

SUMMARY OF FINDINGS

STRIVE Report No. 22

Development of an Industry-Led Quality Standard for Source-Separated Biodegradable Material Derived Compost

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This research project developed an industrial-led compost quality standard for source separated biodegradable waste in order to promote the development of markets for compost in Ireland.

Background

In 2006, the Department of the Environment, Heritage and Local Government (DoEHLG) published the *National Strategy on Biodegradable Waste* (NSBW), which outlines a plan for reaching Ireland's landfill diversion targets. As a part of this plan, the establishment of a compost quality standard was identified as a necessity to develop and stimulate markets for compost-based products. The following year, the DoEHLG published the *Market Development Group 5-year Programme* to support the development of stable outlets and robust markets for recycled materials and goods manufactured from recovered waste materials, including compost. Recently, at European level, guidance was published by the European Joint Research Centre in its *End of Waste Criteria* report, which outlines the criteria to consider in a compost standard.

The purpose of project is to offer a quality standard for compost derived from source-separated biodegradable materials in order to promote the development of markets for compost based products on the island of Ireland as well as to protect human, plant, soil and animal health.

Other EU countries with an established composting infrastructure show that successful biowaste treatment must include meeting quality standards in order to control the use and guarantee the environmental safety of compost application within agricultural, horticultural and landscaping industries, by home gardeners and local authorities. The establishment of an industry-based compost standard supports the long-term growth of the industry and ensures product satisfaction to maintain consumer confidence. The market development process will lead to the overall expansion of the composting industry in Ireland by developing other means of revenue generation apart from gate fees.

Objective

The overall aim of this project was to collate the compost quality databases from Irish compost samples and compare them with databases and standards from other European countries to develop an Irish industry compost standard for source separated biodegradable materials.

Summary of Methodology

The following points outline the methodology used for developing the compost standard:

- Firstly, the results of laboratory analysis of 256 samples of compost from Irish compost facilities were collated.
- Statistical analysis was conducted on the database.
- Upper limits standards were determined for heavy metals, pathogens and impurities.
- Data on stability parameters were examined and compost samples from different compost facilities were tested using a new method for stability to create a stability standard.
- The criteria for a compost standard outlined in the *End of Waste Criteria* report were examined and the standard amended to take cognisance of missing criteria such as a minimum requirement of organic matter content in compost.
- A draft standard was presented to stakeholders in two separate consultative workshops.

Proposed Industry Compost Quality Standard for Ireland

Table 1 presents the proposed industry compost quality standard for Ireland.

Conclusions and Recommendations

1. The industry standard in this project should be developed into a national standard.
2. The industry standard developed by this project should be considered as a 'preliminary standard and should be updated as required during the transitional period while source-separated collection schemes and their corresponding treatment facilities are being established.

Table 1. Proposed industry compost quality standard for Ireland.

Heavy metals (mg/kg dry matter)

Mercury	0.4
Cadmium	1.3
Nickel	56
Chromium	92
Copper	149
Zinc	397
Lead	149

Pathogens

<i>Salmonella</i> (in 25 g)	0
<i>Escherichia coli</i> (cfu/g fresh mass)	1,000

Impurities

Total glass, metal and plastic >2 mm diameter by weight	0.5%
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Stability

Oxygen uptake rate (mmol O ₂ /kg organic solids/h)	13*
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Organic matter

Organic matter (% dry weight)	20% minimum
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**By 2014 there is an objective of a limit value of 10 mmol O₂/kg organic solids/h.*

3. This standard should not be restricted to compost derived from biodegradable municipal waste (BMW) materials alone, as this does not reflect the wide range of acceptable feedstocks permitted by waste permits and licences of composting facilities in Ireland. It is recommended that the industry standard be widened to include the source separated 'miscellaneous' category and other source-separated biodegradable materials that are individually assessed to be suitable, such as animal manures, food processing residuals, fish scraps and brewery or distillery residuals.
4. Around this industry standard or national standard, a voluntary compost quality assurance scheme (QAS) should be developed and audited by an independent third party. A QAS system would control the composting process of facilities, including acceptable raw materials, independent sample taking and the analysis of the compost by approved laboratories.
5. It is recommended that a list of acceptable source separated biodegradable material and bulking agents, to which the standard applies, be developed in a future QAS project. This list should be cognisant of the criteria outlined in the *End of Waste Criteria* report.
6. In the future QAS, sample frequency, sampling methods and the allowed deviation from the compost quality standard would be determined and standardised throughout Ireland.
7. Research should be conducted with the new stability test oxygen uptake rate (OUR) to determine limit values of the OUR test for different end uses of compost.
8. The data collated on the parameters that are mainly related to the beneficial qualities of the compost products (e.g. nutrients) should be used to develop guidelines on the use of compost in different applications.
9. The compost standard developed in this project is for compost manufactured from source-separated biodegradable materials. This standard is not applicable to MBT outputs.

For Further Information

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This report is published as part of the Science, Technology, Research and Innovation for the Environment (STRIVE) Programme 2007–2013. The full report is published by the EPA and is available from: <http://www.epa.ie/downloads/pubs/research/waste/name,26127,en.html>