

# Advisory Committee on the Microbiological Safety of Food

Annual Report 2006

Advises the Food Standards Agency on the  
Microbiological Safety of Food

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# **Advisory Committee on the Microbiological Safety of Food**

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The Advisory Committee on the Microbiological Safety of Food (ACMSF) was established in 1990 to provide the Government with independent expert advice on the microbiological safety of food.

The Committee's terms of reference are:

**to assess the risk to humans from microorganisms which are used, or occur, in or on food, and to advise the Food Standards Agency (FSA) on any matters relating to the microbiological safety of food.**

The various issues addressed by the Committee since its inception are detailed in this and previous Annual Reports<sup>1-14</sup> and in a series of subject-specific reports.<sup>15-27</sup>

## Foreword

1. I am pleased to present the 2006 Annual Report of the Advisory Committee on the Microbiological Safety of Food (ACMSF).

2. In 2006, the ACMSF concluded its work to review the current advice on the safe cooking of burgers originally issued by the Chief Medical Officer (CMO) in 1998. Its *Ad Hoc* Group met on two occasions and considered documentary and oral evidence relating to the epidemiology of *E.coli* O157 and other key pathogens, guidance and cooking conditions for burgers in the UK, US and other countries, published scientific evidence, information from industry and a modelling approach to setting confidence limits. Key conclusions and recommendations were that the CMO's advice for safe cooking of burgers should not change and, in line with current advice, should remain at 70°C for 2 minutes or equivalent. The group also concluded that use of lower time/temperature combinations should not be ruled out where producers were in a position to demonstrate that they would be able to ensure consistently that the final product is safe and that the process is under effective control. The ACMSF recommended that the Agency produced guidance on appropriate use of such time/temperature controls for industry and enforcement officers. ACMSF also recommended that FSA consider using a modelling approach to set recommended time/temperatures based on required inactivation levels and limits of confidence. Lastly the ACMSF proposed that advice to consumers and caterers on cooking of burgers should be reiterated. The conclusions and recommendations from this report will be used to inform the future development of ACMSF advice to the Food Standards Agency.

3. The Committee also published two reports on botulism in 2006. In September, following a period of public consultation, the Committee published its report on the potential health risk from infant botulism associated with the consumption of chilled or frozen baby foods. The conclusions and recommendations were highlighted in the ACMSF Annual Report 2005. In December the ACMSF published its report on the potential risk to human health from cattle botulism associated with the spreading of poultry litter on poultry land. This followed public consultation which took place earlier in the year. The report concluded that there was a low risk of transmission of botulism in cattle and that there should be no requirement to restrict movement of meat and milk from healthy animals from farms where there have

been clinically suspected cases of botulism in cattle. There should also be no requirement to restrict the slaughter of healthy cattle from herds where cases of confirmed or suspected botulism have occurred. However meat and milk from clinically affected animals should not enter the food chain since this might pose a risk to consumers. The Committee also recommended that in the event of the emergence of new toxin types in cattle, surveillance should be carried out. Following publication of this report, and in line with its recommendations, the Committee was informed that the Agency would be implementing a change to its advice and would no longer request voluntary restrictions for healthy cattle from farms where cases of botulism were suspected.

4. Twice in 2006 the Committee considered the changing pattern of human listeriosis in the elderly population in England and Wales. This followed the rise in non-pregnancy related listeriosis in the elderly since 2000, which could not be explained by recognised outbreaks, and which was initially reported to ACMSF in 2005. Noting the continued increased incidence in England and Wales and a similar situation emerging in Scotland, we reiterated the need for an investigative approach to identify changes in the pathogen, assess the vulnerability of the target group and identify the vehicle of exposure. We also considered mechanisms for provision of more information about the biology of the organism and the observed change in epidemiology. We agreed to revisit listeriosis in 2007.

5. Other potential risks to human health through food chain exposure pathways discussed by the Committee included toxoplasmosis and hepatitis E. Whilst recognising that there were many gaps in the epidemiological and foodborne data available for hepatitis E, we agreed that ACMSF advice remained that pork and pig products should be cooked thoroughly. In June Members were informed that the Committee's Working group on Avian Influenza had reviewed the ACMSF's risk assessment and concluded that there was no new published scientific evidence to suggest a role for the food chain in the transmission of Avian influenza to humans. The Committee also commented on a new approach for disinfecting abattoir tools, noting that whilst 82°C was highlighted as the preferred standard for disinfection of knives, more information was needed to assess what this delivered in terms of microbiological safety.

6. We also considered the microbiological risks associated with reduction of total fat, saturated fat and added sugar in some processed foods. We examined the likely compositional changes in foods subject to reformulation, product safety and stability. We also considered microbiological risks linked to products whose stability

was influenced by sugar and fat content. We reviewed use of predictive modelling to demonstrate effects of changes on water activity, pH and sucrose content on microbial growth. We concluded that differences in the behaviour of individual organisms needed to be considered and identified difficulties associated with adopting a broad brush approach to product reformulation. We also identified data gaps and highlighted the need for a risk/benefit analysis including consideration of public health benefits such as reductions in obesity.

7. In June we reviewed the current scientific evidence concerning vacuum and modified atmosphere packaged foods and the risk of *Clostridium botulinum*. We endorsed support for a 10-day shelf life recommendation with guidance on vacuum packaging being revised from less than or equal to 5 days to less than or equal to 10 days at 8°C. We also identified a need for summarised guidance to help enforcers and industry highlighting that this should be brought to the attention of other Member States.

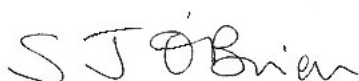
8. Our Working Group on surveillance has considered protocols for FSA surveys on *Listeria* in smoked fish, *Salmonella* in eggs used in the catering industry and in non UK eggs on retail sale and red meat. The Group also commented on a draft survey report on *Salmonella* in non-UK eggs.

9. The Committee revisited its horizon scanning activities in 2006 and short-listed priorities for horizon scanning topics which included food safety and processing, agriculture and food production, vulnerable groups, imported foods, biocides, noroviruses and schools. We agreed to focus our attention on vulnerable groups in light of the recent trend in listeriosis in older people and established an *Ad Hoc* Group to progress this work.

10. The Committee's drive to become publicly accessible has continued in 2006. All of our quarterly meetings continue to be open to the public with a public question and answer session featuring at the end of each agenda. Aside from meetings, we are also accessible via our e-mail address and web pages. Indeed, our web pages are regularly updated for each meeting, and provide a useful source of information about the Committee and its activities. During the year we used the web site to consult publicly on our Reports on botulism in cattle and safe cooking of burgers. We received positive responses to both Reports including comments on the consultation from a wide-range of interested parties, the views of which were carefully considered by the Committee prior to finalising the Reports for publication. In September we reviewed our current approach to openness. Members were keen to remain as open as possible.

11. Looking to the future, the Committee will publish the outcome of the work of its *Ad Hoc* Group on Vulnerable Groups and we will continue to monitor closely developments on the increase in listeriosis. We will also report on new work to assess the potential risk to human health from botulism in sheep and goats and guidance for vacuum-packaged foods. In addition, we will review our work against principles for presenting scientific advice including a best practice agreement for Scientific Advisory Committees.

12. I am indebted to the members of the Committee and its Working and *Ad Hoc* Groups without whose efforts the ACMSF could not operate effectively, and to the many other individuals and organisations who have helped the Committee with its work. I am also very grateful for the support of the Secretariat, whose efforts in ensuring the efficient and effective conduct of Committee business is invaluable.



Professor Sarah O'Brien

**Chair**

## **Introduction**

1. This is the fifteenth Annual Report of the Advisory Committee on the Microbiological Safety of Food (ACMSF). It covers the calendar year 2006.

## **Chapter 1 : Administrative Matters**

### **Membership**

#### **Appointments**

2. Appointments to the ACMSF are made by the Food Standards Agency (FSA), after consultation with United Kingdom Health Ministers (i.e. the “Appropriate Authorities”) in compliance with Paragraph 3(1) of Schedule 2 to the Food Standards Act 1999. The Agency has resolved that appointments to the ACMSF should be made in accordance with Nolan Principles<sup>28</sup> and the guidance issued by the Office of the Commissioner for Public Appointments (OCPA)<sup>29</sup>. The FSA is not bound to follow OCPA guidance, as this applies only to appointments made by Ministers. However, although ACMSF appointments are not made by Ministers, the Agency has decided that it would nevertheless be right to comply with OCPA guidance.

#### **Periods of appointment**

3. To ensure continuity, appointments to the ACMSF are staggered (usually for periods of 2, 3 or 4 years) so that only a proportion of Members falls to be appointed, re-appointed or retire each year.

#### **Spread of expertise**

4. A wide spectrum of skills and expertise is available to the ACMSF through its Members. They are currently drawn from commercial catering, environmental health, food microbiology, food processing, food research, food retailing, human epidemiology, medical microbiology, public health medicine, veterinary medicine, and virology. The Committee also has 2 lay/consumer Members.

5. Members are appointed on an individual basis, for their personal expertise and experience, not to represent a particular interest group.

#### **Appointments in 2006**

6. Three Members were appointed to the ACMSF during 2006: Dr Richard Holliman, Dr Sally Millership and Mrs Jennifer Morris<sup>30</sup>. Dr Holliman provides the Committee with medical microbiology expertise. His period of appointment runs from 1 April 2006 until 31

March 2009. Dr Millership provides the Committee with public health expertise. Her period of appointment runs from 1 April 2006 to 31 March 2007. Mrs Morris provides the Committee with environmental health expertise. Her period of appointment runs for a period of 3 years from 1 April 2006 until 31 March 2009.

#### **Retirements in 2006**

7. Dr Kay Hadley and Dr Quentin Sandifer retired from the Committee on 31 March 2006 after completing 5 years' service respectively.

Mr Philip Mephram also retired on same date after completing 3 years' service.

8. The Chair expressed her gratitude to all the retiring Members for their contribution to the work of the ACMSF and wished them well for the future.

#### **Committee and Group meetings**

9. The full Committee met 3 times in 2006 – on 8 June, 28 September and 5 December. All three meetings were chaired by Professor Sarah O'Brien. All full Committee meetings were open to members of the public.

10. The *Ad Hoc* Group on Infant Botulism (Chair: Professor O'Brien) considered the comments received in response to the public consultation on the draft report in early 2006. The Committee approved the publication of the report at the June 2006 meeting. The *Ad Hoc* Group on Botulism in Cattle (Chair: Professor Williams) considered the comments received in response to the public consultation on the draft report in September 2006. The Committee approved the publication of the report at the September meeting. The *Ad Hoc* Group on the Safe Cooking of Burgers (Chair: Professor Williams) met twice. The Group presented its draft final report to the Committee at the June 2006 meeting and the Committee agreed to issue the report for public consultation. The consultation on this report took place between July to October.

11. The *Salmonella* Contact Group (Chair: Professor Sarah O'Brien) met once in June to review risk assessment information relating to a *Salmonella* contamination of chocolate incident.

12. The Working Group on Avian Influenza (Chair: Dr David Brown) met once in March to review the Committee's 2003 risk assessment on avian influenza and to review import control measures for poultry meat and eggs.

13. The Working Group on Surveillance (Chair: Professor Tom Humphrey) met twice to consider the FSA's surveillance techniques and protocols, FSA surveys on eggs, red meat and *Listeria*. The Group also received a presentation from the FSA statisticians on survey organisation and sampling.

14. The Newly-Emerging Pathogens Group (Chair: Professor Paul Hunter) reported limited activity via the message board as no major threats to the food supply had been identified in 2006.

#### **Current membership and Declarations of Interests**

15. Full details of the membership of the Committee and its Working and *Ad Hoc* Groups are given in Annex I. A Register of Members' Interests is at Annex II. In addition to the interests notified to the Secretariat and recorded at Annex II, Members are required to declare any direct commercial interest in matters under discussion at each meeting, in accordance with the ACMSF's Code of Practice (see Annex III of 2002 Annual Report<sup>11</sup>). Declarations made are recorded in the minutes of each meeting.

#### **Personal liability**

16. In 1999, the Secretary of State for Health undertook to indemnify ACMSF Members against all liability in respect of any action or claim brought against them individually or collectively by reason of the performance of their duties as Members (Annual Report 1999<sup>8</sup> paragraph 6 and Annex III). In 2002, the Secretariat asked the FSA to review this undertaking, given the fact that, since 2000, the ACMSF had reported to the Food Standards Agency where previously it had reported to UK Health Ministers. In March 2004 the Food Standards Agency gave a new undertaking of indemnification in its name, which superseded the earlier undertaking given by the Secretary of State (see Annex IV of 2004 Annual Report<sup>13</sup>).

## **Openness**

### **Improving public access**

17. The ACMSF is committed to continuing to open up its work to greater public scrutiny. The agendas, minutes and papers (subject to rare exceptions on grounds of commercial or other sensitivity) for the Committee's quarterly meetings are publicly available and are posted on the FSA website at:

<http://www.food.gov.uk/science/ouradvisors/microbiogsafety>

18. The Committee also has an e-mail address :  
[acmsf@foodstandards.gsi.gov.uk](mailto:acmsf@foodstandards.gsi.gov.uk)

### **Open meetings**

19. Following the recommendations flowing from the FSA's Review of Scientific Committees,<sup>31</sup> the ACMSF decided that, from 2003 onwards, all of its quarterly meetings should be held in public.

20. The June and September 2006 meetings of the Committee were held in Aviation House, the Food Standards Agency's London Headquarters. The December meeting was held in Trinity House, Tower Hill, London EC3.

21. All of these open meetings follow a common format. Time is set aside following the day's business for members of the public and others present to make statements and to ask questions about the ACMSF's work. The names of participants, the organisations they represent, and details of any statements made, questions asked and the Committee's response, are recorded in the minutes of the meeting concerned.

### **Work of the other advisory committees and cross-membership**

22. The Secretariat provided Members with an annual report of the work of the other expert advisory committees advising the Food Standards Agency<sup>32</sup>. Professor Gasson continued to serve as a member of the Advisory Committee on Novel Foods and Processes (ACNFP), thereby providing a first-hand link between the 2 committees.

## **Chapter 2 : The Committee's Work in 2006**

### ***Clostridium botulinum***

#### **Infant botulism**

23. Between January and April 2006 the *Ad Hoc* Group on infant botulism considered the responses to the public consultation on the draft report that took place in the last quarter of 2005. Comments received in response to the consultation were very supportive of the Report's focus and recommendations. Only a very small number of editorial amendments were required to the Report<sup>33</sup>.

24. In June, the Committee considered the revised report and approved its submission to the FSA Chair for publication. It was published in September 2006<sup>26</sup>. The Committee also published its response to the public consultation on the FSA's website<sup>34</sup>.

#### **Botulism in cattle**

25. The *Ad Hoc* Group on botulism consulted on its draft report on botulism in cattle between January and April 2006. The *Ad Hoc* Group considered the consultation responses and undertook work to revise the report in light of the comments received<sup>35</sup>. Comments received were supportive of the scientific review and the recommendations in the report. Responses highlighting issues of scientific accuracy in the report were addressed. The report concluded that there was a low risk of transmission of botulism from cattle and that there was no requirement to restrict movement of meat and milk from healthy animals. However, the report highlighted that in the event of the emergence of new toxin types in cattle, surveillance should be carried out. The Report also summarised measures to prevent outbreaks of botulism in animals, and management of outbreaks in the UK, including the availability of guidance to farmers. The Committee agreed that paragraph 8.10 of the report should be more strongly worded to recommend that the FSA worked closely with the poultry industry to ensure good practice in litter management and disposal. The relationship between risk assessment and risk management issues falling within the scope of the report was discussed.

26. The ACMSF approved the publication of the report in September 2006. It also published its response to the public consultation on the FSA website<sup>36</sup>.

27. Following the approval to publish the report, in December, the FSA updated the Committee on action being taken to implement the recommendations in the report<sup>37</sup>. The FSA outlined the current voluntary restrictions in place for movement of meat or milk from healthy cattle for farms where there had been suspected cases of botulism. Key conclusions and recommendations in the report arising from the work of the *Ad Hoc* Group on botulism in cattle were summarised. Members were informed that, in line with the recommendations in the report, the FSA would be implementing a change to its advice and would no longer request voluntary restrictions for healthy cattle from farms where cases of botulism were suspected. However it was stated that this would need to be reviewed if new evidence emerged that the botulism toxin types that affected humans were causing outbreaks in cattle. Members noted that the FSA would still be informed of cases of suspected botulism in cattle as there might be additional issues for consideration to ensure protection of the food chain. This change of advice would be communicated to stakeholders.

28. Members were informed that the FSA intended to seek the ACMSF's advice on the potential risk to human health from food chain issues linked to botulism or suspected botulism in sheep and goats.

29. The Committee supported the Agency's approach to implementing the ACMSF's recommendations. Department for Environment, Food and Rural Affairs (Defra) assessor Mr Gayford added that Defra also welcomed the Committee's report and explained that Defra would be following up the recommendations and that comments would be published on Defra's web site. He informed Members that samples being taken and sent for examination had only isolated toxin type D. Toxin types A, B, C and E had not been identified. A sample storage system was also currently being set up to support development and validation of new *in vitro* tests.

### ***Listeria***

30. In June the Health Protection Agency briefed the Committee on the changing pattern of human listeriosis in the UK in 2005. In December HPA updated Members on data which covered the first 6 months of 2006<sup>38-39</sup>. The Committee was informed that the incidence of listeriosis in England and Wales in 2005 remained higher than pre-2001 levels. An increased incidence of listeriosis was also reported in

Scotland, with presentation similar to that reported in England and Wales. Additional data confirmed that the increase was not artefactual. The disease occurred predominantly in older patients with bacteraemia in the absence of CNS infection. No increase was observed in Northern Ireland.

31. Data from the first six months of 2006 indicated that illness in older patients with bacteraemia still predominated. However it was stressed that it was difficult to draw conclusions from this data due to reporting delays associated with passive surveillance. HPA outlined work in progress and resources required to investigate the changing epidemiology of listeriosis.

32. Members considered that case control studies were of limited use in investigating the epidemiology of listeriosis as patients were often too ill to be interviewed. Members reiterated concerns linked to adequate and flexible resourcing of epidemiological investigations carried out by HPA. Members noted that no significant progress had been made to establish the reason for the increase in incidence in listeriosis over the 12 month period since the change in epidemiology was first brought to the attention of the Committee. Members also highlighted the need for a UK wide approach to investigation of listeriosis involving HPA Centre For Infections and HPA regional units. The FSA assessor acknowledged concern about resources at HPA and informed the Committee that the FSA Board were being made aware of the ACMSF's concerns and that this was being pursued with DH Ministers.

33. Members also reiterated the need for a three pronged investigative approach to identify changes in the pathogen, assess the vulnerability of the target group and identify vehicles of exposure. Members suggested that typing, whole genome analysis and examination of molecular isolates might provide more information about the functionality of the organism and the observed change in epidemiology. Members agreed to review listeriosis again in the UK in June 2007.

## **Hepatitis E**

34. Dr David Brown updated Members twice (in June and December) on the risk to the food chain from Hepatitis E in pig meat products<sup>39-40</sup>. In June he outlined an enhanced surveillance study in which a questionnaire approach had also been used to try to identify risk factors. A case-control study had been carried out. He explained that the researchers had been unable to identify any specific risk factors linked to Hepatitis E. He concluded that there was no new information to report to the Committee. Members were informed that the FSA had reviewed and changed its advice on cooking of pork

recommending that all pork and pig products should be cooked properly in light of comments made at the December 2005 meeting. Current advice in the Safer Food Better Business Guidance would be updated when the Guidance was reprinted. Advice for pregnant women on the Eatwell website did not require amendment.

35. In December, Dr Brown outlined UK epidemiological surveillance studies carried out in 2003-5 and summarised the findings of work to investigate risk factors for hepatitis E<sup>40</sup>. He also outlined new research on pigs and thermal stability of hepatitis E. He concluded that in the UK the route and associated risk factors for acquiring infection of hepatitis E had not been established and further studies were needed. He added that the previous ACMSF recommendations<sup>39</sup> were still appropriate.

36. Members queried whether the percentage prevalence of hepatitis E infection in the male population over 65 years had changed. Dr Brown explained that this was difficult to assess due to a lack of sero-prevalence data for the UK. He added that there were a high proportion of unknown case histories which reflected difficulties associated with obtaining this type of information. Members recognised that there was a lack of information available on hepatitis E survival in foods and identified a need to examine the prevalence of hepatitis E in pig products available in the UK. Epidemiological data was also limited in scope. Members discussed the presented information on travel and non-travel associated cases.

37. The Committee concluded that there were many gaps in the epidemiological and foodborne data available for hepatitis E. Members agreed that ACMSF advice remained that pork and pig products should be cooked thoroughly.

## **Avian Influenza**

38. Dr Brown reminded Members that the ACMSF carried out a risk assessment for avian influenza in 2003. This assessment concluded that the risk of Avian Influenza from the food chain was low and that there was no evidence that the food chain was a route of infection. The assessment was reviewed in November 2005 in light of new information and the Committee concluded that there was no increased risk of Avian Influenza, although Members sought more information on control measures for poultry meat and eggs traded within the EU or imported from third countries. The Committee established a Working Group to examine control measures and keep a watching brief. This Group met in March 2006<sup>41</sup> and concluded that:

- There was no new published scientific evidence to suggest that the food chain had a role in the acquisition of AI in humans.
- Cooking precautions employed to avoid pathogens such as *Salmonella* in U.K. should also be sufficient to avoid avian influenza.
- There were adequate control measures in place for poultry meat and eggs traded within the EU or imported from third countries. Surveillance of waterfowl is under review by Defra.
- There were adequate systems in place to protect consumers from introduction of AI through the food chain.

### **Toxoplasmosis and food**

39. In December the FSA briefed the Committee on toxoplasmosis and food<sup>42</sup>. Recent research carried out in the US and the Netherlands had indicated that the disease burden due to toxoplasmosis might be more significant than previously thought. Policy in the UK had tended to focus on risks to pregnant women associated with cat faeces and not foodborne risks. The FSA sought the views of the Committee on the significance of the disease and foodborne risks in the UK, and whether further investigation and surveillance was warranted to obtain robust data on UK prevalence and foodborne sources of toxoplasmosis.

40. Members considered that enhanced surveillance for toxoplasmosis would not have a major impact due to under-recognition. However it was difficult to draw any firm conclusions due to the limited amount of data available. Consideration would need to be given to information on exposure from non food sources in order to assess relative exposure from a food perspective. Examination of sero-prevalence data from the US and the Netherlands and serology to identify IgM responses might also be warranted.

41. The Committee requested that the HPA should be contacted to present a more comprehensive overview of human toxoplasmosis in UK, US and the Netherlands in 2007.

### **Safe cooking of burgers**

42. The *Ad Hoc* Group on safe cooking of burgers met twice in 2006 to continue its work to examine whether the current advice on the safe cooking of burgers issued by the Chief Medical Officer was still appropriate<sup>43</sup>. The Group considered documentary and verbal evidence relating to the epidemiology of *E.coli* O157 and other key

pathogens, and guidance and cooking conditions for burgers used in the UK, US and other countries. The Group also reviewed published scientific evidence and information submitted by a fast food chain and considered a modelling approach to setting confidence limits. Key recommendations arising from the report were that:

- The advice for safe cooking of burgers should remain at 70°C for 2 minutes or equivalent. Use of lower time/temperature combinations could be considered where producers demonstrate through a risk assessment approach that the final product is safe, and that the process is under effective control;
- A z-value of 6.0°C should be used for time/temperature equivalents for burgers, particularly below 65°C;
- A modelling approach to set recommended time/temperatures based on required inactivation levels and required limits of confidence should be considered;
- Advice to consumers and caterers on cooking of burgers should be reiterated.

43. The Committee welcomed the report and registered their agreement with the conclusions proposed by the *Ad Hoc* Group. Members reiterated that the current advice should remain at 70°C for 2 minutes or equivalent, noting that the original CMO's advice was produced in response to outbreaks of *E.coli* O157, which had subsequently diminished. Members added that there might be a tendency for individuals cooking burgers to undercut minimum cooking times. Therefore any reduction in the current time/temperature requirements might lead to an increase in the number of individuals using less safe cooking practices. Members also supported the recommendation to reiterate cooking of burgers advice, noting that some UK gourmet burger restaurants offered consumers the option to consume burgers which were rare (pink in the middle).

44. The ACMSF adopted the report and agreed that it should be published for public consultation. The consultation period took place between 18 July to 20 October 2006.

### **Disinfection of knives**

45. In December the FSA briefed the Committee on disinfection of knives<sup>44</sup>. Under the new EU Food Hygiene Regulations abattoirs were required to have facilities for disinfecting tools with hot water supplied at not less than 82°C, or an alternative system having an equivalent effect. The FSA outlined the EU's Scientific Committee's opinion and

work to develop alternative methods carried out in Australia. The Committee's views were sought on whether:

- a performance standard for knife sterilisation of a 3 log reduction in *E.coli* was appropriate provided that visible contamination was removed prior to immersion;
- a generic 'approval' was an acceptable approach; and
- what further industry data was required to support alternative time/temperature and hygiene parameters in place of water at 82°C.

46. Members considered that, with regard to the proposed 3 log reduction, it was important to consider the impact of washing knives on the end product. Members also queried the effectiveness of current sterilisation practices and the impact of effective application of time and temperature parameters on knives when used on a mechanical line. The Committee discussed application of z values to develop time/temperatures equivalent to 82°C (for 1 second), preferring application of a theoretical heat equivalent process. Members suggested that application of modelling work developed by the Committee to assess the safe cooking of burgers could assist calculation of lower time/temperature combinations capable of delivering equivalent lethality to that at 82°C. More information was also needed on the current microbiological load on knives in order to assess the validity of the proposed 3 log reduction. The Committee was opposed to the use of chemical disinfection. Some Members expressed concern over the proposed adoption of a generic approach as each area in the slaughter house presented different challenges.

47. The FSA confirmed that there were no microcriteria set for raw meat for process control in slaughterhouses and agreed that the use of chemical disinfectants was unlikely to be appropriate in the slaughterhouse setting. Alternative approaches to knife sterilisation would be considered on a case by case basis taking account of the operator's HACCP-based approach in each slaughterhouse.

48. ACMSF noted that whilst 82°C was highlighted as the preferred standard for disinfection of knives, more information was required to assess what this delivered in terms of microbiological safety. *E.coli* modelling work by the ACMSF to assess safe processing controls for cooking of burgers could be applied to develop time/temperature equivalents at lower temperatures. A generic approach to disinfection might not be helpful due to the availability of different meat types and cuts, and variation in procedures used in cutting plants and at post mortem. Lastly the Committee was opposed to the use of chemical disinfectants.

## **Fat and added sugar reduction on foods**

49. In September the FSA briefed the Committee on an Agency commissioned review on the microbiological safety implications of reductions of total fat, saturated fat and added sugar in some foods<sup>45</sup>. The results of the review would be used to inform the development of the FSA's Strategy on saturated fats and energy.

50. Comments were sought from ACMSF on:

- The findings of the review in relation to the microbiological safety and/or stability implications associated with reductions of total and saturated fat and sugar in processed foods;
- Whether the report provided sufficient evidence that there is scope for such reductions without adversely affecting the microbiological safety of these products; and
- Whether there were any other issues not highlighted in the report that required consideration.

51. Dr Gail Betts (Campden and Chorleywood Food Research Association) presented a summary of the work carried out to review the microbiological safety and/or stability implications associated with reductions of total and saturated fat and sugar in processed foods. She summarised information on likely compositional changes in foods subject to reformulation and resulting effects on product safety and stability. She also outlined microbiological risks linked to reformulation of some product groups including those whose microbiological stability was influenced by sugar (jams), fat (sausages) and both fats and sugar (cakes). Lastly, she reviewed the use of predictive models to demonstrate the effect of changes to water activity, sucrose content and pH on microbial growth.

52. The Committee welcomed the review, and in discussing the microbiological impact on food safety from reduction of fat and added sugars in foods the Committee considered that:

- Variation in the differences in behaviour of individual organisms needed to be accounted for in the review;
- There were difficulties linked to adopting a broad brush approach to product reformulation. Care was needed when interpreting the findings of the review as microbiological impact as a result of reformulation and resulting changes to water activity would vary from product to product;

- Particular consideration needed to be given to small and medium sized businesses and caterers and how they would reformulate products safely through application of appropriate controls. Members referred to similar comments raised on previous discussions on the microbiological impact of salt reduction in foods noting that provision of technical support needed to be considered for these organisations;
- The review should include a search strategy for references used and explain why particular organisms were included;
- Gaps in the report needed to be addressed, including information on novel sweeteners;
- Risk/benefit analysis information also warranted consideration, including consideration of public health benefits such as reductions in obesity. Application of a quantitative risk assessment could be considered as part of future work to assess risks from foodborne disease.

### **Vacuum-packaged and modified atmosphere packaged foods**

53. In June, the FSA briefed the Committee on vacuum-packaged and modified atmosphere packaged foods<sup>46</sup>. In December 2004 the ACMSF requested that the FSA commissioned an independent review of the current scientific evidence concerning vacuum and modified atmosphere packaged foods and the risk of *Clostridium botulinum*. This followed concerns raised in response to the FSA's consultation on its guidance on the safety and shelf life of vacuum and modified atmosphere packed chilled foods regarding the proposed shelf life limitation of 5 days (based on 1995 ACMSF advice) for chilled products, and products stored above 5°C where failure to support growth of *C. botulinum* had not been established. This review, which had been carried out by the Institute of Food Research, had now been completed<sup>46</sup>. The full report of the review would be available in due course. ACMSF's views were sought on whether to support the 10-day shelf life recommendation.

54. Professor Mike Peck (Institute of Food Research) presented an overview of the work carried out to review the current scientific evidence concerning vacuum and modified atmosphere packaged foods and the risk of *Clostridium botulinum*. He summarised information on sales of chilled food, current guidance and recommendations for commercial chilled foods, and recent incidence of foodborne botulism in different countries including the UK. He also

outlined growth and toxin formation by non-proteolytic *C.botulinum* at or at less than 10°C. Lastly, he described the effects of other factors including unknown controlling factors, packing in air and re-packing of chilled food.

55. The Committee welcomed the review, and in particular, inclusion of epidemiology in the scope of the research. In discussing the proposed recommendation to increase shelf life from 5 to 10 days the Committee noted that:

- FSA needed to consider risk management issues such as costs/benefits and environmental impact of changes to the guidance;
- Levels of *C.botulinum* inoculum used per pack for challenge testing were higher than levels of toxin typically produced by *C.botulinum* in foods (and referred to previous ACMSF work on infant botulism);
- Epidemiology of *C.botulinum* over last 20 years showed that there were no reported cases of botulism linked to chilled foods. However Members noted that botulism was a difficult diagnosis to make and that under recognition of milder cases was possible.
- The 10-day shelf life recommendation for the UK was already quite restrictive and it was not applied in many other countries.

56. The Committee endorsed the recommendation to support a 10-day shelf life recommendation with the vacuum packaged guidance document being revised from less than or equal to 5 days to less than or equal to 10 days at 8 degrees C. The Committee also identified a need for simple, summarised guidance to help enforcers and industry and agreed that a small group should be set up by the Food Standards Agency to deliver this. In addition, this guidance should be brought to the attention of other Member States via the European Commission.

### **Salmonella Contact Group**

58. A *Salmonella* contact group was convened by the ACMSF at short notice in June to review risk assessment information relating to a *Salmonella* contamination of chocolate incident. The conclusions from this meeting were published on the FSA website<sup>47</sup>.

## Epidemiology of Foodborne Infections Group

59. The FSA updated the Committee on the outcome of the two Epidemiology of Foodborne Infections Group meetings that took place in 2006. In June, Members received a synopsis of 2005 epidemiological animal data for *Salmonella* and human data for several pathogens including *Salmonella*, VTEC O157, *Campylobacter* and listeriosis. A update on two FSA egg surveys on non-UK eggs in retail premises and UK eggs in catering premises was also provided. Findings from a Defra prevalence survey of *Salmonella* in laying flocks in the UK which formed part of a wider EU survey were also outlined<sup>39</sup>.

60. A range of *Campylobacter* items that had been considered by the Group were summarised. These included a presentation on on-farm *Campylobacter* research by Professor Humphrey, updates on the National Case Control Study, Co-ordinated Local Authority Sentinel Surveillance of Pathogens (CLASSP), and a VLA *Campylobacter* survey. The Group also discussed recent surveillance carried out under the LACORS/HPA Food Liaison Group Co-ordinated Microbiological Sampling Programme. Lastly, Members were updated on a report on research on hepatitis E and the Agency's survey of surveys.

61. In December, the FSA provided a review of animal and human data for the first six months of 2006, and briefed Members on trends on VTEC O157 in England and Wales. Other issues considered by the Group included a paper on the Co-ordinated Local Authority Sentinel Surveillance of Pathogens (CLASSP) study which involved simultaneous collection of data on *Salmonella* and *Campylobacter* from poultry meat and humans. HPA also presented papers on trends in the most common sub-types of non-travel-associated *Salmonella* Enteritidis, *Salmonella* Typhimurium infection in England and Wales from 1991-2005 and an update on human listeriosis in the UK<sup>48</sup>.

62. Members welcomed the paper and noted that successful control measures had resulted in a decrease in animal carriage of serovars that were common in humans, including *Salmonella* Typhimurium.

Mr Gayford commented that, in general, the number of *Salmonella* reports had fallen. Professor Piddock informed Members that MLST typing for *Salmonella* was discussed at a recent conference in Canada. Members suggested that the function of typing schemes should be defined and recognised that typing supported the implementation of practical controls.

## Surveillance

### Survey of *Salmonella* and *Campylobacter* contamination of whole, raw poultry on retail sale in Wales and Northern Ireland in 2005

63. Dr Richard Meldrum (National Public Health Service, Wales) briefed the Committee on the findings of the 2005 survey of *Salmonella* and *Campylobacter* in raw chicken in Wales and Northern Ireland<sup>49</sup>.

64. He provided an overview of the project including *Salmonella* and *Campylobacter* contamination rates, results for samples taken from retailers and butchers, fresh and frozen samples, packaging, producers and a comparison of data from Wales and Northern Ireland. He explained that 2005 was the fourth complete year that raw chickens had been sampled in Wales, and the second complete year of sampling in Northern Ireland. He also explained that unlike previous years the methodology used to measure levels of *Salmonella* and *Campylobacter* was now identical to that used for the CLASSP study in England. Results for the 877 samples taken between March-December 2005 indicated that the *Campylobacter* and *Salmonella* contamination rates were consistent with those of previous years.

65. Members discussed the quality assurance between laboratories noting that 25% of samples were randomly sent to reference laboratories. All the laboratories involved in the survey were UK accredited and followed EQA and IQC schemes. Members highlighted the need to swap samples between laboratories in order to be able to eliminate artefactual results and draw comparisons between samples analysed by laboratories in Wales and Northern Ireland. The Committee queried the omission of data on antimicrobial resistance from this survey, noting that this information had been included in previous years. Members also raised the need to include additional information on *Salmonella* serotyping and *Campylobacter* speciation, for example *Salmonella* Typhimurium and *Salmonella* Enteritidis. This information was considered important to poultry producers. Members also recognised that that it would be difficult to increase sample numbers, as Local Authorities were limited in terms of resources. However Members agreed that it would be helpful to calculate the power of the study in retrospect to facilitate comparison with data collected in previous years.

66. ACMSF noted the following points for Dr Meldrum's consideration for future surveys:

- Inclusion of information on speciation of *Salmonella* and *Campylobacter*,

- Quantification of bacterial load;
- Determination of antibiotic resistance of isolates;
- Quality Assurance protocols to ensure comparability of data between laboratories in Wales and Northern Ireland;
- Carry out retrospective power calculations

### Surveillance Update

67. The FSA updated the Committee on the FSA's survey sampling programmes and the work of the Surveillance Working Group<sup>50</sup>. Work on current FSA surveys on eggs, raw red meat and *Listeria* spp in ready to eat hot and cold smoked fish was summarised. Plans for future surveillance on *Campylobacter* and *Salmonella* in raw chicken and *Listeria* spp in cooked sliced meats and pâtés were outlined. The FSA reported that the Working Group on Surveillance had considered the role of statisticians in survey development, retail market share and consistency between laboratories. The Group also discussed the protocol for the 2007 chicken survey and preliminary results for the non-UK eggs survey.

68. Members discussed the role of broader surveillance in order to provide assurance that food controls were in place. However, it was recognised that the FSA was not the only body which carried out surveillance. Members noted that HPA undertook shopping basket and regionally based surveys. HPA also provided surveillance data to the Epidemiology and Foodborne Infections Group, which reported to the ACMSF every six months.

69. Members discussed linking up agricultural production surveys with food surveillance. Mr Gayford commented that results from a Defra survey of layer flocks, which formed part of a wider EU survey, mirrored results in a survey of non-UK eggs.

70. Members were informed that all FSA surveillance results were logged onto a national surveillance database for Local Authorities.

## General Papers

### Scientific Governance

71. The FSA briefed the Committee on scientific governance<sup>51</sup>. Members were informed that an independent review of the Agency (by The Rt Hon Baroness Dean) carried out in 2005 recommended that the Agency's policy for basing decisions on scientific evidence should be maintained and developed further. The Agency had already

been examining its approach to scientific governance in consultation with Advisory Committee Chairs. Part of this work had involved development of a science check list for use by Agency staff and a Best Practice Agreement for the Scientific Advisory Committees to meet the Board's expectations about how scientific evidence is gathered analysed and presented. The FSA confirmed that the Best Practice Agreement was intended for use in conjunction with the Code of Practice for Advisory Committees.

72. The Committee welcomed the document and identified the following points for consideration:

- Further clarification was needed on the roles of Scientific Advisory Committees with regard to separation of risk assessment and risk management issues (ACM/801, paragraph 21 refers). Members queried whether the roles of such Committees included provision of advice on risk management.
- Independence of Committees. The wording 'wherever possible' and 'kept to a minimum' (ACM/801, paragraphs 26 and 27 refer) needed defining in terms of the degree of openness expected. Members noted that it was important to document when and why information was withheld. Members also agreed that it was important for the Committee to remain as transparent as possible.
- Declaration of interests needed to be considered within paragraph 4 of the document.
- Paragraph 18 required clarification. Members noted that consideration of benefits might not fall within the remit of the Committee.
- Avoid use of Latin phrases.

The ACMSF indicated that they supported the Best Practice Agreement.

### **Openness**

73. Dr Foster (ACMSF Administrative Secretary) outlined the Committee's current approach to openness noting that since 2003 the Committee had held all its quarterly meetings in public. She sought Members' views on the success of this approach to date<sup>52</sup>.

74. Members exchanged a wide range of views. Concerns were expressed that the public session at the end of each meeting was used as a forum for discussion of risk management issues as questions were often directed at the FSA and not the ACMSF.

Openness and transparency was viewed as desirable, although it was recognised that this approach sometimes inhibited discussion. The current approach to openness was viewed as acceptable and Members were keen to remain as open as possible.

75. Members discussed holding *Ad Hoc* and Working Group meetings in open session. Whilst desirable, it was recognised that this approach might constrain the type of scientific evidence currently submitted to these Groups, particularly where information of a commercially sensitive nature or unpublished research was relevant to a particular issue. It was suggested that this type of information could be considered in a separate closed session.

76. The Committee expressed a wide range of views on this subject and the balance was towards openness. The Chair and Secretariat agreed to prepare a paper on this issue for discussion at a future meeting.

#### **Induction and appraisal**

77. Dr Foster briefed the Committee on the current induction and appraisal arrangements for Members<sup>52</sup>. She explained that information on the role and requirements of Committee members was issued to applicants as part of the recruitment process. Information about the ACMSF and its procedures was also provided to new members prior to attendance at meetings. Media training was also made available to the ACMSF Chair as the key spokesperson for the Committee. She added that as Members were appointed on the basis of their proven expertise and previous Committee experience, these arrangements were conducted on an informal basis, and were in line with those used by other FSA Committees.

78. Dr Foster summarised the informal appraisal process for the ACMSF. She explained that the Chair assessed the overall performance of Members in terms of their contribution at meetings and sub-groups, outside meetings and attendance. On the basis of these views Members were re-appointed at staggered intervals.

79. Several new Members commented that they welcomed the information that they had received on joining the Committee, and that it fully met their needs. Members confirmed that they were content with the current induction and appraisal arrangements.

#### **Freedom of Information**

80. During 2006 the ACMSF received two freedom of information requests regarding its work on safe cooking of burgers.

### Information papers

81. The ACMSF is routinely provided with information papers on topics which the Secretariat considers may be of interest to Members. This affords them the opportunity to identify particular issues for discussion at future meetings. Among the documents provided for information during 2006 were:

- Update on the *E.coli* O157 outbreak in South Wales (ACM/785a)
- Update on 2 *E.coli* O157 outbreaks in Scotland (ACM/785b)
- FSA Foodborne Disease Strategy: Trends in foodborne disease (ACM/786)
- Update on *Salmonella* in non-UK eggs (ACM/787)
- MSFFG updated *Salmonella* report (ACM/788)
- EFSA advisory forum on risk assessment in Europe (ACM/789)
- Update on the *E.coli* O157 outbreak in South Wales (ACM/805)
- EC Co-ordinated Programme for the Official Control of Foodstuffs report: Bacteriological safety of pre-packaged mixed salads from retail premises for *Listeria monocytogenes* (ACM/806)
- European Food Safety Authority EMRISK project (ACM/807)
- European Food Safety Authority Opinion from BIOHAZ Panel, 16 March 2006 (ACM/808)
- ACMSF Membership: pen portraits (ACM/809)
- Items of possible interest from the literature (ACM/810)
- Botulism testing paper (ACM/811)
- Changing Pattern of Human Listeriosis, England and Wales, 2001-2004 (ACM/812)
- Review of the microbiological risks associated with fat and added sugar reduction in foods (ACM/821)
- Report on a survey of *Salmonella* contamination of non-UK eggs on retail sale (ACM/822)
- Foodborne Disease Strategy Board paper (ACM/823)
- ACMSF Annual Report 2005 (ACM/824)
- Update from other Advisory Committees (ACM/825)
- Items of possible interest from the literature (ACM/826)

## Chapter 3 : A Forward Look

### Future work programme

82. The Committee will keep itself informed, through its close links with the Food Standards Agency and the Health Protection Agency, of developing trends in relation to foodborne disease. A continuing task will be to respond promptly with advice on the food safety implications of any issues, which may from time to time be referred to the Committee by the FSA. The Committee will publish in hard copy the outcome of the work of its *Ad Hoc* Group on safe cooking of burgers and will as a priority area continue to monitor closely developments on the reported increase in listeriosis and in cases linked to the elderly via its *Ad Hoc* group on Vulnerable Groups.

83. The Committee will report on new work to assess the potential risk to human health from botulism sheep and goats and its consideration of simplified guidance for vacuum-packaged foods.

84. The Committee will continue the work of the *Ad Hoc* Group on emerging pathogens and will consider extended spectrum beta-lactamase (ESBL) producing *E.coli* in food.

85. The Committee, through its standing Surveillance Working Group, will continue to provide advice as required in connection with the Government's microbiological food surveillance programme and any other surveillance relevant to foodborne disease. The Group will specifically report on FSA surveys on *Salmonella* in catering eggs and *Listeria* in smoked fish.

86. The Working Group on avian influenza will continue to keep a watching brief on developments.

87. The Committee will also revisit its previous work on foodborne viral infections.

88. The Committee will review its work against principles for presenting scientific advice including a best practice agreement for Scientific Advisory Committees as part of its self assessment procedures.

89. The Committee will continue to keep itself informed of Government horizon scanning activities and initiatives, and their potential impact on the ACMSF's future work programme. The Committee will also prioritise areas for future horizon scanning activities.

### Horizon scanning

90. The FSA briefed Members on the Agency's horizon scanning programme and sought views on suitable horizon scanning topics for consideration by the Committee<sup>53</sup>.

91. The Committee had completed work on previously identified priorities and considered that it was timely to take stock and identify new topics for discussion. Members revisited topics previously identified for consideration in 2002 and suggested new or emerging microbiological hazards which might merit attention by the Committee in the short to medium term.

92. At the December meeting Dr Foster outlined Members' short-listed priorities for horizon scanning topics including any likely emerging microbiological risks. These were:

**Food safety/processing** – impact of fresher products and milder processing conditions; novel processing techniques, bacterial stress responses and food safety; temperature control;

**Agriculture/food production** – changes in agriculture and food animal production, including growth promoters in poultry; use of terminal decontaminants; prevention of bacterial contamination and colonisation;

**Vulnerable groups** – listeriosis in the elderly population and children under 6 months (not weaned);

**Imported foods** – antibiotic resistance, ESBLs;

**Biocides** – review of kitchen and cleaning products containing biocides and whether they promote antibiotic resistance in bacteria relevant to human health;

**Noroviruses** – including pigs and calves as potential reservoir of noro and sapoviruses and the impact on public health; and

**Schools** – implications of the new standards for school meals on food safety; loss of culinary skills in relation to the National Curriculum on food technology.

Members considered that:

- Some of the prioritised areas focussed on research topics rather than development of advice. Members were reminded that imported foods issues had recently been considered by the Committee;

- Vulnerable Groups – in view of the recent trend in listeriosis in older people, this topic warranted further examination. Members suggested a presentation on changes in food habits of the over 60 years age group and clarification of what is meant by ‘vulnerable’. Other suggestions included setting up an *Ad Hoc* group to explore issues linked to vulnerable groups;
- Schools – Members recognised that although changes in nutritional practices in schools were an important issue, there was already a large amount of work in progress in this area. Some of the issues raised also fell outside the remit of the Committee. Further clarification was needed on the questions posed for consideration;
- Agriculture/food production – a very broad and complex area. Members noted that there were dramatic differences in regional farming practices which might impact microbiologically on food safety.
- Probiotics – Members recognised that this was a growing market. However this issue was more appropriate for consideration by SACN.
- Noroviruses – The Committee published a review of noroviruses in 1998. However Members agreed that it would be worthwhile revisiting this report.

93. The Committee agreed to focus its attention on vulnerable groups. Members agreed that consideration could be given to agricultural and farm practices at a later date. ACMSF Chair and Secretariat agreed to set up an *Ad Hoc* group to consider vulnerable groups.

**Annex I: Membership of the Advisory Committee on the Microbiological Safety of Food, its Working Groups and its *Ad Hoc* Groups**

	<b>ACMSF</b>	<b>Surveillance Working Group</b>	<b>Avian Influenza Working Group</b>
Terms of reference	To assess the risk to humans from microorganisms which are used or occur in or on food and to advise the Food Standards Agency on any matters relating to the microbiological safety of food	To facilitate the provision of ACMSF advice to government in connection with its microbiological food surveillance programme and other surveillance relevant to food-borne disease, particularly in relation to the design, methodology, sampling and statistical aspects; and to report back regularly to the ACMSF	To review the ACMSF's 2003 risk assessment on avian influenza including to carry out a detailed review of import measures required for poultry meat and eggs, and to keep a watching brief on developments
<b>Chairman</b>			
Professor W J Reilly <sup>1</sup>	▼		
Head, Gastrointestinal and Zoonoses Section, Health Protection Scotland			
Professor S J O'Brien <sup>2</sup>	▼	▼	▼
Professor of Health Sciences & Epidemiology, Hope Clinical Academic Group, University of Manchester			

<sup>1</sup> Resigned 30 January 2006.

<sup>2</sup> Acting Chair from 31 January 2006.

Members	ACMSF	Surveillance Working Group	Avian Influenza Working Group
Mr J Bassett	✓		
Dr D W G Brown	✓		✓ <sup>3</sup>
Mrs Vivianne Buller	✓		
Ms S Davies MBE	✓		
Professor M J Gasson	✓	✓	✓
Dr K M Hadley <sup>4</sup>	✓		

<sup>3</sup> Dr Brown chairs the Avian Influenza Working Group

<sup>4</sup> Appointment ended 31 March 2006

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Dr R E Holliman <sup>5</sup>	Consultant and Reader in Clinical Microbiology, St George's Hospital, London	✓		
Professor T J Humphrey	Professor of Veterinary Zoonotic Bacteriology, University of Bristol	✓	✓ <sup>6</sup>	
Professor P R Hunter	Professor of Health Protection, University of East Anglia	✓		
Mr A Kyriakides	Head of Product Safety, Sainsbury's Supermarkets	✓	✓	
Ms E Lewis	Computer consultant Consumer representative	✓		
Mr P McMullin	Senior Veterinarian & Managing Director, Poultry Health Services	✓		✓
Mr P Mepham <sup>7</sup>	Independent Management Consultant (retired Environmental Health Manager)	✓		

<sup>5</sup> Appointed 1 April 2006

<sup>6</sup> Professor Humphrey chairs the Surveillance Working Group

<sup>7</sup> Appointment ended 31 March 2006

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Dr S Millership <sup>8</sup>	Consultant in Communicable Disease Control, Essex Health Protection Unit and Honorary Consultant in Microbiology	✓		
Mrs J Morris <sup>9</sup>	Food Safety Policy Officer, Chartered Institute of Environmental Health	✓		
Professor L J V Pidcock	Professor of Microbiology, Division of Immunity & Infection, University of Birmingham	✓		
Mr R Rees	Chef and Food Consultant	✓		✓
Dr Q D Sandifer <sup>10</sup>	Director of Health Improvement, Kent and Medway Strategic Health Authority	✓		
Professor P Williams	Professor of Microbiology, Dept. of Genetics, University of Leicester	✓		

<sup>8</sup> Appointed 1 April 2006

<sup>9</sup> Appointed 1 April 2006

<sup>10</sup> Appointment ended 31 March 2006

Co-opted Members	ACMSF	Surveillance Working Group	Avian Influenza Working Group
Dr Dennis Alexander	Veterinary Laboratories Agency		✓
Dr C Bell	Consultant (retired food industry)	✓	
Dr I Brown	Head of Avian Virology, Veterinary Laboratories Agency		✓
Dr A Hay	Director, World Influenza Centre, National Institute for Medical Research		✓
Dr N Phin	Respiratory Diseases Department, Health Protection Agency		✓
Dr J Wood	National Institute for Biological Standards and Control		✓
<b>Assessors</b>			
Mr P Gayford	Department for Environment, Food and Rural Affairs		✓
Dr J Hilton	Food Standards Agency		✓

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Dr S Neill	Northern Ireland Department of Agriculture and Rural Development	✓		
Dr J McElhiney	Food Standards Agency (Scotland)	✓		
Mrs J Whinney	Food Standards Agency (Wales)	✓		
<b>Secretariat</b>				
<b>Administrative Secretary</b> Dr L Foster	Food Standards Agency	✓	✓	✓
<b>Scientific Secretary</b> Dr P E Cook	Food Standards Agency	✓		
<b>Administrative Secretariat</b>				
Mrs E A Stretton	Food Standards Agency	✓	✓	✓
Mr A Adeoye	Food Standards Agency	✓	✓	✓

		ACMSF	Surveillance Working Group	Avian Influenza Working Group
Miss S Butler	Food Standards Agency	✓		✓
Mr S Rahman	Food Standards Agency	✓		
<b>Scientific Secretariat</b>				
Dr C-H Chan	Food Standards Agency		✓	
Miss J Higgins	Food Standards Agency			✓

<b>Ad Hoc Group on:</b>			
	<b>Newly-emerging pathogens</b>	<b>Infant botulism</b>	<b>Botulism in Cattle</b>
	<b>Safe Cooking of Burgers</b>		
Terms of reference	To assemble information on the current situation on this topic in order to decide whether there is a potential problem in relation to the micro-biological safety of food; and to recommend to the ACMSF whether the Committee needs to undertake further action.	To consider the potential human health risk associated with the consumption of chilled or frozen, pureed baby foods, particularly in relation to <i>Clostridium botulinum</i> and infant botulism, to inform the development of ACMSF advice to the Food Standards Agency.	To consider the potential human health risk associated with botulism or suspected botulism in cattle, particularly in relation to the spreading of poultry litter on agricultural land. To report back with recommendations to the ACMSF.
	To review the current advice issued by the Chief Medical Officer in 1998 on the safe cooking of burgers and to report back with recommendations to the ACMSF.		
<b>Members</b>			
Mr J Bassett	✓	✓	✓
Dr D W G Brown	✓		
Ms S Davies MBE			✓
Dr K M Hadley	✓	✓	
Professor P R Hunter	✓ <sup>11</sup>		
Mr A Kyriakides	✓	✓	✓
Ms E Lewis		✓	
Mr P McMullin			✓
Mr P Mephum		✓	✓
Professor S J O'Brien	✓	✓ <sup>12</sup>	✓

<sup>11</sup> Professor Hunter chairs the Ad Hoc Group on Newly Emerging Pathogens

<sup>12</sup> Professor O'Brien chairs the Ad Hoc Group on Infant Botulism

	<i>Ad Hoc</i> Group on:			
	Newly-emerging pathogens	Infant botulism	Botulism in Cattle	Safe Cooking of Burgers
Professor W J Reilly			✓	
Professor P H Williams			✓	✓ <sup>13</sup>
<b>Co-opted Members</b>				
Dr M Brett			✓	
Professor M W Peck		✓		
Dr M Stringer		✓		
<b>Assessors</b>				
Dr J Hilton		✓		
Mr P Gayford			✓	
Dr S Kennedy			✓	

13 Professor Williams chairs the Ad Hoc Group on the Safe Cooking of Burgers

<b>Ad Hoc Group on:</b>				
	<b>Newly-emerging pathogens</b>	<b>Infant botulism</b>	<b>Botulism in Cattle</b>	<b>Safe Cooking of Burgers</b>
<b>Secretariat</b>				
<b>Administrative Secretary</b>				
Dr L Foster	✓	✓	✓	✓
<b>Administrative Secretariat</b>				
Mrs E A Stretton	✓			
Mr A Adeoye		✓	✓	✓
Miss S Butler		✓	✓	✓
<b>Scientific Secretariat</b>				
Dr P Cook				✓
Mrs O Coffey		✓		
Dr J Aish			✓	

	<b>Contact Group on Salmonella</b>
Terms of Reference	This Group was convened once to review risk assessment information relating to a <i>Salmonella</i> contamination of chocolate incident.
<b>Members</b>	
Prof T Humphrey	✓
Prof P Hunter	✓
Mr A Kyriakides	✓
Mrs J Morris	✓
Prof S O'Brien <sup>14</sup>	✓
<b>Secretariat</b>	
Dr Lucy Foster	✓
Dr Paul Cook	✓
Mr J Pascoe	✓

<sup>14</sup> Prof O'Brien chaired the Contact Group on Salmonella

## Annex II: Advisory Committee on the Microbiological Safety of Food Register of Members' Interests

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Professor W J Reilly	No commercial companies. University of Glasgow University College Dublin DEFRA  FSA	Occasional fee paid work Occasional fee paid work Occasional fee paid work and Collaborator on grants funded by DEFRA  Collaborator on grants funded by FSA	No commercial companies  FSA	Health Protection Scotland undertakes the co-ordination of contractual work on the surveillance of food on behalf of the FSA.
Professor S J O'Brien	None		Various	Research funding in collaboration with industrial partners
Mr J Bassett	Unilever plc	Employee		
Dr D W G Brown	None		Various	HPA industry-funded research and laboratory investigations
Mrs V Buller	Nutmeg UK Ltd North East Land Links  Local Authorities and Schools Association of Public Service Excellence	Consultancy work Consultancy Project-Public Sector Food Procurement Consultancy work  Consultancy work for Local Authority members	None	

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Ms S Davies MBE	Which? (formerly the Consumers' Association)	Employee	None	
Professor M J Gasson	Novacta	Shareholder	Various	IFR Food Safety Science Division industry-funded research projects
Dr K M Hadley	None		None	
Dr R E Holliman	Various	Medical Legal work on toxoplasmosis and hospital acquired infection	None	
Professor T J Humphrey	British Egg Industry Council	<i>Ad Hoc</i> consultancy work	Various	Funding for research projects
Professor P R Hunter	Suez International Paris Institute for Public Health & Water Research	Chair of Science Advisory Committee, Chair of Board of Directors Medical/Legal advice regarding Travel Health	Chambre Syndicale des Eaux Minérales, Paris	Study of Antibiotic Resistance in Food & Water in France
Mr A Kyriakides	J Sainsbury plc Sainsbury's Supermarkets Ltd. CCFRA Scientific & Technical Committee	Shareholder Employee Chairman	None	
Ms E Lewis	None		None	

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Mr P Mepham	Philip Mepham Associates Ltd	Director	None	
Dr S Millership	None		None	
Mrs J Morris	Chartered Institute of Environmental Health Whitbread plc	Member Shareholder	None	
Professor L J V Pidcock	None	<i>Ad Hoc</i> consultancy work	Various	Funding for research projects
Mr R Rees	None		None	
Dr Q D Sandifer	None		None	
Professor P H Williams	None		None	
<b><i>Ad Hoc</i> Group on Botulism in Cattle</b>				
Dr M Brett	None		None	
<b><i>Ad Hoc</i> Group on Infant Botulism</b>				
Professor M Peck	None		Various	IFR Food Safety Science Division industry – funded research projects

Member	Personal interests		Non-personal interests	
	Name of company	Nature of interest	Name of company	Nature of interest
Dr M Stringer	Campden and Chorleywood Food Research Association Technology Ltd	Director	A range of companies from the food and drink industry	Director of Food Technology at Campden and Chorleywood Food Research Association. A portion of the RA's work is funded by the food and drink industry
<b>Avian Influenza Working Group</b>				
Dr Dennis Alexander	None		None	
Dr I Brown	None		None	
Dr A Hay	None		None	
Dr N Phin	None		None	
Dr J Wood	None		None	
<b>Surveillance Working Group</b>				
Dr C Bell	The United Kingdom Association of Microbiologists – Accreditation Marks & Spencer plc	Convenor  Shareholder	Companies in the food manufacturing and retailing sectors  Food Standards Agency	Consultant in Microbiology  Programme Adviser for B11 VTEC research project

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