

# Technical consultation

## Template for comments

Date: 10/08/2012	Document: "EOW for biodegradable waste subject to biological treatment" and its annexes
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Please email back to [JRC-IPTS-END-OF-WASTE@ec.europa.eu](mailto:JRC-IPTS-END-OF-WASTE@ec.europa.eu), with the subject "EoW Biodegradable waste CONSULTATION" **by 21/09/2012 at the latest.**

**Commenter: please state your name / affiliation:**

**Confirmation: Herewith I confirm that my feedback/input can be published (e.g. on the internet), together with the consulted document (please X-mark if you agree):**

1	2	3	4	5	6	7
Page	Chapter No./ Annex (e.g. 3.1, Annex 1)	Text line/Paragraph/Table/ Figure (e.g. Table 1, Last sentence of 3 <sup>rd</sup> paragraph)	Type of comment <sup>1</sup>	Comment (justification for change) (e.g. The meaning of the sentence is ambiguous, please clarify.)	Proposed change (e.g. Replace the sentence with the following one: "..."; Add the following definition for the new term XYZ: "...")	Comments / feedback to stakeholder
6	1.3	200	ge	The section before line 200 refers to both the existing definitions for biowaste and for biodegradable waste. At line 200 you state that the document will deal with compost and digestate from biodegradable waste. It would be helpful if this was set out clearly earlier, and before you define compost and digestate	Move 200 and 201 to178.	
		203-207	ge	This could be more concise. It is an important point to make clear at the start of the document.	This study <b>does not consider the use of composts and digestates as fuel</b> . It only covers the recycling of composts and digestates eg though use on land.	
2.4.3	21	819	ge	There is no mention here of the UK ADQP and the associated PAS110 or the established REAL certification scheme for the use of quality digestate. It would be useful if these were included as they are probably the only existing fully accredited mechanism for using digestate as a product in the EU	Add "In the UK there are currently 78 anaerobic digestion plants of which 29 only treat agricultural biomass. The UK has developed an Anaerobic Digestion Quality Protocol which defines end of waste for digestate. 7 plants are producing digestate certified to , the Publicly Available Specification (PAS110) which is referenced	

<sup>1</sup> **1 Type of comment:**

**ge** = general. Please note that the objective of this consultation is to contrast the accuracy of the background data collected. Political statements without appropriate argumentation will not be considered.

**te** = technical/specific

**ed** = editorial/typographic. Please note that editorial corrections of layout and English language are not necessary as this will be done on the final version.

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					in the Quality Protocol.	
	P 33	1252		Up to date information on the UK AD sector.	Insert "Since 2009, the UK AD sector has increased significantly from 17 to 78 plants. Recent information on the current status of the industry is available at <a href="http://www.biogas-info.co.uk/images/PDFs/baseline.pdf">http://www.biogas-info.co.uk/images/PDFs/baseline.pdf</a> "	
2.7.2	49	1771	ge	The UK compost quality protocol was first put in place in 2007, the second draft is the one that has been 'recently reviewed'	Remove the text 'The recently agreed....'	
2.7.3	50	1865	te	The latest version of the CQP does not require auditing of the use of the compost any more. Please note that we are currently consulting on removing this requirement from the ADQP as well.	Remove the last sentence	
3.2	71	2756	ge	You state that '.....certain plants were not shortlisted for the final screening exercise.' Please clarify the basis that was used to decide which plants should be included and which should be excluded	Clarify the text	
3.1	70	2723	ge	The sample size for some technologies is very very small. Also the report should recognise that the sampling exercise is a snap shot. It does not take account of temporal variation at a plant. So whilst a really useful exercise, the report should acknowledge potential limitations of the data set.	Insert "It must be recognised that there are data limitations in the sampling exercise. Very few samples were analysed for certain technologies. Furthermore, the samples provide a snapshot and do not take into account temporal variation at a plant"	
	75	2860	te	The report concludes that the proposed limit values for PTEs appear to be achievable for all materials. Looking at UK data it is unlikely that MBT or sewage sludge based materials will be able to comply and we are aware of difficulties for green waste composts and for digestates.	Delete paragraph starting at line 2860	
3.3.3	75		te	Sample size for the physical contaminant survey is extremely small. There is no discussion of whether 0.5% is the right limit value – just a statement that source segregated materials can meet 0.5%. There	Sample size is too small to make reasonable conclusions. Need to establish the composition of the physical contaminants.	

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				is still no discussion about the potential take up of the 0.5% - could be all plastic or all glass?		
3.3.5	85	3186	te	We agree that in principle, it should be possible to establish end of waste criteria for materials containing sewage sludge or MBT residues, but disagree strongly that the structure and mechanism that is described in the next section of the document is an appropriate way to do so.	Please see text below.	
3.3.4				Inclusion of organic pollutant measurement.	Please see attached text	
4.1.2.1	88	3251	ge	'The lack of harmonisation creates legal uncertainty for waste management decisions...' We think that within individual member states that have established end of waste criteria for biowaste there is clear legal certainty. Given the bulky nature of composts and digestates, it is unlikely that there will be widespread trade of these materials between member states.. We are not sure of the case for uniform standards at this point although this may change in the future.	Change to ' ....creates legal uncertainty for <b>cross boundary</b> waste management decisions....'	
4.1.2.3	90	3331	te	'...introduce widely recognised product standards for composts and digestates and to promote quality assurance.' Work in the UK has shown that this is only the case where the standards are based on recognised and accredited methodologies and when the quality assurance is also accredited to an appropriate standard. Without this there are no guarantees that a compost or a digestate will in fact meet any proposed limits or specifications and market confidence in the use of the product will not be established.	Change to ' ....introduce widely recognised <b>accredited product standards.....</b> '	
4.1.3.4	92	3453	ge	The end of waste criteria do not cover conditions about the ultimate use of the compost or digestate and state that fitness for use will therefore have to be adjusted to the national legislation and standards that are applicable. In the UK control over nutrient addition will be done via the NVZ regulations, but we do not have regulatory mechanisms that cover the addition of PTEs or organic pollutants to soil.	Input materials and limit values in an end of waste product must be set so that there are no further controls required on the use of the material. The inclusion of MBT residues and some of the other listed wastes will make this difficult if not impossible to achieve.	
		3459	te	'...exclude composts and digestates for which there	Remove MBT residues from the feedstock	

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				is no use....’ In the UK we have undertaken extensive work with stakeholders and those who use composts and digestates to establish trusted and robust markets for these materials. The inclusion of MBT with source separated wastes will severely undermine this work. We do not believe that composts and digestates made from mixed waste materials will be acceptable in UK markets and thus fundamentally question if these materials should be included if the resulting products cannot be used.	lists.	
4.1.3.5	93	3480	ge	‘... rules on the use of compost and digestate...’ See comment above (4.1.3.4) – apart from restrictions on nutrient additions the UK uses EoW criteria as the point at which no further restrictions on use are required.		
		3492	te	The proposed limit for physical contamination is twice that currently used in the UK. This is a significant erosion of our existing standard	Change the physical contamination level to 0.25% DS with some division of this to define levels of different fractions.	
4.3	97	3630 -3635	te	Criterion for minimum stability has been dropped. We do not support this. Whilst we agree that different markets will require materials of differing stability it is unrealistic to expect the market to determine this parameter. Stability is a necessary measurement to determine if a treatment process has been completed and to ensure that biodegradable waste is fully recovered. This is made clear in the definition for compost where the document states that a compost must be sanitised and stabilised.	The document should require that stability is measured, but given that it is difficult to stipulate an EU-wide applicable test mechanism, the level and test method should be determined at member state level. See text below from UK regulator.	
	101	3806	ge	Table of criteria for compost and digestate. Many of the comments that we made regarding the 2 <sup>nd</sup> working draft still stand	Please refer back to the numerous comments made previously on the second draft.	
		3738 and 3791	te	Viable weed seeds. We do not support the limit value of 2 weed seeds per litre for either compost or digestate. Please see previous comments. Presence of weed seeds is an indicator of ineffective processing or poor control of input materials and 2 weed seeds per litre is unacceptably high. We also disagree with the chosen methods of measurement and question if they are applicable to liquid	Reduce limit vale to 0.	

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				digestates. See more general comments on analytical methods.	
		3740 and 3793	te	Macroscopic impurities. The limit value suggested is too high and should be reduced. Setting this at a much higher level than that currently established in the UK will significantly undermine existing UK markets. There is also a need to distinguish between glass metal and plastics. The potential environmental risk from glass will be different to that from plastic and different again from that from metal fragments. This is particularly important if MBT residues remain in the list of allowable feedstocks as glass is potentially a significant contaminant in these materials which can be applied as high dry solids materials.	Reduce limit values to 0.25% on a dry solid basis and introduce separation of different fractions.
		3796	te	'...digestates are less likely to contain high levels of contaminants...' this is true for liquid systems, but less so for dry digesters which are more tolerant of contaminated inputs	
102		3835	ge	Use of Horizontal methods or those used in the ECN QA scheme. Please refer back to the comments that we made in our response to the 2 <sup>nd</sup> working document. It is vital that any European end of waste criteria are based on sound and reliable analytical methods that can be independently verified and then used in laboratories across Europe. Unfortunately this is not the case for either the ECN methods or the proposed Horizontal methods. We also accept that the methods that we use in the UK are different again. Without recognised accreditation of analytical methods, there is little point in trying to harmonise standards across member states as laboratories in one member state will produce different results to those generated by laboratories in other member states. One way to address this would be for the commission to introduce proficiency testing so that individual member states can prove equivalency of methods though this would need to be costed. This would mean that existing standards and certification schemes are not disrupted and the European end of waste criteria are meaningful. Without it there is	Ensure that all analytical methods are fully accreditable, and allow member states to prove equivalency of methods. Consider the use of proficiency testing for laboratories.

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				significant danger of undermining existing markets for composts as end users can not be sure that reported analytical results are correct.		
			3842	Sampling and analysis. It is vital that the methods for both taking samples and then for analysing them are standardised. The current text is confusing in that it deals with the acceptability of exceeding limit values in the same section of text as the methods used for sampling	Separate out these two sections and consider simplifying the proposed approach.	
				Use of 95% confidence limits and 'probabilistic sampling'. We understand the objective here but the approach raises a number of issues.	Define probabilistic sampling approach – doing so will make clear how data should be statistically analysed and reported. As written there is scope for different approaches to be adopted in different member states.	
				If a probabilistic approach is used for sampling, but some parameters vary more than others then there is a possibility that some parameters will fail more often than others. There is no indication in the text of action to be taken in the event of a failure. Does an operator have to return and test all parameters again, or just test for the failed parameter again and should that testing frequency be increased? Does the operator return to the sampling required in the recognition year or does he carry on sampling until the material complies and then release it?	Provide an explanation of action to be taken in the event of failure.	
				Organic pollutant testing. See comments below on the requirement for organic pollutant testing more generally. We agree that it is right to minimise the requirement for organic pollutant testing if initial samples from a plant show very low levels or absence as this proposal adds considerable costs as well as significant laboratory accreditation issues. See text below on costs.		
4.4	106	3862	te	We support the use of a positive list, but disagree with the inclusion of some of the waste materials that are currently listed. See text below from UK regulator.	Remove the waste types noted on the separate spreadsheet	
		3881	te	'... A digestate containing lignin....is not eligible for	Remove the reference to lignin.	

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				end of waste status.’ Depending on the feedstock that is used, it is almost inevitable that waste derived digestates will contain some lignin materials. Feedstock may be pre or post treated to reduce the lignin fraction, but unless all organic solids are removed some non-digestable material will remain at the end of an economic process.		
			te	‘biodegradable plastic not degraded in the anaerobic digestion process’. As above, if food waste is collected in biodegradable bags experience has shown that small fragments inevitably survive the digestion process and appear in the digestion. The physical contaminant level should thus be set at the right level to ensure that the quantity of this material is acceptable. See comments above,.		
		3914	ge	Changes to the positive list – If the process for updating the positive list is via the technical adaption committee then there will need to be clear guidance in place so that applications for change can be put forward with the correct supporting data and so that decisions can be made quickly. It is also important to ensure that this process is reasonably rapid to allow for innovation in industry.	Publish decision criteria to be used by the technical adaption committee so that it is clear to operators how to apply for a new waste to be added to the positive list.	
		3952	ge	‘Clean biodegradable waste are the only wastes allowed to be used as input materials’. It is difficult to reconcile this statement with the inclusion of MBT residues and sewage sludges particularly in the light of the text in the second column which states ‘.... Do not impair the usefulness of the compost or digestate’ As noted above we are aware that the inclusion of MBT residues and sewage sludges will mean that composts and digestates will not be suitable for use in a wide range of markets in the UK.	Remove MBT and sewage sludges from the positive input list.	
		3952	te	We note that sewage sludge has now been included as an acceptable input. This does raise the question of how the end of waste criteria will interface with the existing sewage sludge directive. Under the directive the use of sewage sludges are controlled through to the point of their use and the user is required to implement cropping and grazing	Please explain how the end of waste criteria can replace sludge directive controls on sewage sludge use.	

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				restrictions as well as monitor the addition of PTEs to soils. If sewage sludge is included in the end of waste input list, these requirements of the directive will not be mirrored and sludges could be used without operators observing cropping and grazing restrictions or monitoring soils.		
		3952	te	Additives – these should not be part of a positive list of inputs unless they are a major feedstock for the process or a waste material. Additives should be used to improve a process and should be allowed at the discretion of the accredited certification scheme. This approach will mean that new materials can be added more quickly and innovation in this area can be facilitated.	Remove non- waste additives from the positive list	
4.6				Inclusion of plant growth test as information to be supplied rather than a reportable requirement. We do not support this. A plant growth test is required to ensure that a material is fit for purpose and can be used as an indicator of the presence of various contaminants that will not be tested for elsewhere (eg herbicides) .	Move the requirement for a plant growth test to the mandatory requirements, but allow member state to set analytical methods and test regimes.	
4.7	121	4179	te	‘...waste authority.... Commission a second party audit’. It would be simpler to stipulate that the certifying body must be its self independently certified and accredited to an appropriate standard. Please refer to previous comments on second draft.	Require independent accreditation of the certifying body to an appropriate standard.	
	122	4213 and 4231		If the proposed criteria are to be effective across all member states then it is vital that the same sampling procedures and techniques are used in all member states. If this is not done, different member states will have the freedom to interpret the sampling requirements differently which will in turn lead to differences in the robustness of the criteria in different member states.	Clearly set out sampling procedures and stipulate standard sampling methods.	

(please insert more table rows if needed: mark the whole row and click in the top menu to *Table/insert/rows below*)

**Inclusion of organic pollutant measurement within the end of waste criteria**

The results of the JRC sampling programme have shown that it is possible to detect a variety of organic pollutants in a whole range of materials. Putting aside the very small numbers of samples that have been included, we have some difficulty with the conclusion of the work that states that because we can



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find organic pollutants in all materials, we should test for them. The current UK end of waste criteria do not require operators to test composts or digestates for organic pollutants. Their introduction would mean a substantial change to our existing laboratory testing regime and would mean significant increases in costs. We estimate that testing costs would be approximately £500 per sample. In addition there would be a very serious implication in terms of laboratory accreditation for organic pollutant testing. Currently there are no UK laboratories that are accredited for these tests and we estimate that it could cost in the region of £100K for a laboratory to undertake the work to become accredited. This would restrict the number of laboratories available to UK industry and decrease completion in the market place. Ultimately the cost of accreditation would be passed back to the operators again potentially increasing the overall cost of the testing suit. Thus we need to be entirely convinced that there is an environmental protection need for organic pollutant testing to be done before we could agree to an end of waste criteria set where they were included.

It is not clear from the JRC sampling scheme how the proposed limit values have been set other than they are based on values and limits that are used in some member states. In each case there is little evidence of a risk based assessment of potential impact, and values that are really as low as practically achievable have been selected.

We understand the JRC decision to include MBT residuals and sewage sludge as allowable inputs to be for based around the fact that the analysis campaign has shown that there are a range of contaminants and pollutants in all materials tested including those generated from source segregated materials. This is unsurprising. However, the fact that organic pollutants can be measured does not automatically mean that we need to set limit values for them. The various proposed limit values are selected from those used across Europe and it is clear that these have been set using a range of risk analysis techniques and strategies. The levels of organic pollutants found in the samples that were tested do not generally exceed limit values set elsewhere.

We need to be clear about the basis of setting limit values and thus the need to test materials. If we are worried about the potential for a material to be directly toxic or to have an immediate impact in the environment then it is right to set a limit on the end product material. However, if the concern is more about the potential for accumulation of organic pollutants in the environment, it would be more logical to look at the receiving environment – in this case the soil. As the end of waste criteria that are discussed in the document do not cover the use of the materials the latter issue is not addressed. We do not ask producers to monitor the use of composts and digestates once they have been sold to a user. So, we need be very clear about why it is necessary to include organic pollutant monitoring and make sure that any limit values that are set are backed with sound environmental risk assessment evidence.

The JRC sampling campaign represents spot analyses only and does not cover temporal variations between plants. The nature of the waste inputs to an MBT plant mean that there will be differences in the consistency of the input materials to these plants due to seasonal variations in waste quality and the potential for contamination. Having waste that is un-source segregated is very different to having a waste input of known origin and composition. With the former there is a great deal uncertainty about the composition of a particular waste and the potential for unexpected spikes of contamination or temporal variation. So, whilst we agree that source segregated materials may indeed contain some levels of organic pollutants, we will have a greater level of certainty that those levels will not be high enough to cause environmental harm or direct toxicity. Introducing mixed waste inputs into a source segregated process removes this confidence.

#### **Inclusion of MBT and sewage sludge in the positive list.**

We are not saying that an end of waste criteria will never be possible for sewage sludge and MBT residues. We believe that for materials such as these that are inherently more variable the mechanism that is used to define end of waste should reflect this. The UK Quality Protocols were specifically

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designed to deal with materials made from source segregated materials alone. In the process of developing the QP the UK did consider the potential use of mixed materials. However, the UK system relies on excellent knowledge of the input streams so that an operator can be confident that he will not need to either analyse the inputs materials or introduce an extended analysis scheme to cover all potential contaminants in the end product. By excluding mixed waste inputs the analysis suite for the product can be safely minimised thus restricting costs to the operator whilst still protecting the environment.

The introduction of mixed waste inputs will also have a clear and deleterious effect on the confidence in the use of waste derived materials in the markets. The UK has previously put forward a body of evidence that clearly shows the level of work and investment required to build robust and safe markets for the use of waste derived materials. This has been based on source segregated materials. We have involved a spectrum of food chain stakeholders in developing markets for composts and digestates and in doing this have addressed a very broad range of technical and perceptual issues. We have done this via quantitative risk assessment and critically through the involvement of the UK Food Standards Agency who are responsible for the safety of food production in the UK. The introduction of MBT and sewage sludge as allowable inputs for composting and AD will seriously undermine market confidence. Our food chain stakeholders are not as aware of the nature of these materials and are naturally cautious about the introduction of new materials into agreed input listings. We anticipate that composts and digestates that contain MBT will not be acceptable in UK markets unless a similar level of risk assessment to that done for source separated materials can show that the potential environmental and human health risk can be minimised or removed. Given the nature of MBT this exercise would be more extensive and we are not confident that wide markets could be found for these materials. This leads us to then question if these materials can in fact be declared end of waste. If the number of potential risks associated with them needs extensive monitoring and surveillance, and if markets will not widely accept them if used as products, given that the conditions that govern whether a material can become a non waste include the need for real markets and the lack of environmental harm, it doesn't look as if a mixed waste derived material could comply.

The use of MBT residues in the UK is restricted to one off applications for the restoration of brownfield sites and landfills. This use is controlled through waste permits. Widespread use on agricultural land or in any other applications is not allowed. Very recently the Environment Agency have issued guidance for operators who wish to run trials on the use of MBT residues on land. The guidance is extensive and reflects the need for us to know more about the nature of MBT derived materials and their potential effects on soils (link below). Once trials have been established and we are confident about the complex nature of materials derived from mixed wastes then the next step may be a permit for the spreading of individual materials. However, as noted in the third working draft, materials from different plants can have widely varying physical and chemical composition and it is in fact difficult to envisage a point when their use might be permitted via a simple permit, let alone covered via an end of waste position.

<http://publications.environment-agency.gov.uk/PDF/GEHO0512BWLS-E-E.pdf>

The situation is slightly different for sewage sludge but some of the same arguments apply. In the UK sewage sludge is spread under the requirements of the UK Sludge(Use in Agriculture) Regulations. Together with the conditions listed in the UK code of good agricultural practice for the use of sewage sludge in agriculture and the requirements of the Safe Sludge Matrix. The use of sludge is well understood and has been the subject of a similar level of scrutiny by stakeholders as the use of source segregated compost. Sludge is widely used in some agricultural applications. It is not however used widely in horticultural growing media or many other applications. Stakeholders are largely content with the status quo. As with MBT, we are not saying that an end of waste position for sewage sludge would be impossible, but the material does raise a number of similar concerns – more variable than source separated materials and potentially containing a wider range of contaminants. So, the issues raised above remain. If we were to develop an end of waste position for

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sewage sludges with would therefore use a different approach that would allow us to account for addition risk, and would not simply introduce sewage sludge into the same end of waste mechanism that we use for source separated materials.

We also need to consider carefully the interface between a potential end of waste position for sewage sludge and the requirements of the sewage sludge directive. The latter has a clear objective to monitor sludge quality and potential accumulation of potentially toxic elements in soil. Whilst an end of waste position would monitor the quality of materials that contain sewage sludge the use of the material would not be monitored at all. There is also a question of how member states would be able to fulfil the reporting requirements of the sludge directive if an end of waste position is derived that allows the use of sewage sludge. If the sludge is used as a non waste then it will not necessarily be the responsibility of the producer to use it.

### **Stability**

The JRC document defines compost (line 188) in terms of a material that has been both sanitised and stabilised:

"Compost is the solid particulate material that is the result of composting and which has been sanitised and stabilised. Composting is a process of controlled decomposition of biodegradable materials under managed conditions, which are predominantly aerobic and which allow the development of temperatures suitable for thermophilic bacteria as a result of biologically produced heat."

Similarly it is commonly accepted that digestate has to have been both sanitised and stabilised.

It is important that both compost and digestate which are designated 'end of waste' materials should have been both sanitised and stabilised. Unlike many physical and chemical processes, composting and anaerobic digestion (AD) do not have as clearly a defined end-point and the stability test is a means of demonstrating the waste has been fully recovered

Stabilisation is important because

- It is needed to ensure that the composted/digested wastes are adequately broken down and converted into a new safe, manageable useful material e.g. If waste containing feathers and bones are sanitised, but not stabilised, the feathers and bones will still be recognisable in the end product
- Compost and digestate products which have not been stabilised are liable to reheat, catch fire, give rise to leachate and cause offensive odours when they are subsequently stored or used.
- It is a necessary safeguard against 'sham recovery' and partial recovery.

### **General discussion on choice and use of analytical methods**

One general comment we would make is on the importance of understanding the potential impacts of a change in methodology from that which is currently used in the UK (or any other Member State). A common understanding is needed of the process to fully verify and accredit a method so that we have a robust and proven methodology across Europe. Accreditation of new methods can be an economically costly and time consuming process. It is also essential to allow for a mechanism for Member States to prove the equivalency of alternative methods. Not doing so could lead to the monopolisation of testing services by a few laboratories and drive smaller ones out of the market.

As stated elsewhere in this document, we have to recognise that whilst the ambition to have standard accredited methods for analysis across Europe in the form of the CEN Horizontal methods is to be applauded, we are aware that in many cases these methods are some way away from being fully accredited. Thus in the short to medium term we would propose that the JRC and the commission establish a proficiency testing centre that will allow individual

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member states to prove the equivalency and efficacy of different methods across Europe. A mechanism like this will ensure an even standard and ensure that the end of waste criteria are robust and workable. Without such a mechanism there is a danger that inconsistencies will arise between laboratories and reporting of limit values for comparison across Europe will be meaningless.