
 - forming and turning windrows; and
 - leachate formed during the process.

Operational Controls-Odour

- **Control-feedstock materials delivered.**
- **Materials-composted-compatible-C:N ratio-20:1-40:1**
- **Prevent anaerobic conditions**
- **Clean operational areas regularly to prevent accumulation of potentially odorous materials.**
- **Place mature compost over static aerated piles to act as a bio filter.**
- **Control the air flow rate through aerated piles to meet demand and reduce fugitive emissions.**
- **Monitor the composting process to ensure optimum performance.**
- **Negative pressure-emissions- pass-abatement equipment**
- **Set-back distance**

Monitoring requirements-Odour

- Odour assessment-daily – subjective-logged daily
- Monitoring of emission to air- Quarterly-olfactometric

Regulatory requirements-Odour

- Prior to the date of commencement of the waste activities at the facility, the licensee shall install and provide adequate measures for the control of odours and dust emissions, including fugitive dust emissions, from the facility. Such measures shall at a minimum include the following:-
 - Installation of an odour management system as outlined in xx of the licence application.
- Emission Limit values for H₂S, Ammonia, Mercarpans

Concluding Remarks

The overriding concern of the EPA in licensing composting facilities and in the implementation of the Waste Management (Licensing) Regulations is to ensure that their use does not have an adverse effect on the environment including human health