

Guidance on the safety and shelf-life of vacuum and modified atmosphere packed chilled foods with respect to *Clostridium botulinum*

First meeting of Food Standards Agency VP/MAP Guidance drafting group 11th October 2006, Room 531 Aviation House.

Present

Alec Kyriakides (AK)	BRC
Jenny Morris (JH)	CIEH
Maurize Rossi (MR)	Sealed Air
Kaarin Goodburn (KG)	CFA
Mike Peck (MP)	IFR
Mike Stringer (MS)	CCFRA
Kevin Woodfine (KW)	FSA, PPD
Kathryn Callaghan (KC) (Chair)	FSA, MSD
Ian Smith (IS)	FSA, MSD

Apologies

Paul Cook (PC)	FSA
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Introductions.

1. The chair welcomed members to the first meeting of the drafting group. This was the first of a series of meetings to take forward extensive revisions of the Agency guidance on vacuum packed and modified atmosphere packed chilled foods.

Background to Food Standards Agency Vac Pac/ Modified Atmosphere guidance document.

2. The guidance document brought together existing industry code of practice and advice from the ACMSF into a single concise document, for ease of reference. The draft guidance went out for public consultation in 2004. The 10 day shelf life rule was revised following an independent review of *Clostridium botulinum*. w.r.t to chilled foods. The ACMSF has endorsed the conclusion from the review that for short shelf-life foods where other controlling factors are not identified storage at $\leq 8^{\circ}\text{C}$ and a shelf-life of ≤ 10 days is recommended. In addition to the revised 10 shelf-life rule, the guidance will need to take account of comments from the public consultation and key findings and conclusions from the review. These are stated at paragraph 40.

3. It was anticipated that two to three meetings would be required to complete the revision of the guidance, with the final version being submitted to the ACMSF in 2007. Once responsibilities had been assigned to members of the drafting group it will be easier to estimate the time required. A Regulatory Impact Assessment may be required e.g. the 10 day shelf ruling may impact as a barrier to trade and the group would consider that further, with advice from FSA.

Scope of the guidance document

4. Members considered that the scope of the document was critical and it should focus on the risk involved in these type of products. The guidance should be focussed on chilled VP and MAP products, it should acknowledge recent developments on temperature control and HACCP, and should be kept as concise as possible. The focus should be *C.botulinum* rather than general guidance on microbiological risks, but that should extend to partially oxygenated packed foods with extended shelf-lives.

Pitch: It should be pitched at the level of Safer Foods Better Business, but not as a best practice guide. An original aim of the ACMSF guidance was to protect against the dangers of 'home vacuum packing' and this should be transparent.

Imports: The discussion moved to the problem of personal importing of products from Eastern Europe, associated with an increase in the number of reported cases of botulism. It was noted that the FDS Consultative Group had requested a paper on imported foods and the drafting group could consider further on the basis of FDS conclusions.

Mail order: Members agreed the guidance should cover mail order and the opening paragraph of the document should be extended to "... irrespective of the distribution channel"

Promotion of finalised guidance: The guidance could be disseminated with new vac packing equipment. Responsible manufacturers are keen to participate to maintain their reputation for safety;

Incorporation of consultation comments into guidance

5. *'the FSA draft should be more prescriptive and make detailed references to HACCP, in particular the need to challenge test or carry out predictive modelling in the context of HACCP'.*

Drafting group response:

Challenge testing: As a tool, challenge testing is considered to be expensive and impractical for small businesses. There is no standard protocol and the technique should not be used in isolation. It is of little relevance to short-life foods, but is an option for certain foods so Members agreed to retain references to it for now.

Predictive models: Largely based on broth studies but some use real food samples. No single model is good for all conditions. But predictive models

are as a rule failsafe, therefore generally indicating a shorter shelf-life than may be achievable

HACCP: There is no obligatory training requirement for understanding HACCP principles that small businesses have to comply with. HACCP should form an important basis of the document and KG agreed to draft this new section. This would encompass all types of food business and JM agreed to have input on this.

ACTION

6. *'Users should be referred to the key issues as given in the Industry Code of Practice: training of food handlers, risk assessment, monitoring of control points, product formulation, temperature control, definition of product life, hygiene and the prevention of cross-contamination'*

Drafting group response:

Members discussed the difficulty in deciding the 'content' of a full risk assessment. There needs to be clarity in what a risk assessment means. It can be broken down into risk judgement and risk profiling for different types of food. Each of these stages would be a big undertaking in itself. The quality of data will determine how useful the risk assessment will ultimately be. Interpretation will be dependent on the skill of the person doing the assessment and providing the technical advice. Members agreed that reference should be made to the use of risk profiling as another tool.

7. *'ideally the proprietor should be required/ advised to notify the Local Authority'*

Drafting group response:

There is no legislative requirement for small businesses to notify the Local Authority of changes in manufacturing processes. This would be more relevant if a business started using vac packing for the first time. An EHO would investigate if a process was very different from the established procedure, and there was a perceived risk, based on scientific opinion that there was a food safety hazard. The business would then need to justify the practice on this basis. The document would guide EHOs on the decision making process (e.g. in relation to issuing an improvement notice).

ACTION: JM to draft guidance for EHOs/ Local Authorities. This will largely involve cross referencing existing procedures.

8. *'advice on whether the risk is great enough to require thermo graphic cooking records to verify 90°C would be valuable'*

Drafting group response:

The group agreed that temp/ cooking time evidence should be demonstrated in the guidance (and should be part of the HACCP requirement).

9 *'the guidance needs to include advice on the repackaging of previously vacuum packed items into smaller units and assigning the same or*

possibly different date marking advice. The acceptability or otherwise of this practice needs to be covered and reference made to the need to recognise additional critical control points'

Drafting group response

Agreed, and not only for just small businesses. This issue has already been covered in the literature review and will be translated into the guidance.

10. *'it would be very helpful if the guidance could include generic HACCP plans for vacuum packed products e.g. a suggested plan for vacuum packed raw meat and vacuum packed cooked meat'*

Drafting group response:

Generic plans by their very nature would not take account of local manufacturing conditions. The guidance is not intended to be a manufacturing guide but rather a controls guide. Reference could be made to HACCP plans in the Industry Code.

11. *'more pre worked examples such as for vegetables and raw meat'*

Drafting group response:

It was agreed that the guidance should include reference to existing material e.g. 'Best Practice Guidelines for the Production of Chilled Foods', 4th edition 2006, using various food types as examples.

12. *'the FSA guidance has oversimplified the issues. Would prefer a summarised/ simplified industry code'*

Drafting group response:

Working on this.

13. *'the FSA should make a clear statement if they believe that predictive tools alone can be used to determine product safety for MAP/VP products that do not meet specific controlling factors, or if they believe that a challenge test must also be done'*

Drafting group response:

Predictive tools, like other tools, have drawbacks and it is more important to state that they require interpretation by specialists. Members agreed that it would be helpful if the document mentioned places that people go for that expertise.

14. *'Could information be given on accredited laboratories able to carry out challenge testing'?*

Drafting group response:

Such a list would go out of date very quickly.

15. *'Which growth predictive systems should be included in the guidance?'*

Drafting group response:

The guidance could include a resources table of recommended predictive models and accredited laboratories. Predictive models should be based on food studies rather than broth studies. Some predictive models are very conservative, whilst others are less accurate with longer shelf lives beyond 10 days. Need to make it clear that 'interpretation of such models requires specialist advice. It was suggested that MS or MP could assist in the drafting of this paragraph

ACTION

16. *'redraft section "What is Clostridium botulinum?" to be more specific about anaerobic conditions in food, for example that botulism outbreaks have been associated with baked potatoes in aluminium foil'*

Drafting group response:

The redraft should more fully reflect text in the review, MP agreed to be consulted further on this section

ACTION

17. *Psychrotrophic C. botulinum is more commonly found in fresh water than in marine sediments*

Drafting Group response: Could draft a line to clarify

18. *Queries whether smoked fish should be specifically cited*

Drafting Group response: Group will look to the review for appropriate incidences to highlight as a particular problem for VP/MAP

19. *Document does not differentiate foods that may be high in oxygen MAP from those that may be under true anaerobic conditions*

Drafting Group response: A new section clarifying the risks under different oxygen conditions could be helpful

20. *High oxygen MAP not a risk, but, some products which may not be conventional MAP packs may present a risk*

Drafting Group response: Could add a small appendix covering products in air that could potentially present a problem e.g. garlic in oil

21. *Need to clarify which products are covered by the guidance. Need to include raw meat and meat products*

Drafting Group response: The guidance will make it clear that it covers both raw and cooked products

22. *Need to clarify if guidance includes raw products. CCFRA guideline 11 covers all raw products and specifically mentions raw/cooked vegetables, raw cured meats and raw uncured meats*

Drafting Group response: Agreed

23. *Mesophilic C. botulinum has led to outbreaks of foodborne botulism following temperature abuse of products intended for chill storage in other countries. Revise lines 3-4 of the first paragraph to “Mesophilic C. botulinum is considered a low risk with respect to...”*

Drafting Group response: Agreed

24. *‘Some of the language still too complicated for small retail and caterers. Perhaps the wall chart or leaflet version mentioned could stick to the basic “rules of thumb” outlined in Fig 1 and Fig 2’.*

Drafting group response:

Will need to consider the re-draft first.

25. *‘the key points in Fig 1 should be presented in reverse sequence. This would more logically follow the decision making process for manufacturers and retailers’*

Drafting group response: Members agreed that Fig 1 should be deleted

26: *‘It would be helpful if the figure and text referred to storage life <3°C as having no specific requirements for control of psychrotrophic C.botulinum*

Drafting group response: This is already clear.

27. *‘Fig 1 fails to specify a quantitative reduction in risk and should be re-phrased to read “a combination of heat and preservative factors that provides a protection factor of 6 log reduction against the risk of survival and growth from spores of psychrotrophic C.botulinum throughout the shelf-life of the product”. This change should be applied throughout the document’*

Drafting group response:

Agreed

28. *‘Clarification of what is meant by “predistribution storage life” and how is shelf-life defined in Fig 2’*

Drafting group response

Could refer to the shelf-life beginning once the temperature is > 3°C in the chill supply chain of the product;

29. *‘suggest using words rather than symbols for less than, more than etc. to make it more user friendly for small catering premises proprietors’*

Drafting group response:

Agreed.

30. *“Minimum heat treatment” should clarify that it is the slowest heating part of the food which must reach this temperature. Suggest that “core temperature” or “centre temperature” should be used to describe the time/temperature combination throughout the document’;*

Drafting group response:

Agreed that this should be made clear in the document;

31. *‘In Fig 1 more explanation of step 3 is needed. Also suggest that Figs 1 and 2 include wording to encourage seeking further professional advice’*

Drafting group response:

Agreed

32. *‘Reference to other organisms other than C.botulinum in Table 1 could be confusing.*

Drafting group response:

Agreed that table 1 should be deleted from the guidance.

33. *‘Table 2 should be extended to include time/ temperature combinations above 90°C’*

Drafting group response:

Agreed. Table 4: Lethal rates for psychrotrophic *Clostridium botulinum* from the CFA best practice guidelines will replace Table 2.

34. *Remove reference to Listeria monocytogenes in annex (Background Information on the Specific Controlling Factors).*

Drafting group response:

Agreed. Reference to *L. monocytogenes* will be deleted from the background section of the guidance.

35. *Need to revise the explanation of protection factor*

Drafting Group response: Agreed – MP to revise this section

ACTION

36. *‘Nitrate/ nitrite are important control factors particularly for cured meats e.g. hams (cooked) and bacon (raw) and should be mentioned in the combination of control factors’*

Drafting group response:

The group considered there to be very little data available on the use of nitrate/nitrite to control *C.botulinum* – will consider further when the first draft of the revised changes is available.

37. Clarification needed of recommendation on process temperature (90°C for 10 minutes). Is this “in final pack” ?

Drafting group response:

38. *‘The wording of footnote 5 (For long shelf-life foods (> 40 days) stored at chilled temperature $\leq 8^{\circ}\text{C}$, research published since publication of the ACMSF advice and industry Code of Practice suggests that in addition to a heat treatment of 90°C for 10 minutes (or equivalent see Table 2), challenge testing may be needed to establish the maximum shelf-life) is important and should also appear in Fig 1 and 2’*

Drafting group response:

Agreed that footnote should appear in Fig 1.

39. ‘Lower water activities may be required if other factors are controlling water activity (e.g. chilled pasta). This should be revised to “an aw of 0.97 (controlled by NaCl) or lower throughout the food”

Drafting group response:

Agreed.

Consideration of key findings of literature review

40. Main points coming out of the literature review:

- The importance of HACCP procedures;
- Current practice of $\leq 8^{\circ}\text{C}$ for ≤ 10 days seems to be safe, but need to be cautious about revising existing practices or devising new practices;
- Guidance should apply to all chilled foods sold in the UK;
- Should also apply to food packed under air, since anaerobic conditions can exist inside food;
- Do not permit rolling shelf life i.e. no repackaging;
- How will the recommendations of the report affect the situation in Scotland w.r.t. minimum chill temperature;
- There is a choice of z-values, in relation to 90°C for 10 min. (merit of using CFA time/ temperatures);
- Combinations of factors (as included in ACMSF criteria) need to be quantitative and a 6D process (rather than “consistently prevent growth”);
- Are mail order foods covered by the guidance?
- New technologies need to demonstrate equivalence;
- Discuss available software tools;
- A water activity of 0.97 relates to NaCl, it will be lower in foods where water activity is controlled by other agents e.g. chilled pasta.

Timetable

41. It was agreed that the Agency would endeavour to get the first draft of the revised guidance to members for comment by December 2006. It was anticipated that the final version of the report would be endorsed at the June 2007 ACMSF meeting.

ACTION

IS to redraft guidance to reflect agreed changes and clear contributions from members of the drafting group as appropriate.

A.O.B.

42. KG asked the Agency how the key recommendations from the review would be taken forward and suggested that a formal response to the recommendations was needed. The Chair said the recommendations would be considered fully, but the publication of the guidance would take priority,

Date of next meeting.

43. The date of the next meeting of the drafting group is provisionally arranged for Wednesday 24th January 2007.