

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

ACMSF RESPONSE TO THE WRAP COMPOST AND ANAEROBIC DIGESTATE RISK ASSESSMENTS

1. In March 2010¹ ACMSF was requested to consider the Waste and Resources Action Programme (WRAP): risk assessments on the use of source segregated composts in agriculture. In September 2011² ACMSF was asked to consider the WRAP report on: quality, safety and use of digestate in UK agriculture. On both occasions ACMSF referred these risk assessment reports to a small group of members to consider on behalf of the Committee. The subgroup's comments on the reports which were approved by the Committee, were forwarded to WRAP in November 2010 (source segregated composts) and May 2012 (anaerobic digestate). See annex A.
2. On 16 September 2013, authors of the WRAP reports met with ACMSF's WRAP subgroup (**Vivianne Buller, Paul McMullin, Rick Holliman, John Coia, Roy Betts and Gary Barker**) to discuss the changes to the above reports and new work procured by WRAP, as a result of the comments provided by ACMSF. WRAP provided an overall summary of the changes and results of new work covered by the 8 reports submitted to the subgroup. See annex B.
3. At the meeting WRAP provided an overview of the compost and anaerobic digestate risk assessment reports and highlighted the changes they had made to the reports to address ACMSF comments.
4. Members considered whether their comments had been adequately addressed in the revised documents and a summary of their specific comments is outlined below.

Source segregated compost

5. The group found that the amendments made by WRAP in relation to the revised risk assessment had addressed most of the issues identified by ACMSF. However further comments were made on the following areas:
 - over-precision within the risk assessments,
 - range of pathogens considered,
 - impact of process by-pass for composts derived from catering waste,
 - public acceptability around use of meats as a component of plant food fertilizer,
 - risk communication.
6. Although the issue of **over-precision** within the risk assessments has been better addressed in the revised risk assessments documents, the group

¹ <http://www.food.gov.uk/multimedia/pdfs/committee/acm976wrap.pdf>

² <http://www.food.gov.uk/multimedia/pdfs/committee/acm1035wrap.pdf>

remained concerned about the level of precision implied by the data. For example risk estimates were given to three significant figures in some instances. Whilst it was noted this was not technically wrong, as currently presented the calculated figures imply a level of accuracy (particularly to a lay reader) which might cause some issues with risk communication. It was suggested that the figures could be rounded, as appropriate to intervals of days, weeks, months, years etc.

7. The group felt that the reports and summary were not explicit on how the **range of pathogens** for assessment was selected and the reports would benefit from greater transparency in this area. Ultimately the report should provide clearer justification for specific omissions, which include some of the more heat-resistant pathogens. WRAP noted that certain hazards may have been excluded from consideration due to lack of data. Extensive discussions were held with stakeholders, along with drawing on a published literature review, to select pathogens of interest including those most likely to survive. This would be clarified in the reports.
8. The group had continuing concerns over the lack of operational data showing actual rates of **process compliance and by-pass** achieved in practice, as this would have a bearing on risk. WRAP noted that it had to assume Regulatory compliance but that the impacts of various degrees of by-pass had been considered in sensitivity modelling, including what the authors considered to be worst case assumptions. The group, however, considered the absence of 'real-life' data from commercial operation to be a weakness, as it could not be sure which scenario best reflected reality. WRAP noted that it would seek a contribution from AHVLA, as the responsible regulator, to cover how process compliance is verified and by-pass managed in practice for inclusion in the risk assessment report.
9. The group restated their concerns over **public acceptability** of the use of meat and animal by-products in compost production and noted this may need some further consideration either by WRAP or the relevant risk managers when dealing with communication of the risks. The group suggested that estimated risks could be presented within the context of wider societal benefits from composting. It was also recognised that there were other factors which were outside the scope of the risk assessment that users of composts may wish to take into account, such as religious or dietary considerations.

Quality, safety and use of anaerobic digestate

10. The group found that the amendments made by WRAP in relation to the above report had addressed most of the issues identified by ACMSF. However further comments were made on the following areas:
 - over-precision within the risk assessment,
 - projects that were carried out to address ACMSF's comments on *C.botulinum*,
 - range of pathogens considered,
 - impact of process by-pass for digestates,

- public acceptability around use of meats as a component of plant food fertiliser.
11. The group reiterated the previous point they had made on **over-precision** which also applied to the anaerobic digestate risk assessment.
 12. In addressing ACMSF's comments on ***Clostridium botulinum***, WRAP had procured two new projects³. The group acknowledged that information from the projects had been helpful. On the ADAS project, undertaken to determine the presence of *C.botulinum* in a range of organic materials and associated loadings to agricultural soils, the group noted that no significant accumulation of spores had been detected in the receiving soils following application of the composts and digestates studied. The group felt that the report's authors should include further details on the types of soils studied, including historical use of soil amendments, since materials such as poultry litter could increase the baseline loading of spores in the soil. The FERA project studied the impact of anaerobic digestion processes on *C.botulinum* spores and toxins. The group noted that the results obtained were equivocal and do not provide any clear evidence to show that toxin is not produced during the anaerobic digestion process. In particular, the group noted that this study had not produced any experimental results for *C. botulinum* types C and D (group III) due to loss of toxin genes from the isolates prior to the experimental stage. WRAP confirmed that a further study is to be procured which will investigate the differential impact of pre- and post- digestion pasteurisation on *C.botulinum*. This work will test a range of digestates in Scotland for *C.botulinum* spores and toxin. The group recommended that *C.botulinum* groups I and II be included within the scope following a request from WRAP for advice. The scope had initially been restricted to *C.botulinum* group III reflecting interest from the livestock sector and Scotland's Chief Veterinary Officer. The group also commented on the potential for occupational exposure to *C botulinum* in workers who handle the material at anaerobic digestate facilities and during land spreading. It was suggested that this should be covered by the risk assessment report and advice included in the ADAS good practice guidance. This could include reference to comparable risks from other organic materials (e.g. slurries) which may be handled and spread in the same way.
 13. The group referred to its previous comments regarding transparency in how the **range of pathogens** for assessment was selected, as this applied to the anaerobic digestate risk assessment report, as well as for composts. In particular the rationale for omitting other a wider range of TSE agents was not explained and this should be clarified.
 14. Concerning actual rates of process compliance and the **impact of process by-pass** on risk, the group referred back to their previous comments which apply to anaerobic digestates in addition to source-segregated composts.

³ (i) ADAS report on *Clostridium botulinum* in the environment; (ii) FERA report on *Clostridium botulinum* in AD systems

15. The group noted that its previous comments relating to **public acceptability** of meat and animal by-products in compost production also apply to the production of anaerobic digestates.

ADAS good practice guidance and renewable fertiliser matrix

16. The group noted WRAP's statement that additional text would be inserted in the draft ADAS **renewable fertilizer matrix** to require a 42-day interval between application and harvest that was needed to align the matrix with the compost and anaerobic digestate risk assessments. The group commented that the 'blanks' for Group 3 fresh produce in the draft matrix could trigger questions, as it gives an impression that composts and digestate can be applied at any time during the growing period. WRAP confirmed that there were practical sector-specific limitations on use and that this would be made more explicit in the matrix. The group also requested a note be included to explain that Group 3 fresh produce only comprises vegetables that require cooking prior to consumption to make explicit this additional risk-reduction step. Clarification was also requested on the status of plants used to derive seeds for sprouting within the matrix.

Possible further work

17. The group noted that its previous comments on the lack of actual data on pathogen reduction from routine operation of anaerobic digestate (and composting) facilities to validate model assumptions on by-pass rates remains an evidence gap that would be worthwhile addressing.

General conclusion

18. The subgroup welcomed the changes WRAP had made to the risk assessment reports commenting that the additional work undertaken, amendments and additions made have addressed most of the points the ACMSF had raised previously.
19. Subject to the comments summarised in this note and the proviso in paragraph 21 below, the group was generally satisfied that the microbiological risks arising from production and use of PAS-compliant composts and anaerobic digestates are acceptably low. The group stressed this view was based on evidence provided by WRAP to date and an assumption of full compliance with statutory requirements, the renewable fertiliser matrix and associated good practice guidance.
20. The group considered it was not possible to come to a view in respect of risks from *C. botulinum* group III (Types C and D), since the work procured to date had failed to provide any new evidence. The group therefore indicated a proviso that the results of further experimental work planned by WRAP on the

fate of *C.botulinum* in anaerobic digestion would need to be reviewed before they could reach a firm view.

21. The group felt that the lack of any clear understanding regarding operational compliance rates and the amount of process by-pass remained one of the biggest sources of uncertainty. While it was generally accepted this was outside the direct scope of the risk assessment the group felt it was important this issue be addressed by WRAP and other bodies involved in risk management.

22. Members are invited to:

- **Note** the comments provided by the above members on the revised WRAP compost and anaerobic digestate risk assessments
- **Agree** that the group's comments summarised in this note be formally conveyed to WRAP.

Secretariat
September 2013