

**ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD**

**Review of scientific evidence to support FSA consultation on vacuum-packaged and modified atmosphere packaged foods**

1. At its meeting in December 2004 the committee examined issues raised in response to the Agency's consultation on its guidance on the safety and shelf life of vacuum and modified atmosphere packed chilled foods with respect to psychrotrophic *Clostridium botulinum*. Non-proteolytic *C.botulinum* is the principal microbiological hazard associated with these foods.
2. The FSA guidance summarised the guidance and advice from the industry Code of Practice for the Manufacture of Vacuum and Modified Atmosphere Packaged Chilled Foods (1996) and advice from the ACMSF in its Report on Vacuum Packaging and Associated Processes (1992), and the Committee's subsequent advice on shelf-life (1995).
3. In response to the FSA's consultation, concern had been expressed by industry about the proposed shelf-life limitation of 5-days (based on ACMSF advice, 1995) for chilled products (10°C and below), and products stored above 5°C where failure to support the growth of *C. botulinum* had not been established.
4. The committee proposed that the FSA should commission an independent review of the current scientific evidence concerning vacuum and modified atmosphere packaged foods and the risk of *Clostridium botulinum*. The review of scientific evidence has now been undertaken and was led by the Institute of Food Research. A summary of the key conclusions from this review are at Annex A and an extended summary of the report is at Annex B. The main report will be available in due course.
6. Member's views are sought on the findings of the independent scientific review and, in particular, whether the committee supports a '10 day shelf life' recommendation with the FSA guidance document being revised from ≤5 days to ≤10 days at ≤8°C.

**Secretariat  
June 2006**

## ANNEX A

### **Key conclusions from the review of *Clostridium botulinum* in vacuum and modified atmosphere packed (MAP) chilled foods.**

- Substantial quantities of chilled foods are sold in the UK and overseas and when correctly stored they have not been associated with foodborne botulism. Current practice would therefore appear to have a high degree of safety;
- Data from 1307 independent challenge tests indicate that, given the right circumstances, toxin formation by inoculated non-proteolytic *C. botulinum*, will occur in 10 days or less at 8°C. Predictive models (e.g. the ComBase Predictor) using established controlling factors (e.g. pH, water activity, temperature) also indicate potential for toxin formation in 6 days at 8°C.
- Short shelf-life foods have been produced safely in the UK (and internationally) for more than 2 decades and the lack of reports of botulism associated with these foods suggests that their safety is dependent on one or more 'unknown controlling factors'.
- The FSA guidance should include the '10 day shelf life' recommendation - storage at  $\leq 8^{\circ}\text{C}$  and a shelf life of  $\leq 10$  days. This is based on extensive sales of chilled foods without any reported foodborne botulism in this sector (when correctly stored);
- For foods where one or more controlling factors cannot be identified the maximum shelf life is 10 days. This should commence once the product is first vacuum or modified atmosphere packed and not be re-started if the product is subject to further packing under vacuum or modified atmosphere, unless other controlling factors are applied.
- Modifying current industrial practices (e.g. extending the shelf-life of chilled foods over that currently used), and the development of new products needs to be undertaken with great care;
- Packaging under air or a similar oxygen-containing atmosphere is not a guarantee that toxin formation by non-proteolytic *C. botulinum* will be prevented i.e. the food is reduced;