Evaluating PAS110, the Anaerobic Digestate Quality Protocol and ASRS

Edinburgh 12th December
Bristol, December 13th
London, December 15th
Review or evaluation?
Review or evaluation?

- Quality Protocol is being reviewed
  - This process is led by the EA
  - Changes will probably need to be notified to Europe
- PAS110 is being evaluated
  - EU EoW process is underway
  - Need to ensure that the PAS remains fit for purpose
  - Streamlining the actual review process
Context
PAS110

- Source-segregated inputs
  - Packaged food wastes
- Pasteurisation step needed for most processes
- Process and output parameters consulted and agreed with industry
  - Indicator pathogens, PTEs, stability, physical contaminants and agronomic declarations
- Digestates from anaerobic processes only
Since PAS110 was published

- Two plants certified
  - Around a dozen more on the scheme
- WRAP / ZWS AD technical programme
  - PAS110 / agriculture risk assessment
  - Biofertiliser matrix
  - Minimal toxicological risks mean that pasteurisation is used as main category
  - QMS and RTA have their own matrices
AD Quality Protocol

- The Waste Protocols project and its aims
- Quality Protocol development process
- Quality Protocol requirements
- WPP now and looking ahead
The Waste Protocols Project Partners

- WRAP
- Environment Agency
- DEFRA
- Lywodraeth Cynulliad Cymru (Welsh Assembly Government)
- NICA
- Industry
Barriers for Industry

The waste label = red tape = lack of customer confidence = uncertain markets = difficulty securing investment.
What does a Protocol achieve?

**Regulations**

**Waste Treatment**
- **Acceptance:** Duty of Care / Hazardous Waste
- **Treatment:** Environmental Permit / Exemption / Low Risk Position

**Movement from Site**
- Duty of Care and Registered Waste Carrier

**End Use**
- Environmental Permit / Exemption / Low Risk Position
End of Waste

Waste Treatment

Acceptance:
Duty of Care / Hazardous Waste

Treatment:
Environmental Permit / Exemption / Low Risk Position

Quality Protocol

Movement from Site
Non-waste

End of Waste

End Use
Non-waste
How is a Protocol achieved?

Inputs

Evidence Gathering

Risk Assessment
Financial Impact Assessment
Technical Report

Technical Advisory Group:

Industry

Environment Agency
End of waste?

**Environment Agency**

Evaluate the evidence

**Outputs**

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**Position statement**

The environmental regulation of the production and use of tyre-derived rubber materials

- Purpose of the position statement:
  - A quality produced with assurance of end-of-waste criteria for the purpose of a quality control system to facilitate reuse or recycling. As the Quality Protocol is intended for use with Double and Quadrotor systems, it is essential that materials are manufactured to meet these criteria.

- The position statement provides clarity on how to regulate:
  - The classification and processing of waste tire (distinct from the production of前所未有 products)
  - The evaluation of rubber material that meets the requirements of the Quality Protocol
  - The identification of rubber materials that do not meet the requirements of the Quality Protocol

- The position statement also outlines the conditions and factors that must be considered when determining whether a material qualifies as waste or non-waste.

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**Anaerobic digestate**

End of waste criteria for the production and use of quality outputs from anaerobic digestion (i.e., biogas and associated bio-solids waste).
Quality Protocol Requirements

Waste Inputs

Standards

Records Management

End Uses

Good practice

Certification Scheme
Summary

- Purpose to determine point of end of waste
- Based on robust evidence for key documents to be produced
- Partnership working between EA, WRAP and industry
- Results in
  - improved quality
  - reduced regulatory burden and cost saving
Current status

- Waste Protocol Programme ‘closed’
- Finalise outstanding QPs
- Reviews – every 2 years
EU End of Waste Proposals

- Revised Waste Framework Directive
- Introduces new procedure for defining end of waste
- Biowaste chosen as one of the first wastes to be developed
- Others finished include ferrous metals and copper.
What does it mean

- It will be a pan European set of criteria – ie the same for every one.
- The UK is the only member state to have developed its own end of waste process.
- Others have existing standards and certification schemes.
- The European criteria will eventually replace the UK criteria.
Expert meeting in Seville

JRC submit revised proposals to Commission

Possible discussion of draft regulation at EU Technical Adaption Committee

Responses to JRC Questionnaire

Commission to draft legal text (regulation/decision)

Draft regulation agreed

11 Jan

Possibly by May/June

June

End 2012/1st half 2013
The process so far

- Initial documents circulated in March
- Technical group discussion
- Request for loads of information
- Second document circulated in October just before the second working group
- New questionnaire issued November
- No new document.
Where are we now

- JRC need response to the new questionnaire by 11th January
- This relates mostly to digestate but covers some other issues.
- Separate spreadsheet on the waste types to be allowed under the positive list
- If you would like to see the documents please contact Rachel who will send them to you.
- Please send any thoughts, data and information to your REA, AFOR or ADBA who will collate them.
- We are asking JRC for a bit more time.
Things we know

- Proposal is QP shaped…..
- ....but detail is different
- Positive list
- QMS
- Set determinand list

- We have quite a lot of the data that they are asking for but not all.
But –

- Some determinands different
- Some use different methods
- Some have different limit values
- Difference in required reporting and information to be supplied to the customer
- Determination of sampling regime is left to regulator and certifying body.
- Sewage sludge and MBT residues are excluded.
Things to do between now and Christmas

- Please look carefully at:
  - The positive list
  - The individual questions in the questionnaire
  - The specific requirements for QMS

- Provide any information at all on impact assessment (question 24)

- Likely to go back to JRC and tell them that this it is not possible to undertake a full impact assessment in the timescale and we will continue to do this separately.
ADQP review
Source-segregated biodegradable materials
## Appendix B

### B.1 Waste types acceptable for the production of quality digestate

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Description</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Food waste</td>
<td>Organic waste from households, including food scraps and garden waste</td>
<td>Additional processing required for recycling or energy recovery.</td>
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<tr>
<td>Biowaste</td>
<td>Organic waste from agricultural and horticultural activities</td>
<td>Suitable for composting or anaerobic digestion.</td>
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<tr>
<td>Paper and cardboard</td>
<td>Recyclable materials</td>
<td>Processing required for recycling.</td>
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<td>Textiles</td>
<td>Garment waste, including cloth and fabric</td>
<td>Suitable for recycling or composting.</td>
</tr>
<tr>
<td>Plastic</td>
<td>Packaging and household waste</td>
<td>Suitable for recycling or energy recovery.</td>
</tr>
<tr>
<td>Metal</td>
<td>Scrap metal</td>
<td>Suitable for recycling.</td>
</tr>
<tr>
<td>Glass</td>
<td>Bottle and container waste</td>
<td>Suitable for recycling.</td>
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### B.2 Waste types not acceptable for the production of quality digestate

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<td>Waste containing substances harmful to health or the environment</td>
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<td>Domestic waste</td>
<td>Paper, cardboard, textile, and glass</td>
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<td>Medical waste</td>
<td>Waste containing biological or chemical substances</td>
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### B.3 Waste types unacceptable for the production of quality digestate

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Inputs - issues for the review

- Clarification and oversights e.g. codes
- Additional inputs
  - Which wastes?
  - What issues?
  - What evidence?
End uses – designated market sectors

- Agriculture, forestry and soil/field-grown horticulture; and land restoration

- Issue for the review - additional uses?
  - Which uses?
  - What issues?
  - What evidence?
End of waste & record management

Waste Treatment

Acceptance: Duty of Care / Hazardous Waste

Treatment: Environmental Permit / Exemption / Low Risk Position

End of Waste

Movement from Site
Non-waste

End Use
Non-waste

Quality Protocol
Reminder – start of a process

- Evidence gathering
- Develop proposals
- Public consultation
- European ‘notification’
Additional Scheme Rules for Scotland (ASRS)
Additional Scheme Rules for Scotland

David Collins
Biofertiliser Certification Scheme

12th December 2011

http://www.biofertiliser.org.uk
Digestate Standard

Why?
Renewable Energy Assurance Ltd

- wholly owned by REA
- REAL Code of Conduct for renewable energy installers who are MCS certified
  - The Microgeneration Certification Scheme certifies microgeneration technologies used to produce electricity and heat from renewable sources.
  - The MCS is also linked to financial incentives which include Feed in Tariffs.
- REAL Green Gas Certification Scheme
- REAL Biofertiliser Certification Scheme (PAS110 & ADQP & ASRS)
Current ASRS - SEPA Position for Digestate Producers for End of Waste

- Specifications contained in PAS110
- Conditions of the SEPA Regulatory Position
- Certain conditions extracted from the ADQP:
  - Appendix A – Definitions
  - Appendix B – List of Biowastes (EWC)
  - Appendix F – Records to be kept
  - Appendix G – Supply documentation
REAL Contacts

David Collins - dcollins@r-e.a.net
07973 111 972
Ciaran Burns - cburns@r-e-a.net
REAL CEO Virginia Graham

http://www.biofertiliser.org.uk
http://www.biogas.org.uk
PAS110 evaluation
Have we thought of everything?

- Residual Biogas Potential test
- Pasteurisation requirement
  - For non-ABP inputs
- PTE limits
- Any other topics?
Topics arising at other workshops

- Dry digestion – does it fit?
- TAD – does it fit, and do we know enough about quality?
- Storage / coverage requirements
- Sampling processes / protocols
- Distillery wastes – different pasteurisation / test suite?
- Acceptability of food wastes in glass / glass limits
- Corn starch bags
- Meaning of the word ‘arising’ wrt imported produce
- Status of digestate between commissioning and PAS accreditation?
Residual Biogas Potential Test

- Designed to show stability as a proxy for prior digestion
- Limit based on RBP of small number of other land-applied materials (livestock slurries)
  - No permitted variance developed
- Test does not formally consider environmental outcomes
Questions: RBP test

- What are the issues with the current test?
- RBP limit?
  - If so – why, and how should it change?
- Cost of test?
- The test does not deliver real-time feedback to AD operators who may be adjusting permitted feedstocks to maximise gas yields
- Separate process and product tests?
Pasteurisation requirement

- Intended to minimise risk from microbiological hazards
  - Human, animal and plant
- Applies to all AD processes within PAS110
  - Except where inputs arise, are digested and used on the same holding
- Site-specific criteria set by AHVLA
- Non-ABP operators can opt for one of the three standard approaches in the UK ABPRs
- No deference to thermo or mesophilic
Questions: pasteurisation

- CAPEX and OPEX
- Seen as important by those who influence digestate markets
- Not required for non-ABP inputs when digestates spread as waste (non-PAS110)
- Should some input materials be exempted?
  - If so, which and why?
- Could ‘pasteurisation equivalence’ be allowed, or a wider range of options?
## Pasteurisation – ABPR

<table>
<thead>
<tr>
<th>System</th>
<th>UK A*</th>
<th>UK B*</th>
<th>EU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum particle size (mm)</td>
<td>50</td>
<td>60</td>
<td>12</td>
</tr>
<tr>
<td>Minimum temperature (°C)</td>
<td>57</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Minimum time spent at minimum temperature (hours)</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Applies to catering waste only, and must be followed by minimum 18 days storage*
### Pasteurisation – sewage sludge

<table>
<thead>
<tr>
<th>Process</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sludge Pasteurisation</strong></td>
<td>Minimum of 30 minutes at 70°C or minimum of 4 hours at 55°C (or appropriate intermediate conditions), followed in all cases by primary mesophilic anaerobic digestion</td>
</tr>
<tr>
<td><strong>Mesophilic Anaerobic Digestion</strong></td>
<td>Mean retention period of at least 12 days primary digestion in temperature range 35°C±3°C or of at least 20 days primary digestion in temperature 25°C±3°C followed in each case by a secondary stage which provides a mean retention period of at least 14 days</td>
</tr>
<tr>
<td><strong>Thermophilic Aerobic Digestion</strong></td>
<td>Mean retention period of at least 7 days digestion. All sludge to be subject to a minimum of 55°C for a period of at least 4 hours</td>
</tr>
<tr>
<td><strong>Lime stabilisation</strong></td>
<td>Addition of lime to raise pH to greater than 12.0 and sufficient to ensure that the pH is not less than 12 for a minimum period of 2 hours. The sludge can then be used directly</td>
</tr>
</tbody>
</table>
# PTE limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Upper limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy metals / potentially toxic elements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>mg/kg dry matter</td>
<td>1.5</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>mg/kg dry matter</td>
<td>100</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>mg/kg dry matter</td>
<td>200</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>mg/kg dry matter</td>
<td>200</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>mg/kg dry matter</td>
<td>1.0</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>mg/kg dry matter</td>
<td>50</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>mg/kg dry matter</td>
<td>400</td>
</tr>
</tbody>
</table>
Questions: PTE limits

- Limits are on a dry matter basis
  - Whole and liquor digestates have very low DM, making it difficult to guarantee passes
  - However, PAS110 includes an option for SUA application limits to be used

- Should the SUA opt-out remain?
- Are there any alternatives?
  - If so, what should the limits be?