BCS Position on Technical Requirements

The Biofertiliser Certification Scheme interpretation of PAS 110, the Anaerobic Digestate Quality Protocol, the Anaerobic Digestate Resource Framework, NRW's Guidance Note 023, SEPA's WAS-G-DEF, and BCS Scheme Rules requirements

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This document has been developed to assist you to comply with the Biofertiliser Certification Scheme requirements. The aim is to provide clarification on some of the technical aspects of PAS 110, the Anaerobic Digestate Quality Protocol (ADQP), the Anaerobic Digestate Resource Framework (ADRF), NRW's Guidance Note 023 (GN023), SEPA's WAS-G-DEF-07 (SEPA's RPS), and the BCS Scheme Rules (latest version). The interpretation given in this document have been discussed and agreed with the certification bodies and their inspectors. Final comments are sought from the BCS Technical Advisory Committee, comprising of scheme stakeholders, before finalising and publishing any new sections.

Please note that this is an open document, and we will add new sections when required.

We recommend that you liaise with your certification body if you need any further clarification.

Contents

Key changes from the previous version

- Addition of references to NRW and SEPA's EoW position requirements
- Addition of sections 18 (Changing the screen to decrease the aperture size, 19 (Testing digestate made from the producer's/co-operative's own materials and used by the producer/co-operative for physical contaminants, 20 (Co-storage of certified liquid digestate outputs produced by the same operator on the same site), 21 (Training on PAS 110 requirements) and 22 (Internal auditor training)
- ~~Addition of references to ADRF requirements~~
- ~~Changed 'NRM' to 'Approved Laboratories'~~
- ~~Restructure of document with new sub-sections~~
- ~~Addition of references to relevant clauses in PAS 110, ADQP, and the BCS Scheme Rules~~
- ~~Removal of former section 15 (Sample transport and storage requirements)~~
- ~~Addition of recommended guidance to give contractors in each country of the UK in section 15~~

1. TRACE ELEMENTS

Clause 6.1 of PAS 110 states: 'Reasonable care shall be taken to avoid any contaminated wastes, products or materials from becoming included with the input materials.'

Question: "Is it necessary to have a supplier agreement for any trace elements added to the digester or can it be defined as a 'process additive' in the SOPs, including naming of the specific product and supplier?

Purpose of use: optimization of biogas yield.

Rate of use @ The farm: add 600 grams to 50 tonnes / day inputs to digester."

REAL BCS's interpretation

Section 6 of PAS 110 is intended for biodegradable (definition 3.7) input materials so does not address the process additive above. However, it would appear to be covered by the general term in clause 6.1. The product can be used as described. Details of the additive, preferably supported by a manufacturer's data sheet, shall be recorded and available for inspection.

2. CHANGE OF SLURRY TYPE

Clause 4.8.5 of PAS 110 states: 'If any significant, non-temporary, change in input materials, production process management or required digestate quality occurs, the production process shall be revalidated (see Note for guidance).'

Background: The pig slurry currently fed into the digester equates to approx. 3.8 % of total input to the digester each day. The remainder of total input per day is liquidized, de-packaged food waste. It is proposed to switch from pig to cow slurry during the PAS 110 validation process; this does not appear to represent 'significant change' having considered the slurries' dry matter characteristics and that the proportion mixed with food waste is low on a vol/vol basis. We do not expect any change to how we operate the AD process nor a significant/material impact on the test results of the separated liquor and fibre fractions.

REAL BCS's interpretation

Significant change is a matter of interpretation, and can relate to input materials, production process management, required quality of digested materials or other factors that affect their quality. If the producer has applied to a certification body for initial or renewal certification, an interpretation of the BCS Scheme Rules may be sought.

The changes concern inputs of animal slurries with broadly similar generic characteristics, which do not necessitate significant changes to the production process management. Therefore, it is advised that the feedstock changes will not affect the validation process. An example of a significant change would be where food wastes are introduced for the first time into a plant previously using only animal slurries.

3. PATHOGENS

Refer to clauses 10.2, 10.3, 10.4, and 10.5 of PAS 110.

Question: “Pathogen testing according to ABP regulations & PAS 110 requirements - which pathogen indicator species?

Under current arrangements for quarterly ABPR testing the plant analyses pasteurized digestate for Enterobacteriaceae and Salmonella spp. The operator is not currently required to test for E. coli for ABPR approval. As long as these pathogen indicator species continue to be accepted by the Animal Health vets, can the ABPR test results be used for PAS 110 assessment purposes? Note that NRM offer both alternatives; Enterobacteriaceae and Salmonella spp. OR E. coli and Salmonella spp.”

REAL BCS’s interpretation

If pathogen sampling is taken in accordance with ABPR then no further tests are required as long as they comply with PAS 110:2014 sections 10.2, 10.3, 10.4 and 10.5, which state that the materials must be “sampled after full treatment……when it is ready for use”. If the plant pasteurises after the digestion process, it would fall into this category.

It is understood that the term Enterobacteriaceae refers to a large family of bacteria, including pathogens such as Salmonella and Escherichia coli.

3.1 Timing of sample taking

Refer to clauses 10.3, 10.4, and 7.2 of PAS 110.

Question: “Our facility and whole digestate has full approval from the Animal Health vets. To date, we have been testing only the whole digestate, before the separation stage. However, this is too early given PAS 110’s requirements, and it is the whole digestate that is sampled rather than, individually, the separated fibre and liquor fractions.

To enable us to use the ABPR test results for demonstrating PAS 110 compliance on pathogen tests, we intend to request permission from the vets to test pasteurized digestate after separation, specifically the separated liquor fraction and, separately, the separated fibre fraction. Please confirm that such change would enable the pathogen testing efficiency we seek or let us know an alternative way to proceed.”

REAL BCS’s interpretation

The above procedure would be acceptable under BCS.

3.2 Laboratory used for pathogen tests

Clause 10.9 of PAS 110 states: ‘Each sample tested in order to demonstrate compliance with this PAS shall be tested by a laboratory that has no conflict of interest with the producer.’

Question: “The plant uses a DEFRA approved laboratory (which is not a REAL BCS Approved Laboratory) to carry out pathogen testing. Can the plant continue to use the laboratory for the pathogen tests, as evidence towards PAS 110 compliance (assuming they continue to offer the indicator species required by the vet)?”

REAL BCS’s interpretation

Where (as above) the ABPR pathogen tests fall within PAS 110, a DEFRA approved laboratory would be acceptable. If new tests were required, then only a REAL BCS Approved Laboratory would be acceptable at present.

4. BATCH SIZE OF SEPARATED LIQUOR AND SAMPLING POINT

Question: “The plant is currently operating using one pasteurization unit and expect to be operating an additional pasteurization unit (in parallel) early next year. Whole digestate pumped out of the digestion tank will go through the available pasteurization unit (for treatment to EU ABP standard) and afterwards pumped into the pre-separation holding tank.

It is suggested that the batch sample size for separated liquor is 96 tonnes, which equates to 48 tonnes digestate/day processed through each pasteurizer. Each pasteurizer has capacity for 4 tonne batches and can process 12 batches per day.

The representative sample of separated liquor will be taken from the ‘short-term storage’ tank that receives the liquid output from the separator unit. This tank is located within the AD permitted area. Because it has a small maximum capacity of 50 tonnes at any one time, we have to frequently pump separated liquor out of this tank and transport it to our on-farm lagoon for medium-term storage before use. We plan to sample a 96-tonne batch of separated liquor by following a repeated cycle of ‘pumping then sub-sampling from the discharge point’ a number of times during a day selected for sampling; the sub-samples would be combined to form a representative sample of sufficient volume for the laboratory tests. (Our short-term storage tank does not have a mechanism for mixing the contents.)

In the event of a test result failure on the separated liquor, a representative sample of digestate from the lagoon would be taken for re-test, after appropriate treatment/corrective action. (By the time we receive the test results, the batch of separated liquor that we sampled will be in the lagoon rather than in the ‘short-term storage’ tank.)

Are these plans suitable?”

REAL BCS’s interpretation

This procedure is acceptable.

5. SEPARATED FIBRE SAMPLING

Question: “The quantity of separated fibre is much smaller than the quantity of separated liquor. It is suggested that the separated fibre batch sample size should be 2 % of the whole pasteurized digestate. Each batch of the 3 batches sampled for PAS 110 testing will be isolated in one corner of the storage bunker during the PAS 110 validation process.

Are these plans suitable?”

REAL BCS’s interpretation

Sampling of separated fibre must comply with the requirements of PAS 110 section 10 (particularly clause 10.4). For further guidance on obtaining a representative sample of a separated fibre batch, whether for validation or ongoing certification, REAL BCS recommends referring to the REAL Compost Certification Scheme (CCS) sampling guidance (f40_REAL_CCS_sampling_guidance_December_2020.pdf (www.qualitycompost.org.uk)).

BCS Approved Laboratories can advise on the quantity of fibre required for full suite and individual test parameters.

6. TRANSITION FROM COMPLIANCE WITH PARAGRAPH 7 EXEMPTION (WASTE FOR THE BENEFIT OF LAND) TO A PTE TESTING REGIME IN ACCORDANCE WITH PAS 110 & ADQP REQUIREMENTS

Refer to sections 12 and 15 in Appendix H of the ADQP.

Detail: Under Paragraph 7 plants were not required to test soil for PTEs. Two years before the conditions of the future PAS 110 & ADQP were confirmed, the plant decided to run its own tests based on an average PTE value over a 50Ha block of land or alternatively averaged on a 'whole farm' basis. The ADQP states that sampling frequency should be in accordance with the values set out in Code of Practice for Agricultural use of Sewage Sludge (the Sludge Code), which also requires that that for sludge at least one sample should be taken for every 5 Ha of land.

REAL BCS's interpretation

- The Sludge Code is for a high-risk material (Sewage Sludge) which, unlike PAS 110 and ADQP does not have stringent source separation criteria.
- The ADQP specifies that the PTE limit values in the Sludge Code are not exceeded but does not mention compliance with the maximum permissible area for soil sampling.
- ADQP Section 16 - covers soil analysis for PTEs - which must be carried out before the first application of digestate and again when predicted concentrations approach 75% of the limit values set out in the Sludge Code.
- The operator can use PTE tests carried out in the five years before registering for PAS 110 and ADQP.
- Operators sampling on a 'whole farm' basis should move to a maximum 50 ha sampling area for PTEs within five years of achieving certification under the ADQP ~~BCS~~.

7. CERTIFICATION OF THE FIBRE ELEMENT OF DIGESTATE ONLY

Question: "An AD plant is digesting some confectionary feedstocks that include a small gelatine content. This is degraded in the digestion process and is digested with the daily trade effluent stream that is currently going to sewer discharge.

The digestate is very dilute and will be passed through a Huber separator and the liquid fraction discharged to sewer. Only the solid fraction (at about 20% dm) is land applied. The liquid fraction is treated by the local water utility. In due course with a COD reduction of over 95% this may be further polished for grey water reuse on site.

Can the fibre alone be certified to PAS 110 and the relevant EoW position (the ADQP ~~, or~~ the ADRF, SEPA's RPS, or GN023) in the case where the liquor is discharged to sewer?"

REAL BCS's interpretation

We consider that the material that is produced as digestate fibre is technically suitable for certification under BCS. However, a significant requirement for compliance with the ~~ADQP or ADRF~~EoW positions (the ADQP, the ADRF, SEPA's RPS, or GN023) is that there should be a market outlet ~~for the disposal of~~

~~the product to land~~. At this plant, this is obviously the case with the solid fraction, but the plant is disposing of cleaned liquor to the sewer.

The requirements of BCS do not exclude the situation where only the separated solids are submitted for certification and subsequent application to land.

Although it appears that within the scheme documents the certification of fibre alone is allowable, we consider that it is in the spirit of the BCS to maximize the beneficial use of all elements of digestate including liquor. It would therefore be preferable for the plant to at least consider cleaning the liquid fraction that is being discharged to sewer to the state where it can be recycled as grey water.

Please note that even where BCS believes this process is in compliance with the scheme requirements, the regulatory authorities are the ultimate arbiters.

8. FOOD WASTE SOUP AS AN INPUT MATERIAL

Refer to clause 6.2 of PAS 110.

Background: An AD plant intends to apply for certification to PAS 110 and the ADQP through the BCS later in the year. The plant is starting to apply PAS and ADQP controls over their inputs and process. They currently accept food waste soup from a soup supplier and the EWC code is listed in Appendix B of the ADQP, but the soup supplier will not disclose the soup ingredients.

The soup supplier describes the soup as 'compliant with ADQP input requirements' but will not list the waste types and proportions in the soup. This makes it difficult for the operator to perform a robust hazard analysis and to check whether the soup ingredients are permissible inputs in the QP.

REAL BCS's interpretation

AD operators shall not accept and process food waste soup from a supplier unless they have been provided with the full list of waste inputs and these inputs are compliant with the relevant End of Waste position (ADQP, ADRF, GN023, or SEPA's RPS), along with the corresponding EWC code of the food waste soup being listed in the relevant End of Waste position ~~are ADQP or ADRF compliant~~. The feedstock should be rejected if the supplier does not list the inputs.

If the waste inputs are compliant, the supplier should provide a full waste transfer note and a written supply agreement should be agreed and in place with the soup supplier, in accordance with clause 6.2 of PAS 110. The AD operator will then need to perform a hazard analysis in relation to the food waste soup inputs and in accordance with the requirements of PAS 110. If accepting waste soup, it is also important to ensure that the tankers are washed and clean.

9. DE-PACKAGING EQUIPMENT

Clause 6.1 of PAS 110 states: 'Reasonable care shall be taken to avoid any contaminated wastes, products or materials from becoming included with the input materials' and 'The pre-treatment shall use reasonable endeavours to remove non-biodegradable packaging prior to loading those biowastes / biodegradable materials into the digestion system'.

REAL BCS's interpretation

De-packaging equipment must not be designed to reduce contamination to a particle size that will bypass the PAS 110 physical contaminants test i.e., particles less than 2mm in a single dimension.

10. SAMPLING FOR STABILITY

Clause 10.1.3 in PAS 110 states:

'Sampling for measurement of digestate stability (Annex A) shall be carried out at the end of the digestion process and prior to dispatch of digestate from the site of production.'

REAL BCS's interpretation

Whole digestate may be sampled for stability, prior to separation into liquor and fibre, i.e., it is not compulsory to test each digested material output for stability if the whole digestate was sampled and tested before separation.

11. CO-OPERATIVES AND THE PASTEURISATION EXEMPTION

Refer to clauses 6.3, 7.2.3, and 7.2.5 in PAS 110.

A co-operative (farming / horticultural / forestry) may be set up to carry out one anaerobic digestion process within the co-operative's holdings. The below sets out the requirements that a co-operative must comply with.

11.1 Requirements for a cooperative

PAS 110:2014 sets out criteria for digested materials made only from manure, unprocessed crops, processed crops, crop residues, glycerol, and/or used animal bedding that arise within a single holding or a co-operative and after digestion are returned to and used entirely within the same premises or holding or co-operative.

There must be a clearly identified entity / organisation or individual within the co-operative with the overall responsibility for the QMS. This identified person/organisation will be responsible for gathering the evidence of compliance with the requirements from all members of the co-operative.

Cooperatives must have a signed agreement in place as summarised below.

11.2 Terms of the agreement

There must be an agreement between the operator and a number of local farms (calling it a Co-operative), from which all the inputs for the AD plant would be sourced. If the cooperative are operating under clause 6.3 and 7.2.5 (exemptions for requirements for written supply agreements and pasteurization) then the materials must be used entirely within the same co-operative's premises or holdings and this should be stated in the agreement.

The agreement should be for a minimum of one year to stop farmers joining the cooperative for a short period and leaving immediately after supplying feedstock.

11.3 Signatories to the agreement

The signatories should include the plant operators, the person/organisation identified as responsible for the QMS, the land managers/farmers who are providing the feedstock and managing the digestate spreading and also the owners of any of the land that is managed by the land managers or farmers. It is important that the landowners are made aware of the risks as they may take over the management of the land soon after digestates have been applied.

11.4 Pathogen testing

Under circumstances where input materials arising within the co-operative's premises have not been through a pasteurisation step, the signatories to the agreement need to be aware of the risk that they may be exposing themselves to. There is still a requirement to test for Salmonella and E.coli.

11.5 Digested products

On delivery of the digestate, the digestate producer must supply a certificate stating what inputs (and sources) the digestate has been produced from and what the risks may be and highlighting the lack of pasteurisation where relevant. The digestate must be fit for purpose and the certificate must state what purposes the digestate is fit for. The certificate could detail that the AD operator has taken reasonable care to ensure that the digestate is free from named local plant pathogens, alert the end users to the risk from the lack of pasteurisation and naming the farms from which the unpasteurised material is derived. The pathogen testing in 11.4 above may also be provided.

12. NON-CONFORMING BATCHES OR PORTIONS OF PRODUCTION

Refer to section 13 of PAS 110.

REAL BCS's interpretation

The operator shall have a clear, written contingency plan to deal with non-conforming batches or portions of production. Providing that the HACCP and quality management system are designed and implemented correctly, non-conforming batches should not be produced.

13. EQUIVALENT PASTEURISATION STAGE

Refer to clause 7.2.2 of PAS 110.

REAL BCS's interpretation

Where a plant does not have pasteurisation but accepts input material from a process that has an equivalent pasteurisation stage, the auditor must see satisfactory evidence (such as HACCP and input supply agreements) of the equivalent treatment and may need to be granted access to the site of the input production and associated documentation to verify pasteurisation has taken place. The certification body may make additional charges for visiting additional sites.

14. RE-VALIDATION

Refer to clause 4.8.5 of PAS 110.

REAL BCS's interpretation

In the event of significant changes, it may become necessary for some digestion processes to be re-validated. Whether or not a digested product may continue to use the BCS certificate and conformity mark during re-validation will depend on the circumstances in each case and will be at the discretion of the certification body and in accordance with the requirements of the relevant regulatory bodies.

In the event that an operator makes any change to their process which may include the QMS, HACCP, personnel, process, feedstock or equipment they shall notify their certification body. The certification body will decide whether or not the change is significant and require revalidation. In the event that the change is not deemed to require re-validation, the certification body may request evidence from the operator that the change has not had an impact on the quality of the digestate being produced. Following a change that requires re-validation, the certification body may grant the operator positive release of batches of material that have been produced by a compliant process with test results to demonstrate the material passes on all relevant parameters.

Where appropriate the certification body may carry out a spot check audit at the site and may make a charge for this. The charge must be reasonable and agreed before the audit takes place.

15. DISPATCH INFORMATION

Refer to section 14 of PAS 110, Appendix G of the ADQP, Section 4 of GN023, and section 4.3.1 of the ADRF.

REAL BCS's interpretation

When digestate is dispatched directly to a contractor that spreads digestate on behalf of a farmer/end user (third-party contractor), the operator shall supply a Contract of Supply or a Product Information Sheet to the contractor~~mpany~~ which contains clear terms and conditions for product storage and use. This should be accompanied by a Declaration Form.

The Declaration Form should be signed by the contractor~~mpany~~ declaring that all the required information has been passed on by the operator and the contractor will commit to minimising any risks associated with spreading. It is advisable that the operator obtains and keeps a copy of the Contract that has been signed by both parties and the Declaration Form that has been signed by the contractor.

REAL BCS recommends that operators use assured / certified contractors that have been independently audited and certified to a quality standard for land-based contractors. (One scheme recognised by REAL BCS is the Assured Land-Based Contractor (ALBC) Scheme run by the National Association of Agricultural Contractors (NAAC).)

REAL BCS also recommends that operators in England provide contractors with DEFRA's Code of Good Agricultural Practice (COGAP) for Reducing Ammonia Emissions, available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729646/code-good-agricultural-practice-ammonia.pdf.

For operators in Scotland, REAL BCS recommends providing contractors with the Scottish Government's Code of Good Practice for Prevention of Environmental Pollution from Agricultural Activity (PEPFAA), available here: https://www.gov.scot/publications/prevention-environmental-pollution-agricultural-activity-guidance/.

For operators in Northern Ireland, the recommendation is to provide contractors with DAERA's Code of Good Agricultural Practice for the Reduction of Ammonia Emissions, available here: https://www.daera-ni.gov.uk/sites/default/files/publications/daera/code-of-good-agricultural-practice-for-the-reduction-of-ammonia-emissions.pdf.

For operators in Wales, the recommendation is to provide contractors with the Welsh Government's Code of Good Agricultural Practice guidance on reducing ammonia losses from agriculture in Wales, available here: https://gov.wales/sites/default/files/publications/2019-04/code-of-good-agricultural-practice-guidance-on-reducing-ammonia-emissions.pdf. Please note that certified digestate is considered as 'organic manure' under The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.

16. USE OF FINAL EFFLUENT FOR FEEDSTOCK DILUTION

Refer to section 6 of PAS 110, Appendix B of the ADQP, and section 2 of the ADRF.

Question: "An AD plant intends to apply for certification to PAS 110, the ADQP, and the BCS Scheme Rules later in the year. The input materials are all compliant with the ADQP, but water is added after de-packaging the feedstock to ensure that the material is of good consistency to be passed into the digesters. The water is sourced from the drinking water main on site. The facility is adjacent to a wastewater treatment works, which discharges final effluent to a local water course. Can this final effluent be used for feedstock dilution under the BCS?"

REAL BCS's interpretation

Final effluent that is not discharged as per the Waste Water Treatment Works (WWTW) Environmental Permitting Regulations (EPR) water discharge permit has the EWC code 16 10 02. While this code may appear in one or more End of Waste positions, the environmental regulators have confirmed it is not a permissible input. Therefore, this restriction applies across all four UK nations.

This AD operator cannot use this final effluent for feedstock dilution if they seek certification through the BCS, regardless of the UK nation's End of Waste position to which they are certified.

17. PHYSICAL CONTAMINANTS TESTING OF SEPARATED LIQUOR

Table 1 of PAS 110 specifies the test parameters, upper limit values and declaration parameters for validation. The table specifies the upper limit values for physical contaminants in whole digestate (WD), separated liquor (SL), and separated fibre (SF).

NOTE 2 of Table 1 states that '*Separated liquor is exempt from physical contaminants tests only if the separation technology used by the producer results in all particles being < 2 mm in the separated liquor fraction.*'

Table 3 of PAS 110 specifies the minimum digestate testing and quality requirements after validation. The table specifies the upper limit values for physical contaminants in whole digestate (WD), separated liquor (SL), and separated fibre (SF).

NOTE 2 of Table 3 also states that '*Separated liquor is exempt from physical contaminants tests only if the separation technology used by the producer results in all particles being < 2 mm in the separated liquor fraction.*'

REAL BCS's interpretation

Based on the above clauses, our interpretation is that separated liquor can only be exempt from physical contaminants tests if the operator provides sufficient evidence that the separation technology used, results in all particles being < 2 mm in the separated liquor fraction. This also applies to operators using separation technologies with a screen of 1 mm.

Validation

One sample tested for physical contaminants during validation with results showing that all particles are < 2 mm is considered sufficient evidence. However, if the test results show that there are particles > 2mm, further samples are required to be taken and shall be dealt with as a test result failure, in accordance with section 13 of PAS 110. Validation shall only be achieved when test results show that particles are < 2 mm.

If test results for separated liquor do not show that all particles are < 2mm, then liquor will not be exempt from physical contaminants testing. Testing of (routine) samples taken after validation will be required and the upper limits for physical contaminants in Table 3 will apply.

After validation

If process validation is achieved and physical contaminants test results for separated liquor show that all particles are < 2 mm, separated liquor will be exempt from physical contaminants tests for routine sample testing. However, REAL BCS requires that one sample of separated liquor be tested for physical contaminants on an annual basis, as evidence that the separation technology continues to result in all particles being < 2 mm in the liquor fraction. If these test results show particles > 2mm, they shall be dealt with as test failures.

REAL BCS also requires that samples of separated liquor be tested for physical contaminants following any changes in separation or screening technologies, or any major changes to the input of physical contaminants (in source-segregated biodegradable materials and/or biowaste) e.g., new waste bags containing food waste from a commercial source, or new biodegradable packaging containing food waste from a municipal source.

18. CHANGING THE SCREEN TO DECREASE THE APERTURE SIZE

Refer to clause 4.8.5 in PAS 110 re significant, non-temporary, change. Refer to Table 1 and clause 11.2.2 re required test parameters for validation and required number of passes. Refer to clause 10.6 and Table 4 re the minimum time between testing representative samples.

Query: "What are the requirements for maintaining certification if looking to replace a digestate screen at the end of the process with the view that plastic limits will be tightened?"

REAL BCS's interpretation

A screen that is included as a process step for control of physical contaminants is highly likely to be designated a critical control point (CCP) in an operator's HACCP study. Any change to the particle size of a screen which has been designated a CCP or key pre-requisite control measure for physical contaminants will be regarded as a significant, non-temporary change. Therefore, the production process must be revalidated, and for revalidation (as for validation), all parameters must be tested for in accordance with Table 1 of PAS 110.

Three-in-a-row passes are required for each parameter. If passes are achieved on all parameters for the first portion of production, this can be dispatched under positive release. This is also applicable for subsequent portions if they pass on all parameters.

The portion of production must be the same as the portion defined for initial validation, unless the minimum frequencies for testing representative samples of digestate after validation are adhered to (Table 4 of PAS 110) instead.

REAL BCS recognises that changing a screen with the aim to reduce the presence of physical contaminants in digestate is a positive development and focuses on one quality aspect, though the current requirements of PAS 110 mean the above actions must be taken.

The rationale behind the position on requiring revalidation with all parameters tested for centres around the need to ensure consistency in the interpretation of PAS 110 requirements.

PAS 110 is interpreted to require revalidation in the event of any significant change and for all parameters to be tested for – exceptions are not made on a case-by-case basis, and this removes the possibility of great inconsistency. It is interpreted to require the portion of production to be the same as the portion defined for initial validation, as this was defined in the operator's QMS which was validated initially – the portion of production should therefore not change in the event of a significant change, as it would not be covered by the validated QMS – also, the only relevant PAS 110 requirements are clause 10.6 and Table 4 (setting out an alternative frequency for testing in this context).

Overall, PAS 110 requires that the whole process of production is revalidated in the event of any significant change.

19. TESTING DIGESTATE MADE FROM THE PRODUCER'S/CO-OPERATIVE'S OWN MATERIALS AND USED BY THE PRODUCER/CO-OPERATIVE FOR PHYSICAL CONTAMINANTS

Refer to clauses 6.1, 6.4, and 6.8 of PAS 110 for requirements on input materials, the use of animal bedding, and visual inspection of input loads. Refer to clause 11.2.4 and Table 2 for testing during validation. Refer to clause 12.2.4 and Table 5 for testing after validation.

Query: Does PAS 110:2014 require testing for physical contaminants if the digestate is made from the producer's/co-operative's own materials and used by the producer/co-operative?

REAL BCS's interpretation

Providing the requirements of the above PAS 110:2014 clauses are adhered to, i.e., the digestate is made only from manure, unprocessed crops, processed crops, crop residues, glycerol and/or used animal bedding that arises within the producer's/cooperative's premises or holding, and the digestate will be used entirely within the same (producer's/cooperative's) premises or holding, and the requirements of the relevant End of Waste position (e.g. ADQP, ADRF, GN023, or WAS-G-DEF-07) ~~ADQP~~ are adhered to (including the digestate being produced using only permissible source-segregated input materials~~those source-segregated input materials listed in Appendix B~~), there is no requirement to test for physical contaminants as per Tables 2 and 5. REAL BCS considers the likelihood of these feedstock materials containing physical contaminants is very low, and therefore the risk is very low.

Any supplier of used animal bedding within a co-operative must ensure that any waste input materials used to produce the bedding are permitted by ~~Appendix B of the ADQP~~the applicable End of Waste

position. This includes ensuring that the animal bedding has only been sourced from places using untreated wood.

In accordance with the animal bedding requirements of PAS 110, any supplier of used animal bedding within a co-operative must also ensure that the material does not contain physical contaminants. If the supplying farm identifies any possibility of contamination, the material must not be delivered for processing. In accordance with the visual inspection requirements of PAS 110, the receiving farm (the digestate producer) must carry out a visual inspection of the animal bedding when delivered. If the receiving farm identifies any physical contaminants, the input load(s) must be rejected and must not be digested.

20. CO-STORAGE OF CERTIFIED LIQUID DIGESTATE OUTPUTS PRODUCED BY THE SAME OPERATOR ON THE SAME SITE

Refer to clause 3.36 of PAS 110:2014 re HACCP planning in respect of production and storage of digestate. Refer to clause 4.4.6 of PAS 110:2014 re production and storage records. Refer also to clause 7.1.2 of PAS 100:2014 re contamination of treated material with partially treated or untreated material.

Query: Can you co-store certified liquid digestate outputs from two processes on the same anaerobic digestion production site?

REAL BCS's interpretation

None of the requirements set out in the ADQP, ADRF, GN 023, WAS-G-DEF-07, or ~~The ADQP and~~ PAS 110:2014 prohibit the ~~do not restrict the~~ co-storage of certified liquid digestate outputs from two or more processes on the same site. The assumption being that the outputs are of the same liquid type (i.e., whole digestate or separate liquor) and fully mixed in storage.

Co-storing two or more certified digestate outputs produced by the same operator on the same site before supplying the mixed certified digestate is permissible, providing the requirements below are adhered to regarding digestate characterisation testing. This decision is based on the scheme's interpretation of the above clauses, and consultation with the BCS Technical Advisory Committee, the Certification Bodies, and Environmental Regulators.

The site's HACCP plan must consider and incorporate possible laboratory test failures in respect of co-storage. Specifically, failure of one or more minimum quality criteria (i.e., pathogens, potentially toxic elements (PTEs), stability, or physical contaminants and stones (PC&S)) for one process would result in failure of all co-stored material the test failure relates to.

Further, as processes may handle slightly different feedstocks, digestate characterisation testing (i.e., pH, total NPK, ammoniacal nitrogen, dry matter, and loss on ignition) of co-stored digestate output is required for end users' information. The sampling of co-stored material may require a different sampling procedure to that used for individual processes (refer to BCS sampling guidance: https://www.biofertiliser.org.uk/pdf/BCS-Sampling-Guidance.pdf).

~~20.~~21. TRAINING ON PAS 110 REQUIREMENTS

Clause 4.3.3 of PAS 110 states: 'Each person whose duties affect digestate quality shall be trained, instructed and supervised commensurate with those duties, such that he/she is competent. Training

shall include the subjects of QMSs and HACCPs, at least for the competent person(s) with overall responsibility for the QMS, who also lead(s) or participate(s) in the HACCP team. That person's training on QMSs and HACCPs shall be carried out by a formal training provider.'

Clause 4.3.4 of PAS 110 states: 'For each person, including the competent person(s) with overall responsibility for the QMS, a record shall be kept of the:

a) training topic;

b) training date or period;

c) name and role of the person who received the training on that topic;

d) person and organization who delivered the training (which can be the producer); and

e) any certificate or qualification achieved.'

REAL BCS's interpretation

Each person whose duties affect digestate quality should be trained on the requirements of PAS 110 on a regular basis to ensure they remain competent.

REAL BCS recommends that each person receives formal training every two years. (One formal training provider is the Association for Renewable Energy and Clean Technology, delivering the 'Understanding PAS 110' training course on a biannual basis.)

~~21.~~22. INTERNAL AUDITOR TRAINING

Clause 4.7.1 of PAS 110 states: 'The producer shall conduct and record internal audits at planned intervals, at least annually, to determine whether the QMS conforms to its QMS plan for the production of digestates that are fit for purpose, and whether the QMS is effectively implemented and maintained.'

Clause 4.3.2 states: 'The producer (senior management and/or manager with QMS responsibilities) shall determine the necessary competences for personnel performing work affecting digestate quality.'

Clause 4.3.3 states: 'Each person whose duties affect digestate quality shall be trained, instructed and supervised commensurate with those duties, such that he/she is competent.'

Clause 4.3.4 states: 'For each person, including the competent person(s) with overall responsibility for the QMS, a record shall be kept of the:

a) training topic;

b) training date or period;

c) name and role of the person who received the training on that topic;

d) person and organization who delivered the training (which can be the producer); and

e) any certificate or qualification achieved.

It has been asked what 'commensurate with those duties' requires in the context of internal auditing, and whether the auditor must receive external training on internal auditing.

BCS's interpretation

Based on the above clauses, our position is that there is no requirement for internal auditors to hold a formal qualification or certification. However, they must be demonstrably competent and objective.

Internal auditors shall receive training in the QMS and HACCP requirements relevant to the operations, to effectively evaluate the QMS. Records of training shall be maintained and made available upon request, including all specific content detailed in PAS 110 (clauses 4.3.4 a) to e)). Records of internal auditor training must demonstrate that personnel performing internal audits have been trained, instructed, and supervised by a suitable person to perform such audits; this person may be a senior manager, or another individual with a relevant qualification or certificate to provide such training.

The Certification Body will review evidence of auditor competence (and audit records) during their assessments to confirm that these requirements have been met.