

Action and discussion points arising from a series of workshops on the AD Quality Protocol (ADQP), PAS110, and Additional Scheme Rules for Scotland (ASRS)

Edinburgh 12th December, 2011

Bristol 13th December, 2011

London 15th December, 2011

Residual Biogas Potential Test
1. AD facilities accepting food wastes are producing digestates that are close to RBP limit, and can't be sure that they will pass. This uncertainty means that operators have to operate parallel product and waste spreading regimes – adding substantial cost (and market uncertainty)
2. Despite feedback to the contrary, OU confirm that most digestates pass the current test limit
3. The RBP test was designed to handle digestates taken from storage - not sampled from the digestion vessels. If operators wish to sample from the end of the 'active' process (as is permitted within PAS110:2010), then the limit would need to be adjusted accordingly
4. A clear statement from the environmental regulator was requested, as to why RBP was needed for product digestates but not waste digestates. Initial feedback was that this is needed to demonstrate that wastes had been subjected to a recovery process – which isn't needed when handling wastes
5. Need to be clear what the purpose of the current test is. If to demonstrate that digestion has occurred, are other approaches better?
6. There was general consensus that it is important to demonstrate that digestion has occurred, and also to demonstrate that negative outcomes from the use of digestates are avoided (eg by controlling VFA loadings in digestate). This could mean that two or more separate tests are appropriate to demonstrate different digestate characteristics. For example: One to demonstrate that the process has taken place, and one to show that digestate will not harm the environment in use. Samples for separate tests could be taken at different points in the overall process
7. Need to understand impacts of VFAs on soils, since this could provide the necessary 'environmental outcome' test to sit alongside the 'process outcome' RBP test
8. Could waste data flows and OFGEM returns be used to demonstrate that full recovery had taken place?
9. With gate fees going down and electricity prices going up, it was suggested that 'sham' recovery was unlikely to be taking place
10. A number of parameters are already routinely monitored to check process operation - could these be used instead of RBP?
11. Carbon in and carbon out instead of RBP?
12. Could just test whole digestate (since this would demonstrate that a digestion process had taken place) and not test separated fractions
13. Need to look at historic data and re-evaluate test, as well as examining the slurry baseline data to determine whether they remain valid
14. Need to review current RBP data and undertake repeatability trials
15. Is there a quicker / cheaper RBP equivalent / alternative? For example: Does VFA monitoring have anything to offer in terms of process monitoring? Is there an in-line test to predict stability? How do VFAs relate to RBP?
16. Is there a direct or indirect test that could correlate with and predict eventual digestate stability?
17. Evaluation of data on a site-by-site basis is needed to understand why some facilities pass and some don't. Current gross failures may indicate that the AD process is inhibited (and could fail).

Minor exceedances should possibly not be a problem
18. Look at RBP sampling intervals during validation. Need to demonstrate consistent process, but it current approach too restrictive / insufficiently restrictive? Could EU EoW approach give a steer?
19. Length of current test means that digestate may have been spread before failure is identified. EA and BCS need to discuss the implications of this and develop a clear approach
20. Need for full retention time between samplings (during validation) is hard – could it be streamlined?
21. Could we have a system that allowed x out of y passes, with any failure below a secondary limit (as with <i>E coli</i> monitoring for ABPR compliance)?
22. Do storage conditions impact on digestate stability?
23. Clearer guidance was requested on corrective actions, and how these might be used to maintain certification status in the event of single test failures
24. Is RBP suitable for aerobic digestates, or is an alternate test needed?
25. What would the impacts of the different EU test be?
Pasteurisation
1. More flexible approach to pasteurisation requested – the general feeling being that it should be up to the plant to demonstrate that their approach is effective
2. Could thermophilic plants be exempted from additional pasteurisation requirements? Need to better understand impacts of thermophilic processes on pathogens of interest
3. Bear in mind that 74C for 4 hours is recommended to sanitise some resistant plant pathogens, so current 70°C 1 hour approach may not be 100% protective
4. Investigate use of indicator organisms in non-ABP facilities. Tricky if we're looking for the microbiological processes to guarantee sanitisation – since biology will vary between digesters. Thermal effects are simpler to model and monitor, but the current validation techniques for alternative transformation approaches are better suited to composting than AD facilities
5. Create a slightly more expansive table for time / temp / particle sizes for pasteurisation equivalence - eg through reference to Bendixen report ¹ ? Talk to AHVLA about possible alternative validation approaches. Generally acknowledged that pasteurisation is understandable and desirable
6. Pre-pasteurised materials should be exempted from subsequent re-pasteurisation. Need to define pre-pasteurisation in such cases (eg dairy wastes, distillery wastes)
7. FYM / slurry should be exempted from pasteurisation, since they can be spread on other farms without treatment
8. Purpose-grown crops (grass silage, maize silage, beet, whole crop wheat) should be exempted from pasteurisation. Whilst evidence is clear that MAD controls <i>Fusarium</i> , there is still a need to ensure any other hazards are considered before changing current approach
9. Vegetable trimmings / discards should be exempted from pasteurisation, since they could otherwise be fed to livestock or spread to land untreated
10. Continuous / semi-continuous pasteurisation should be permitted so long as they demonstrate adequate control
11. Could uncontaminated but pre-pasteurised (packaged) foods be exempted from pasteurisation requirement? Thought unviable by most
12. How do current pasteurisation requirements fit with farm co-operatives?
13. Could aerobic sanitisation stages be allowed in an anaerobic process? Probably 'yes' if process impact can be adequately demonstrated

¹ Bendixen H J (1999). *Hygienic safety-results of scientific investigations in Denmark*. In: IEA Bioenergy workshop: Hygienic and environmental aspects of anaerobic digestion: Legislation and experiences in Europe. Conference proceedings ISBN 3-930511-65-7

PTE limits
1. How do you monitor a 10 year rolling average (as permitted within the Sludge Use in Agriculture Regulations)?
2. Does SUA opt-out need to remain place? Could look at PTE / nitrogen relationships to limit total PTE loading through N limits (or P limits)
3. COGAP will limit application rates of digestate, and hence PTE loadings
4. Can PTE data / limits be made in mg/l instead of mg/kg DM?
5. Soil sampling requirement should be removed from QP, but could still be recommended as good practice?
6. Care is needed when presenting data, since it is easy to forget that (whole / liquid) digestates have low DM contents, and that a 'high' PTE number is probably irrelevant in real risk terms
7. Cadmium inputs from manufactured fertilisers are likely to much higher than from digestates
Thermophilic Aerobic Digestion (TAD)
1. BCS to visit TAD facility to understand whether current scheme fits – since major changes probably need to be approved by UKAS, which is not time efficient
2. More data needed on quality of TAD outputs to understand whether they can be included in PAS110. Need to understand how tightly defined TAD is, and whether it includes processes such as waste water treatment – since these were considered less desirable
Storage
1. Discuss regulatory approach to offsite / onsite storage of waste / non-waste digestates - particularly with referent to requirements to cover material
2. Further guidance on what constitutes covered storage (feedback indicated that coverage was good as it kept out water while keeping in ammonia and odours. Also better ensured that user got what they wanted).
3. Why cover fibre digestates?
4. Should covered storage be required for digestates that are dry and stackable (such as pressed cake)? The need to build permanent storage could negate the C-benefits associated with the material (Bill Griffiths to send in more information on this)
5. Retro-fitting covers onto existing storage tanks is costly and not always possible
6. Definition of storage vs delivery needed. Deliveries may be placed into temporary storage for just a few days prior to spreading – would this be captured by a coverage requirement?
Sampling
1. Clearer sampling guidance for all fractions
2. Is it possible to split sampling points, so that samples to demonstrate stability (ie process) may be taken immediately upon completion of the process, whilst samples for product quality could be taken from storage (or end of process during busy periods). SOPs could / should have flexibility to allow for both, but it's uncertain whether the current limit values adequately account for both options
3. Is it possible to reduce the time between sampling intervals during process validation? Particularly relevant to RBP test
4. Need to ensure that sampling adequately covers possible process variability – do current data show us whether feedstocks are varying significantly across a calendar year?

5. If inputs 'significantly change' then the process should be re-validated. What does 'significant change' mean?
6. Is 'point of despatch' adequately defined, since this is where samples are currently taken?
7. Flexibility in sampling intervals (for RBP) could be abused by some operators, who could deliberately sample material that had been in store for longest
Other
1. WRAP to circulate EU EoW EWC list, comparing with ADQP and CQP input list
2. Do local authority contracts / procurement approaches impact on starch / plastic bags used for collecting food wastes?
3. Investigate costs of PAS110 compliance for smaller scale plants: both CB and analytical costs. Would a different test suite be appropriate?
4. There is a proposed CLA positive list for inputs that (it is suggested) could be subjected to lighter-touch regulation. This list and its implications / potential are being discussed as part of the Defra / DECC AD Strategy and Action Plan
5. Good practice guidance for odour management during spreading? (Some facilities are already looking at precursor compounds as predictors of eventual digestate odour - more work could have industry-wide benefit)

ADQP / Additional Scheme Rules for Scotland
1. Clarity needed on glycerol EWC description (appropriate / acceptable sources) and starch (as a by-product from pharmaceutical processes)
2. Some differences in ADQP and CQP EWC descriptions / acceptance of caddy liners. Clarity / consistency sought
3. Are wool dust / fibres acceptable? Need to clarify whether already captured on EWC list
4. Are natural cotton fibres / dust acceptable? Need to clarify whether already captured on EWC list
5. Is natural fibre clothing acceptable? Need to clarify whether already captured on EWC list
6. Domestic horticulture / turf / growing media markets for digestate?
7. Could digestates be supplied into amenity markets, such as sports turf?
8. Some novel markets might be commercially confidential. How can these be considered for inclusion in the QP, or are they best addressed through the EA 'end of waste' panel?
9. Clarity over storage requirements for separate digestate fractions
10. Could user record-keeping become a recommendation, rather than compulsory for AD operators?
11. Where does digestate as a fuel sit?
12. Does a requirement for digestate users to seek advice from FACTS-qualified advisors need to stay in the QP, or could this become a recommendation?
13. Should record keeping become a case of batch control, rather than field-by-field control? Coca-cola recalls were given as a useful comparator
14. If changes to farmers' record keeping are required, depending upon whether digestate is product or waste, then this needs to be made as clear as possible
15. Need to clarify whether animal manures are ABP for the purposes of the ADQP input list – since they are currently lumped with green wastes in 20 02 01, and no ref is made to ABPR in the description provided
16. Need to ensure consistency in lists between ADQP and CQP
17. SEPA / NFUS 'Scottish Regulator' panel to consider new inputs (additions to baseline ADQP list)
18. SEPA to examine user/traceability requirements with BCS. It shouldn't be necessary to trace the use of a product