

# **The Formation of a Draft Standard for Digestate**

IrBEA 12<sup>th</sup> Annual Conference  
Utilising Ireland's Natural Resource

Thursday 21<sup>st</sup> February, 2013  
Lyrath Estate Hotel, Kilkenny

## Outline

1. Background
2. Scope of work
3. Review of Existing Standards/QAS
4. Draft Standard
5. Public Consultation & Main Issues raised
6. Next Steps

## Background (1)

- Expected increase in the development of AD facilities throughout the country
- Lack of Standard related to the land application of digestate produced by AD facilities
- Irish BioEnergy Association (IrBEA) applied to rx3 for grant approval in 2010 for development of a draft standard
- Following funding approval, IrBEA tendered for consultant to aid in project delivery in April 2012
- FTC & ADAS (UK) appointed as consultant

## Background (2)

- Fehily Timoney & Company [www.ftco.ie](http://www.ftco.ie)
  - Cork & Dublin based consultancy specialising in:
    - Waste management
    - Renewable energy
    - Environmental sciences
    - Civil & structural engineering
- ADAS UK [www.adas.co.uk](http://www.adas.co.uk)
  - Extensive expertise in agronomic sciences, integrated crop management and biofuel production

## Background (3)

- Benefits of development of an AD Standard
  - Environmental protection
  - Licencing, permitting, regulation
  - Marketing/product development with potential for increased revenue
  - Confidence in digestate
- Challenges faced
  - Agreement/buy-in from all stakeholders
  - Interface with existing regulation

## Background (4)

- Why a 'draft' standard?
  - First step is to develop a Standard to the point of being ready to apply for standardisation
  - Once developed, a decision can then be taken, based on the outcome of the project, to take further steps in standardisation and/or QAS development

## Background (5)

### Aims

- To develop a Standard to draft format which :
  - is flexible & affordable
  - requires accurate monitoring & analysis of relevant parameters
  - can be adopted by all relevant regulatory bodies

### Purpose

- To ensure digestate is produced from suitable inputs & in an appropriate manner for a sufficient residence time
- To ensure process has been well managed and monitored so as to produce a material that meets market needs and protects the environment

## Background (6)

### *Scope of Work*

1. Initial stakeholder meeting
2. Desktop research of existing standards, relevant research and legislative impacts
3. Formulate a draft standard based on research and consult with Steering Committee (SC)
4. Public consultation with stakeholder on draft standard and register feedback



## Background (7)

- Initial stakeholder meeting on 14<sup>th</sup> June 2012 – Steering Committee elected; representatives included:
  - Operators
  - FSAI
  - EPA
  - Technology providers
  - Research
  - End Users
- 2 no. Steering Committee meetings held on 15<sup>th</sup> August 2012 & 20<sup>th</sup> September 2012

## Review of Existing Standards/QASs (1)

- Carried out a review of existing standards/QASs in place across Europe including:
  - UK – PAS110
  - Germany - BGK RAL
  - Sweden – SPCR 120
  - Belgium – VLACO
  - Switzerland – VKS
  - Austria – ARGE
  - Czech Rep – VKS-AIC
  - ECN QAS (proposed)
  - EU Eco-label
  - EC ‘Organic’ Regulation
  - 2<sup>nd</sup> Draft Biowaste Directive
  - I.S. 441 – Irish Compost Standard
  - End of Waste Proposals

## Review of Existing Standards/QASs (2)

Based on the review, items identified for consideration in the development of a standard were:

- Material type
- Input Materials
- Pasteurisation
- Hygienic indicator species
- Impurities
- Nutrients
- Other parameters e.g. EC, dm, pH
- Organic pollutants
- PTE's
- Stability
- Product labelling
- Process Management

## Review of Existing Standards/QASs (3)

### Digestate Analyses

- Examined sources from UK, Germany & Sweden
- Variety of feedstocks and comparison with standards identified
- Broadly indicative only – various means, medians, %iles of the number of samples
- Lack of Irish specific data available at present; future testing
- Achievement of Cu & Zn limits variable

## Review of Existing Standards/QASs (4)

### Relevant Legislation & Policy

- Environmental Protection – Water Framework Directive & Nitrates Directive
- Health – Animal By-products Regulations & FSAI report
  - Ongoing discussions with DAFM
- Waste Management – Legislation and Policy

## Review of Existing Standards/QASs (5)

### Other Relevant Information sources

- Quality, Safety & Use of digestate in UK agriculture
- IEA Bioenergy Tasks 24 & 37
- Sources related to biological stability
- Cranfield Risk Assessment
- Heavy metals in digestate
- EoW proposals
- NIEA Event

## Review of Existing Standards/QASs (6)

- Findings of the review of existing standards, digestate analyses, legislation and other information sources documented as a deliverable
- To be shortly available on IrBEA website [www.irbea.ie](http://www.irbea.ie)

## Outline of Draft Standard (1)

### Proposed Structure of draft Standard

#### Draft standard to address:

- Materials type
- Input materials (list of materials, exclusions)
- Pasteurisation requirements (& Hygiene indicators)
- PTEs – type & limits values
- Stability
- Nutrients
- Other parameters inc. organic pollutants
- Process Management (sampling frequency & extent)
- Parameter testing methodologies

#### Recommendations for QAS:

- Input Materials (additives, feedstock agreements, inspections, testing, etc)
- Process management (QMS, HACCP, storage & transportation, validation, test failure, sampling methodology)
- Product Labelling



## Outline of Draft Standard (1)

### Section 1 – Introduction

- frame the background to the standard
- aims, purpose, use of standard outlined

### Section 2 - Scope

- applicable to ‘source segregated, separately collected biodegradable waste materials and non-waste materials’
- applies to whole digestate, separated fibre and separated liquor

## Outline of Draft Standard (2)

### Section 3 – Normative references

- identify test methodologies proposed

### Section 4 - Definitions

- outlines range of definitions for terms presented in the standard
- sourced from legislation, guidance document, relevant publications

## Outline of Draft Standard (3)

### Section 5 – Input materials

- Characteristics of input materials
  - biodegradable of animal/vegetal origin
  - segregated at source
  - collected separately
  - feedstock agreement required
  - in compliance with waste licence/ABP licence
  - Biodegradable plastics to be verified as per identified standards

## Outline of Draft Standard (4)

### Section 5 – Input materials

- Feedstock agreement
  - must be in place
  - identifies the means by which the quality of the input material is ensured
  - not required where an agricultural based AD facility accepts input material produced at that premises only
- Exclusions
  - mixed municipal waste or derived materials – definition
  - inhibitory substances – fungicides, paints, oils etc

## Outline of Draft Standard (5)

### Section 5 – Input materials

- Additives
  - only serve to improve AD process or environmental performance
  - not for dilution of characteristics outlined in standard

### Section 6 – Quality & Testing

- Sampling
  - Sampling frequency post validation outlined dependent on input material type and total feedstock input
  - Actions in event of test failure addressed

## Outline of Draft Standard (6)

### Section 6 – Quality & Testing

- Quality
  - time/temperature parameters to ensure hygenisation identified, limit values for indicator species
  - limit values for weed seeds, PTEs, impurities
  - means of assessing maturity and nutrients
  - dry matter, organic matter, pH & EC
  - requirement for quality declaration

## Outline of Draft Standard (7)

### Elements of a Digestate QA scheme

- Propose initial validation followed by ongoing QA as means to demonstrate adherence with standard
- Input materials
  - non-exhaustive list
  - feedstock agreement requirements
  - identification of additives

## Outline of Draft Standard (8)

### Elements of a Digestate QA scheme

- Process Management
  - QMS requirements
  - HACCP
  - sampling requirements
  - hygenisation
- Other elements
  - QA scheme – validation and maintaining
  - ammonia volatilisation
  - maturity testing



## Consultation (1)

- Draft standard issued to industry for consultation on 21<sup>st</sup> November 2012 via [www.irbea.ie](http://www.irbea.ie) ; responses received by 12<sup>th</sup> December 2012
- 13 responses received and circulated – responses welcomed
- Public Meeting held on 17 January 2013 to discuss main outcomes of the consultation process

## Consultation (2)

- Main outcomes:
  - Queries in relation to testing methodologies
  - Suggested amendments to definitions
  - Clarification on the inclusion of sewage sludge
  - Suggested alternatives to sampling classification
  - Pasteurisation not to apply to non-ABP
  - PTE limits – absolute limits, micronutrient, application based on dry matter
  - Stability testing vs. maturity testing
  - Nutrients – contribute to livestock 170 kg N per ha

## Next steps

- At the stage were there is a draft standard in place but further assessment needed to determine the practicality of the proposed draft standard including:
  - Assessment of all test methodologies proposed
  - Field test for N losses
  - Trials with Irish Digestate
- Responsibilities
  - IrBEA ownership
  - Funding required to progress

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**Thank You**