

SEAC Annual Report April 2001 – March 2002



**ANNUAL REPORT April 2001 – March 2002**

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## **Foreword**

I am pleased to present this, the fifth Annual Report of the Spongiform Encephalopathy Advisory Committee (SEAC) covering the period from 1 April 2001 to 31 March 2002.

The BSE epidemic in cattle has continued to decline in line with expectation. The number of cases of vCJD in the human population has shown a rising trend but we are still not able to predict how the epidemic will develop with any confidence. A large proportion of the Committee's time has been occupied with the consequences of infections in humans, especially the possibility of onward transmission through medical procedures, on surveillance for the possibility of BSE infection in sheep and BSE risk assessment via environmental pathways.

The work of the Committee invokes much public interest and after each Committee meeting, SEAC has continued to hold press briefings. SEAC will continue to explore methods of opening up the work of the Committee to a wider audience. Following the open meeting which was held in September 2001 every SEAC meeting would be largely held in open session with a closed session to cover any confidential issues.

I have been first acting Chair and then Chair of the Committee for the past year. I am grateful to fellow Members of the Committee and to the Secretaries and the support staff in all three departments of the SEAC Secretariat for their support and insight in dealing with some of the complex issues that we have had to address. I would particularly like to acknowledge the important contributions made over a number of years by Mr Ray Bradley who left the Committee during the year. Mr Ray Bradley's deep knowledge of veterinary Pathology has been of great value to the deliberations of SEAC.

The Committee continues to be reliant upon access to early research findings and technical briefings on particular issues and I would like to thank those who throughout the year have helped the Committee on these aspects.

I hope that you find this report of interest. If you have any comments or suggestions, I would be grateful if you could forward them to the SEAC Secretariat, whose details can be found at the end of this report.

**Professor Peter Smith**  
Chairman

## About the Committee

1. SEAC is an independent expert advisory Committee. Its terms of reference are to provide scientifically-based advice to the <sup>1</sup>Department for Environment, Food and Rural Affairs (Defra), the Department of Health (DH), Devolved Administrations, and the Food Standards Agency on matters relating to spongiform encephalopathies, taking account of the remits of other bodies with related responsibilities.
2. SEAC evolved as a reconstitution of the Tyrrell Committee, which in turn had emerged from the Southwood Working Party. The Tyrrell Committee and its predecessor the Southwood Working Party were the bodies that originally advised the government on BSE related issues.
3. SEAC had its inaugural meeting on 1 May 1990 and since then has advised the government on matters relating to transmissible spongiform encephalopathies (TSEs).
4. SEAC is a Public Body whose members are appointed to the Committee in accordance with the code for public appointments issued by the Commissioner for Public Appointments. It is based on the Nolan Principles, which aim to ensure fairness and transparency in appointments.
5. It is usual for the Committee to meet five or six times a year to formulate advice to Ministers on scientific aspects of TSEs. It is standard practice for Ministers to consider SEAC's advice when formulating public and animal health policies and to publish the advice from SEAC.
6. Items on the agenda of a meeting of the Committee result from a number of sources, including:
  - specific requests from Ministers and officials for advice
  - results of new research
  - requests from a Member of the Committee
  - specific requests for advice to individual SEAC members or to the Secretariat.
  - the SEAC forward Business Plan.

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<sup>1</sup> In May 2001 the Ministry of Agriculture, Fisheries and Food (MAFF) became part of the newly created Department for Environment, Food and Rural Affairs (Defra).

### **The Committee's Commitment to Openness**

7. SEAC continues to increase the openness and transparency of its deliberations. Following an open meeting in September 2001 it was agreed that SEAC's future meetings would be held in open session. This would help to increase public awareness of the full range of issues discussed by SEAC. This is the Committee's fifth Annual Report, and in accordance with the recommendations of the SEAC Review published in July 1997, the Committee has published a public summary after each meeting since October 1997. Since November 1998, SEAC has also held a press briefing after each meeting. For the period of this report, SEAC has attached to their public summaries a list of published papers distributed to Committee Members by the SEAC Secretariat since the previous meeting. The minutes of each meeting appear on the SEAC Website: [http://www.seac.gov.uk/CoP\\_index.htm](http://www.seac.gov.uk/CoP_index.htm)

### **Membership**

- 8 Members of SEAC are usually appointed for a period of three years. The Commissioner for Public Appointments Code considers that renewal for a further 3 years, but not longer, is permissible.

### **Meet the Members**

9. During the first two months of this report, SEAC membership consisted of the acting Chairman and ten Members from wide-ranging backgrounds including epidemiology, neuropathology, veterinary pathology, veterinary medicine, and public health practice. On 1 July 2001 the acting Chairman was appointed as Chairman of SEAC and two additional members were added to the Committee. In addition, one public interest representative served on the Committee during this reporting period, in accordance with the recommendations arising from the SEAC Review report published in 1997.

**Professor Peter G. Smith –**

(Acting Chairman until 30 June 2001 and Chairman from 1 July 2001)  
Head of Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine.

**Professor Adriano Aguzzi** - Head of the Institute of Neuropathology, University of Zurich, Director of the Swiss Reference Centre for Prion Diseases and Associate Dean for Research Zurich Medical School.

**Professor Roy Anderson** - Head of the Department of Infectious Disease Epidemiology, Imperial College School of Medicine, University of London.

**Professor Christopher Bostock** - Director of the Biotechnology & Biological Sciences Research Council's Institute for Animal Health.

**Professor John Collinge** - Director and the Head of Department, MRC Prion Unit and Department of Neurodegenerative Disease, Institute of Neurology.

**Professor James Ironside** - Neuropathologist at the National CJD Surveillance Unit, Edinburgh.

**Mr Peter Jinman** - Private Veterinary Surgeon.

**Professor Harriet Kimbell MBE** - Associate Professor at the Guildford College of Law and a member of the Council of the Consumers' Association.

**Professor Colin Masters** - Professor and Head of the Department of Pathology, University of Melbourne, Australia.

**Professor Ian McConnell** - Professor of Veterinary Science at the University of Cambridge and Director of Research at the University of Cambridge Veterinary School.

**Dr Jiri Safar** - Adjunct Associate Professor in the Department of Neurology at the University of California, San Francisco.

**Professor Robin Carrell** - Professor of Haematology at the University of Cambridge.

**Dr Deirdre Cunningham** - Public Health and Medical Director of the Southeast London Strategic Health Authority.

One member left the Committee during the year as his membership came to an end:

**Mr Ray Bradley CBE** - Veterinary Pathologist and BSE co-ordinator for MAFF until his retirement in 1995. Now a Private BSE consultant.

Further details on each of the current SEAC Members may be found on the SEAC Website: <http://www.seac.gov.uk/membership.htm>

### **Code of Practice for Members**

10. The Committee agreed a revised Code of Practice in July 1999. This contained further guidance on the disclosure of Committee business after SEAC meetings and information on an indemnity offered by Ministers to Members of SEAC and related Committees in connection with the performance of Committee duties. A copy of the indemnity offered to SEAC Members can be found at Annex II. The SEAC Code of Practice

incorporates the seven principles of public life identified by the Nolan Committee in their report on Standards in Public Life. In addition to the above, it gives specific guidance on publication of work by SEAC Members, conflicts of interest and confidentiality. Copies may be obtained from the SEAC Secretariat or can be found on the SEAC Website: [http://www.seac.gov.uk/CoP\\_index.htm](http://www.seac.gov.uk/CoP_index.htm)

### **Register of Members Interests**

11. Details of commercial and non-commercial interests of SEAC Members that may conflict with their responsibilities as Members of the Committee are placed in the public domain. The register can be found at Annex III and is also maintained on the SEAC Website <http://www.seac.gov.uk/interest.pdf>.

### **Conflicts of Interest**

12. In addition to the register of Members' interests, Members are asked, at the beginning of each meeting, to declare any conflicts of interest with respect to individual agenda items.

### **Secretariat**

13. The Secretariat co-ordinates the work of the Committee and arranges the financing of its activities. The contact address for the Secretariat (including Website addresses, for further information on the work of sponsoring Departments) can be found at the end of this report at Annex VII.

### **Subgroups**

14. With the approval of Ministers, the Chairman of SEAC can authorise the setting up of *ad hoc* subgroups to discharge specific tasks. Subgroups have specific terms of reference and are required to report to the main Committee. Members of SEAC also serve on these subgroups. There is considerable flexibility about how subgroups are set up, depending on the issues under consideration.
15. Expanded use of subgroups, as recommended in the 1997 SEAC Review, has allowed the Committee to delegate the initial consideration of some of the highly specialised issues which require a substantial input from experts in addition to those on the main Committee.
16. The SEAC Epidemiology subgroup was set up in September 1997, chaired by Professor Peter Smith. The subgroup reports jointly to the four UK Chief Medical Officers and to SEAC, and meets twice a year. The terms of reference for this Group are:-

- “To assess the information about the epidemiology of vCJD and develop as far as possible advice on trends in the disease”.
17. Details of membership of the Epidemiology subgroup are set out at ANNEX IV
  18. Other subgroups, such as the Sheep subgroup convene on an *ad hoc* basis as required.

### **Working groups**

19. In addition to subgroups, SEAC maintains a Joint working group with the Advisory Committee on Dangerous Pathogens (ACDP), chaired by Professor Don Jeffries (ACDP Member). The terms of reference for this Group are:
  - “To consider the risks from exposure to the agents of transmissible spongiform encephalopathies that may arise as a result of work activities”
  - “To develop guidance to minimise such risks”
  - “To provide advice as requested by the parent Committees (ACDP and SEAC)”
20. Membership of the working group is given at Annex VI.
21. Membership of the SEAC Working Group to discuss issues relating to the National Scrapie Plan (NSP) at 4 March 2002 is given at Annex V.

## **Main Topics Considered by SEAC**

### **Summary**

22. The committee met six times between 1 April 2001 and 31 March 2002 including a SEAC working group to discuss issues relating to the NSP in March 2002. During this period SEAC examined current research within the field of transmissible spongiform encephalopathies and monitored epidemiological data on vCJD and BSE. The number of cases of cattle BSE continued to decline. As at 31 March 2002, the total number of definite and probable cases of vCJD had increased to 114. New results from work were presented regularly in the form of published papers and confidential pre-publication drafts. In addition, key results from current research were presented during Committee meetings.

### **A. CJD and Public Health**

#### **CJD Epidemiology**

23. The Committee conducted its regular review of epidemiological information on vCJD. A greater incidence of vCJD cases in Northern Britain had been reported, with a mortality rate per million of 0.51 in the North; 0.34 in the North West and 0.19 in the South East, in the period from 1 May 1995 to 31 August 2001. It was unknown whether these differences were due to variation in exposure to the vCJD agent, or some other factor such as differences in genetic susceptibility. No such geographical difference had been found for sporadic CJD.
24. The Committee noted that the analysis from the Public Health Laboratory Service (January 1994 - December 2001), showed that since 1995, the increase in the number of vCJD cases continued to be significant, on average increasing at a rate of 21 per cent per year for disease onsets and 23 per cent per year for deaths. This analysis is available on the National CJD Surveillance Unit (NCJDSU) website: [www.cjd.ed.ac.uk](http://www.cjd.ed.ac.uk)

#### **Leicestershire cases**

25. In April 2001 the Committee considered the full report from Leicestershire Health Authority on the apparent cluster of vCJD cases that had occurred in Queniborough, in Leicestershire. The Committee endorsed the view of the epidemiological subgroup that the Health Authority's principal hypothesis, that certain historic (and now illegal) local animal butchery practices may have contributed to the spread of vCJD, was a plausible explanation.

26. In November 2001 the Committee was informed that a number of geographically associated cases of vCJD were being investigated in conjunction with the National CJD Surveillance Unit (NCJDSU), the Communicable Disease Surveillance Centre/Public Health Laboratory Service, the London School of Hygiene and Tropical Medicine and the Department of Health. The investigations had not, as yet, found any correlation between areas of the country with a high incidence of scrapie in sheep and those areas where geographically associated cases had been found.

### **Southampton cases**

27. The Committee was informed that the NCJDSU had identified five geographically associated cases of vCJD in individuals who had lived in or near Southampton. Analysis of their medical records showed that two individuals had received oral polio vaccine (OPV) in 1994 from the same batch of vaccine. There were no other vCJD cases known to have received OPV from this batch.
28. The Committee recommended that the Department of Health encourage GPs to log batch numbers of vaccines, using new technology where appropriate. This could greatly aid future investigations. The recording of batches by bar coding was being explored.
29. The Committee concluded that the observation that two vCJD cases had received OPV from the same batch did not provide sufficient reason for the Committee on the Safety of Medicines (CSM) to re-consider its recent assessment. The CSM considered that it was very unlikely there would be any BSE risks from the use of UK-sourced fetal calf serum (which had been used in the manufacture of OPV). The Committee suggested it might be of value to determine if the MRC-5 cell line used to generate the vaccine could replicate TSE agents. The Committee stressed the benefits that accrued from vaccination and the important role they had in controlling the common infectious diseases of childhood.

### **Research and Development in the health field**

30. In April 2001 the Committee was informed that the TSE Joint Funders Research Group (which includes MAFF (now Defra), DH, FSA, MRC & BBSRC) had issued a call for proposals in March 2001 to encourage research on diagnostic tests, earlier identified by the Committee to be a research priority. In June 2001 the Committee noted that, following the Joint Funders Research Group's call for proposals, 55 responses had been received to date. The Committee was informed that a formal assessment of those, which merited funding, would take place.

31. Members noted that the work underway at both the University of Nottingham and the National CJD Surveillance Unit, to look at deaths from dementia type illness in the elderly, had identified one 74-year-old patient who had died from vCJD. The Committee was concerned about possible under ascertainment of vCJD given the low post-mortem rate in the elderly following dementia illness.
32. Ongoing research at the Neuropathogenesis Unit investigated the potential prophylactic use of pentosan for vCJD in an animal study. The Committee considered that a great deal of further work would be necessary before its possible clinical use against CJD could be considered.

### **Ophthalmic devices**

33. In June 2001 the Committee reviewed previous advice on the public health risk associated with the use of lenses and ophthalmic devices. They noted the results of unpublished research findings which suggested that if abnormal prion protein was present in the posterior area of the eye it would be at a lower level than previously assumed. The Committee considered that wherever practicable in the medical setting, a single use approach should be followed for lenses and devices coming into contact with the front of the eye. As the single use approach was impracticable for some devices including rigid complex diagnostic lenses, tonometers, and other highly specialised equipment, it would be important to apply best decontamination procedures, including, as appropriate, the use of 2% sodium hypochlorite solution.

### **Potential vCJD therapies**

34. In September 2001 the Committee noted an announcement by the Department of Health which explained the arrangements for a clinical trial of quinacrine as a potential treatment for CJD. A MRC DH steering committee was being established to oversee the clinical trial which would evaluate the therapeutic efficacy of quinacrine. The Committee welcomed the news that the Chief Medical Officer had established a CJD therapy advisory group to evaluate a number of candidate therapies for CJD, and advise on ethical and practical aspects.

### **Decontamination of Surgical instruments**

35. In February 2002, the Committee noted that, following SEAC's earlier advice, DH had published the results of a national survey of decontamination services for surgical instruments in the NHS. Members noted that reviews by NHS Trusts and inspections by NHS Estates decontamination teams across England had found that decontamination services in some hospitals did not meet acceptable standards. By implementing urgent action plans and improving the management of

decontamination services, NHS Estates now rated decontamination in all 249 hospitals with central sterile services as either acceptable or better. The Decontamination Survey results are available on the NHS Estates website: [www.decontamination.nhsestates.gov.uk](http://www.decontamination.nhsestates.gov.uk)

### **Single-Use Instruments for Tonsillectomy adenoidectomy surgery**

36. The Committee was informed that following consultation with the British Association of Otorhinolaryngologists (BAO), the DH had announced (on 14 December 2001) the reintroduction of re-usable surgical instruments for tonsillectomy and adenoidectomy surgery. A number of Members were concerned that the decision to re-introduce re-usable instruments for tonsil surgery was based on limited evidence from a small number of centres prior to a full audit. However SEAC had previously advised that single use instruments could be piloted provided patient safety was not compromised. The Committee requested an update on a retrospective audit on single use tonsillectomy kits in England and the positions of the devolved administrations at the next SEAC meeting.

### **Blood**

37. In February 2002 the Committee noted that the CJD Incidents Panel had recommended informing the transfusion recipients who had unknowingly received blood from donors who subsequently developed vCJD, of the potential risk of infection. Given the huge degree of uncertainty around the risks associated with vCJD and blood and the ethical dilemmas involved, the Government would carefully consider the responses to the consultation exercise before deciding whether to accept the Panel's recommendations.

## **B. Food Safety and the Protection of Animal Health**

### **Imports of beef and beef products**

38. The FSA reported the position on imports of beef with remnants of spinal cord attached. The number of affected consignments had risen to fourteen. All cases had been followed up with the relevant national authorities and the European Commission (EC). In some cases operations at the abattoirs concerned had been suspended while corrective action was taken. The FSA also informed the Committee that work was in progress to implement the extension of the EC specified risk material controls to include the bovine vertebral column from animals over a certain age in certain other Member States. This would require new UK controls to ensure that vertebral column was removed from imported carcasses, and to review the countries currently exempt from the OTM rule, in the light of recent geographical BSE risk assessments carried out by the Commission.

### **Pigswill**

39. The Committee was updated on the issue of pigswill. MAFF reported that an order, which would ban the feeding of catering waste containing meat and meat products as swill, would be laid - provided that Ministers were content with the recommendations put to them (The order has since been made and was announced in the Minister's statement to the House on 3 May 2001).

### **Fallen stock survey and results of second Over Thirty Months Survey**

40. In April 2001 the Committee noted that various active surveillance exercises had been delayed as a result of the FMD epidemic. Only 705 cattle had been tested to date as part of the fallen stock survey, of which 12 tested positive for BSE. The Committee considered that they were unable to draw firm conclusions from the small number of animals tested and the proportion of positive animals found to date. The proportion of positive animals in the fallen stock survey is higher than the proportion found in the surveys of OTMS animals. This is consistent with results obtained in other EU member states where surveys of fallen stock have also produced higher levels of positive results.
41. The Committee noted in a completed second survey of over thirty-month animals, that out of 9562 samples tested, 39 were positive for BSE. The Committee requested that the age data available, even if incomplete, should be provided to those engaged in the modelling of the epidemic. This was important to enable the model to be validated.

### **Experimental animals and FMD**

42. The Members considered there would be a significant financial and scientific loss if the TSE experimental animals had to be slaughtered as a result of FMD control measures. The Committee advised that urgent consideration be given to vaccinating these experimental animals to protect them from the risks of FMD.
43. Following SEAC's recommendations, the possibility of introducing a vaccination program had been investigated and a risk assessment had been carried out at the VLA to examine the risk to experimental animals in light of the existing containment measures. The Committee recognised the potential difficulties of implementing a vaccination policy for experimental animals, but Members reiterated their earlier advice that valuable experimental animals involved in long term and expensive TSE experiments should be protected from FMD by vaccination.

### **BSE epidemiology in Northern Ireland - Casualty animals**

44. In February 2001, Members requested further information from a survey of casualty animals over thirty months of age in Northern Ireland, which indicated evidence of BSE infection in 54 cattle of the 2546 sampled using the Enfer diagnostic test (2.12%). The Members noted that the samples were taken from older cattle registered as casualty animals, and so were considered to be a high risk population in terms of BSE infection. All animals were over thirty months of age so would not have entered the food chain. Of the small number of samples collected as part of the GB fallen stock survey, approximately 2% also showed evidence of BSE infection. Members agreed that in order to achieve more parity across the EU, the introduction of a standardised surveillance protocol across all Member states should be investigated.
45. Members considered the use of EC-validated diagnostic tests for surveillance of BSE. Members noted that the tests had only been validated using tissue taken from cattle clinically affected with BSE and hence infected cattle earlier in the incubation period may not be detected by the current tests. A specific research project was underway to harvest tissue collected throughout the incubation period of cattle experimentally infected with BSE to establish when diagnostic tests were able to detect infection in the pre-clinical phase. This was not complete and hence current stock of such tissue was very scarce, Members requested an audit of such tissue and it's proposed use to assess if tissue could be made available to validate the efficacy of tests to detect infection in the pre-clinical phase.

### **FSA review of BSE controls: taking forward the recommendation on the OTM rule**

46. Following the recommendation of the FSA Review that the OTM rule should be further reviewed, starting summer 2001, the FSA invited the Committee to note and comment on the initial plans to implement the review. The Committee agreed that information from the BSE surveillance programmes to be carried out by the UK Agriculture Departments would be crucial to the review. The Committee agreed that the presence of older animals on farms because of foot and mouth disease restrictions would not be a relevant factor.

### **BSE update in the UK and Europe**

47. In September 2001, the Members were updated on the current and projected status of the BSE epidemic in the UK and other EU Member states. Currently all animals over thirty months of age have to be tested using an approved diagnostic test before they can enter the human food chain. Because the UK implements the OTM rule, which prevents any OTM cattle (with limited exceptions) from entering the food chain, this country is not currently required

to test all older cattle. However under EU regulations, the UK has introduced a large TSE surveillance programme. Although the FMD epidemic has limited tissue collection for surveillance purposes, the UK programme includes the examination of casualties and fallen stock, 50,000 cattle over thirty months of age and 18,000 sheep over 18 months old. Concerns about the sensitivity of the current diagnostic tests were reiterated because it was not clear at what point in the incubation period the tests were able to detect misfolded prion protein (PrP-res) in an animal. This raised the possibility that current surveillance regimes may underestimate the overall level of BSE prevalence. It was considered important that diagnostic tests are validated using tissue taken throughout the incubation period to ascertain their reliability at detecting abnormal prion in the pre-clinical phase.

48. The UK BSE epidemic continued to decline largely as predicted. Future predictions suggest that the tail of the epidemic will be long, and that the number of cases will be in the order of a few hundred in 2002, reducing to approximately 100 in 2003. The Committee noted that the UK control measures, particularly the offspring and selective cull, had made a significant impact in reducing the tail of the epidemic.
49. Rising numbers of BSE cases had been reported in a number of other EU Member States. The Committee noted this might have implications for the importation of meat from other Member States. This could also affect the choice of country from which to import cattle for breeding stock, notably as part of the restocking following FMD.

#### **BSE investigations- post August 1996.**

50. The Committee considered investigations into the possible routes of BSE exposure in cattle with BSE born after 1 August 1996. To date six such cases had been reported in the UK, five in GB and one in Northern Ireland. The Committee noted that although contaminated feedstocks could not be ruled out as a possible exposure route, it was unlikely that maternal transmission was the route of exposure in at least 4 out of the 6 cases, given that the dam of the affected animal lived for a significant time after the offspring was born without displaying clinical signs of BSE. Members agreed that if any of the four cases had resulted from maternal transmission, the assumption that transmission risk was confined to the period close to disease onset was not valid.

#### **Baby food and the advice given by SEAC in 1996 on the relative susceptibility of babies to vCJD**

51. In view of recent interest in the use of lamb in baby food and the theoretical possibility of BSE infection in sheep, the Committee was asked to review its earlier advice, given in 1996, that infants and children were not likely to be

more susceptible than adults to infection with the BSE agent. In view of the limited number of studies relevant to the question of age-related susceptibility, the Committee did not consider they had sufficient data to give a definitive view. There were theoretical grounds for assuming that in some circumstances infants could be more susceptible in the first few months of life. Although many infants would not be exposed to sources of TSE through diet at that time, the Committee considered a prudent approach might be adopted. It was recommended that further experimental research was required on age-related susceptibility to infection with TSE agents.

## **C. Environmental Issues**

### **Risk Assessment on Small Incinerators**

52. The Committee considered a risk assessment on the potential BSE risks arising from the use of small incinerators to dispose of specified risk material (SRM). The broad conclusions of the risk assessment were that the BSE risks to public health from these incinerators were negligible, and lower than from large incinerators. Incomplete combustion of the ash represented a small risk, but the most significant risk arose from the burial of the ash resulting from incineration in unlined pits on land close to the incinerators themselves. The Committee stressed the importance of proper inspection and enforcement of the rules regulating the running of such incinerators in ensuring that the risks were kept to a minimum. They recommended that, in order to minimise the risk from small incinerators, the ash should go to landfill rather than being buried locally.

### **Report of the working group on FMD disposal**

53. The Committee discussed the conclusions of the SEAC working group meeting on 24 May 2001 which met to consider various aspects of the disposal of Foot and Mouth disease (FMD) carcasses. In relation to the disposal routes of ash created from the burning of cattle on pyres, Members were content with the working group's conclusions that in general, the preference for ash disposal was on site burial. The Committee recommended that where this was not possible, site specific risk assessments should be carried out and the most appropriate disposal method employed.

### **Transporters for FMD carcasses**

54. Members considered the working group's conclusions on the use of transporters for FMD carcasses. The working group had concluded that because of the small number of potentially BSE-infected animals that such trucks were likely to have carried, that the trucks were lined with impervious material and because of the decontamination measures used, there was no

reason to alter earlier SEAC advice that subsequent use to carry food was acceptable, providing that vehicles were thoroughly washed and disinfected. The Committee was content with the working group's conclusions on transporters.

### **Review of spreading of slaughterhouse/rendered material on fields**

55. The Members noted the current legislation on spreading of waste from slaughterhouses and rendering plants. The framework governing disposal routes is complex, and centres on two key pieces of legislation; the Animal By-Products Order 1999 and the Water Management Licensing Regulation 1994. The former specifies the disposal routes of most animal by-products (including animal carcasses and products of animal origin) and states that land spreading is not a permitted disposal route. The Water Management Licensing Regulation provides exemptions which allows the landspreading of certain types of waste under licence, including blood and gut contents from abattoirs, sewage sludge and waste materials used in or resulting from the preparation of food and drink.
56. The Committee noted that under new EC proposals, the exceptions as currently applied would be withdrawn unless such material has first been treated in accordance with the appropriate regulation. Treatment would include rendering or, for low risk material only, treatment in a biogas or composting plant. Manure and slurry would continue to be spread to all land without treatment.

### **Risk assessment on theoretical BSE risk from burning and burial of sheep**

57. Members considered a risk assessment commissioned by Defra to examine the potential public health risks from the disposal of sheep carcasses under contingency plans if BSE was identified in UK sheep. The report concludes that, even if BSE was present in sheep, the infectivity from burying or burning a large number of sheep carcasses, such as in the recent FMD out break, would be very small.

### **Overview of risks from BSE via environmental pathways**

58. The Environment Agency had commissioned DNV to update their analysis, to take account of new scientific information and information on any additional environmental pathways not included in the original report. SEAC was invited to consider whether the key assumptions used in the analysis remained valid, and if they could identify additional, potential routes of exposure that should be assessed.

59. Members agreed that the assessment should use recent surveillance data to derive figures for BSE prevalence and recent results from the attack rate experiment in the analyses
60. In terms of the transport and fate of the infectious agent in the environment, Members noted there were few data on the partition of prion protein in soil and water, but agreed that the extent to which prion leached from an aquatic environment was likely to be dependent on the ionic make-up of the immediate surroundings.
61. It was noted that previous values on the reduction of infectivity had been limited by the sensitivity of the assay employed. With the advent of more sensitive assay techniques, rendering had been shown to remove up to 10,000-fold of infectivity, although it was agreed that the previous estimate of a 50-fold reduction should be used as a conservative estimate.
62. Members noted that a large number of pathways had been examined in the original assessment including sewage sludge and wastewater from abattoirs. Although it was not in DNV's remit to examine all potential pathways affecting prions, Members suggested other potential environmental pathways such as the disposal of human blood and cadavers from CJD victims might be included. The Committee recommended that because of the many scientific uncertainties relating to the propagation and degradation of BSE infectivity in the environment, it was important to test the sensitivity of the risk assessment to different assumptions.

#### **D. Research on TSE Issues.**

##### **Potential novel blood marker for TSEs**

63. The Committee discussed a recently published paper from the Roslin Institute which had identified a marker in blood, called erythroid differentiation-related factor (EDRF), which decreased progressively as the incubation period of TSE diseases progressed. The relationship, if any, between the expression of EDRF and prion disease is unknown.
64. The Committee concluded that although this was an interesting and potentially useful finding it was too early to tell how specific this marker was to TSEs. There were many questions to be addressed before a direct relationship between the level of the EDRF gene expression and the progress of prion diseases could be shown. For example, it was not known if the expression of EDRF expression decreased in response to other infections or neurological diseases. Further work would need to be done before it would be known whether this represented a specific marker for detecting TSEs.

### **Relative sensitivity of the mouse vs. calf bioassay**

65. Mice and calves are frequently used for determining whether BSE infectivity is present in tissue from cattle or other animals. Work carried out at the VLA indicates that the sensitivity of the bioassay differs considerably between these two species, with the mouse bioassay being less sensitive. The BSE Inquiry drew attention to this, concluding the species difference in sensitivity may have implications for the mouse bioassay work in terms of identifying tissues harbouring BSE infectivity and that these needed to be reconsidered systematically. The Government's interim response to the BSE Inquiry Report concluded that SEAC's advice would be sought on this recommendation. The Committee concluded that although the calf bioassay was 500 fold more sensitive than the mouse bioassay, the conclusions to date on whether or not infectivity was present in the different cattle tissues at different stages in the incubation period were the same for each assay. Thus the Committee considered on the basis of the results so far there was good agreement between the mouse and calf bioassay. Further work on the calf bioassay was still ongoing and the Committee would consider this issue again when these results were available.

### **BSE: Autoimmune Theory**

66. Professor Ebringer gave a presentation to Members outlining both the autoimmune hypothesis of BSE and the diagnostic test that had been developed on the basis of the proposed aetiology. Professor Ebringer's diagnostic was based on his observation that BSE infected cattle have specific elevations of antibodies against *Acinetobacter* – a bacterium which lives in cattle intestines or the environment. He proposed that these antibodies are involved in an autoimmune response which results in BSE. The M.A.N. index measures three antibodies; myelin autoantibodies, *Acinetobacter* antibodies and neurofilament autoantibodies (i.e. antibodies produced by the body in response to *Acinetobacter* that bind to neural tissue). Overall the Committee considered that Professor Ebringer supported his theory by using a rather selective and limited choice of publications, and had disregarded much of the published literature. They concluded that the theory was not a good postulate for the origin of BSE and that it did not seriously challenge the prion hypothesis.
67. The Committee agreed that, although the data presented on the M.A.N. assay was of some interest, a test sensitivity of 70% was not sufficient to give confidence that BSE positive animals could be correctly identified. There was too much overlap between the antibody levels seen in individual control animals, and those seen in the BSE infected animals. Members also agreed that the specificity of the test also appeared to be poor compared to existing tests. The Committee concluded that on the basis of the results presented,

there was little justification at this time for carrying out additional work to develop the test for use in pre-clinical animals.

## **E. TSE in Sheep**

### **Studies of experimental BSE in genetically susceptible sheep**

68. In June 2001 SEAC were updated on ongoing experiments to examine the pathogenesis of experimental BSE in sheep using a mouse bioassay. In this assay, infectivity had been detected in the liver of genetically susceptible sheep at 16 months and 22 months post challenge.

### **TSE strain typing**

69. In September 2001 the Committee considered a report from a SEAC working group convened to review an ongoing experiment to examine a pool of scrapie brains collected in the early 1990's for evidence of BSE.
70. The Committee noted that the strain typing results from the scrapie brain pool (SBP) collected to date could not positively distinguish between scrapie and BSE but could be compatible with BSE having been in sheep at that time. They recommended research to examine potential contamination including DNA analysis of the original pool for evidence of bovine tissue to examine the possibility that the SBP may have been contaminated with bovine tissue at the time of collection.
71. In November 2001 the Committee were updated on strain typing work. Previous experiments had indicated a highly consistent pattern in incubation periods and brain pathology in a panel of mice inoculated with isolates from cases of BSE, vCJD, feline spongiform encephalopathy (FSE) and other naturally occurring or experimentally induced TSEs. For BSE, incubation periods are typically 320 days post inoculation in RIII mice and 100 days longer in C57-black mice. Other mice strains contract disease at later time points. Individual scrapie brains (183) were being tested in panels of mice. Experiments are incomplete, but based on incubation period data, none of these isolates were characteristic of BSE.
72. In November 2001 members were updated with work at the VLA to strain type scrapie isolates using a Western Blot (WB) technique. The preliminary evidence showed that this technique was able to distinguish scrapie and BSE in sheep. The members recognised the needs to test many known scrapie isolates from different breeds and genotypes to build up a matrix of information from existing scrapie strains. The Committee considered that it would be beneficial for scientists in the research groups using molecular

strain typing techniques in human and animal diseases to meet and discuss how best to move this work forward rapidly.

73. In February 2002, the Committee was given a brief update on progress at the VLA to develop and validate the western blot test to discriminate BSE from scrapie. It was reported within the limited range of genotypes investigated, the tests appeared to have the ability to discriminate between BSE and scrapie.
74. The members noted that much of the current work was being done using BSE control material from cattle. Members agreed that effort should be made to provide suitable control material from sheep experimentally infected with BSE. Once the technique could confidently be used to distinguish between TSE strains in sheep, and in particular between experimental BSE and scrapie, it would be employed to examine archived scrapie samples at the VLA.

#### **Risk assessment in the event BSE is found in sheep**

75. The FSA had commissioned risk assessments (RA) from Imperial College and DNV to assess the potential risk of BSE in sheep. In September 2001 the members noted that the RA required optimal data centred around four key areas, namely demography of the sheep population and survival age, pathogenesis data, consumption patterns in humans and epidemiological data on transmission of TSEs in sheep. The group also intended to perform a broader assessment of the possible impact of an epidemic of BSE in sheep on current vCJD epidemic predictions. The main aim of the RA in the short term was to try to quantify the risk of exposure to infectivity. The RA would be based on assumed levels of BSE prevalence in the flock to assess main routes of exposure and identify risk reduction measures that might be effective.
76. In November 2001 SEAC received a progress report on work commissioned by the FSA to assess the potential risks of BSE in sheep. The Committee considered that more details on the consumption pattern for lamb were needed, to include factors such as age, gender, geographical and cultural variations. More data were also needed on scrapie in sheep, including prevalence data over time, by age and flock type, geographical location of scrapie, the tissue distribution of scrapie infectivity within sheep, by age, and on the transmission routes. The demography of the national sheep flock was considered to be poorly documented.

### **Scrapie in sheep**

77. In September 2001 the Committee considered that further research to investigate scrapie transmission was important and high priority, particularly in view of the drive to reduce scrapie incidence under the NSP.

### **National Scrapie Plan**

78. In November 2001 members were invited to consider proposals to accelerate the NSP. These included extending the NSP to the non-registered purebred sector and to scrapie-affected flocks. The Committee endorsed any moves to accelerate the eradication of TSEs in sheep but emphasised the importance of ongoing research to determine whether genetically resistant sheep were capable of carrying or transmitting the infectious agent. Members noted work was underway to examine the spread of TSE infection in the tissues of sheep of different breeds and genotypes at various time points after experimental challenge.

### **National Scrapie Plan: modelling work**

79. In March 2002 the SEAC NSP working group discussed the modelling work to estimate possible timescales for the spread of resistant alleles across the GB flock under the current selective breeding programme. The model suggested that the NSP would be effective in increasing the frequency of the ARR allele and decreasing the VRQ allele with an estimated a 10-15 year timescale to eliminate the VRQ allele. The working group noted that the success of the targeted breeding and genotyping scheme, and the time taken to increase the number of ARR alleles, was dependent on the ability of the industry to adapt to NSP schemes.

### **National Scrapie Plan: Can sheep carry TSEs?**

80. In March 2002 the working group were updated on research funded by Defra to address if genetically resistant sheep can act as carriers for TSE infection, and the mechanisms of TSE transmission between sheep. Members noted three variables within this research; genotype of the sheep, strain of infectious agent, and the route of challenge. Transgenic mice were considered suitable to examine the basic phenotypic traits responsible for scrapie resistance conferred by the ARR allele.
81. The members considered two possible key risks in NSP. Firstly, as the infectious agent is capable of changing phenotype on passage within different genotypes there was a theoretical possibility that a rare strain of scrapie may emerge that ARR animals may not be resistant to. The second risk was the potential loss of other positive traits not related to TSEs as a result of selective breeding. The group considered that the research

programme should be extended to study: the possibility of deleterious traits selected by the breeding strategy, the demography of the national sheep flock, the mechanisms of scrapie transmission, and the development of transgenic mice with scrapie-resistant alleles.

82. Members noted as goats had no equivalent of an ARR allele, they were not suited to a selective breeding programme. The working group suggested that the EC was the appropriate forum to consider further work in goats.

#### **National Scrapie Plan: scrapie-affected flocks**

83. In March 2002, the SEAC NSP working group were informed that removing susceptible animals from flocks was an effective way to control disease and limit the spread of infection to other flocks. Although SEAC and SSC have recognised the importance of targeting scrapie-affected flocks, due to the demands of the FMD outbreak, there had been little progress on these proposals on scrapie-affected flocks.
84. Members noted that there were seven possible options to take action on scrapie affected flocks. It was agreed that before any option was agreed further work should be undertaken which should include modelling and risk assessment to assess the likely impact of any proposed action on scrapie reporting rates and resultant effects on overall scrapie prevalence, and the potential benefits to public health assuming various levels of compliance.

#### **National Scrapie Plan: certified flock scheme**

85. In March 2002, the SEAC NSP working group was updated on Defra's proposals for a certified flock scheme. The aim of the scheme was to provide a commercial incentive for sheep farmers to move over time to semi-resistance and eventually to full resistance of TSEs. The working group noted that presentational issues and the timing of the implementation of the plan would be considered in consultation with the industry. It was also noted any certification scheme was reliant on good animal identification and record management.

#### **Defra workshop on TSE research**

86. In February 2002 members were informed of the outcome of a Defra workshop on sheep TSE research, held in December 2001. Members considered that more work was required on the mechanisms and factors affecting vertical transmission and sub-clinical carrier states in sheep. Efforts to improve surveillance to assess both the underlying demography of the sheep flock and the prevalence of TSE should also be increased. The co-ordination of research across such a large programme was identified as a critical issue. The appointment of a research board to oversee the

research programme was suggested. Members were informed that the new Defra Chief Scientist, would be invited to a future SEAC meeting to respond to the recommendations made in the Review of Defra funded TSE research and surveillance programmes.

### **TSE sheep surveillance**

87. In November 2001, SEAC discussed a Defra proposal for future sheep surveillance work. To comply with new EC regulations the UK planned to carry out two separate sheep surveys beginning in January 2002. An abattoir survey would monitor approximately 20,000 over 18 months old sheep slaughtered for human consumption and a second survey would examine 3000 fallen stock for evidence of TSE infection in brain tissue using an appropriate diagnostic test. Under EC law the entire carcass of an animal tested positive for a TSE had to be destroyed. This requirement led to retention of all body parts of suspect animals pending the outcome of TSE testing. Given that there was no evidence of BSE in the UK sheep flock and that the vast majority of animals entering the food chain would not be tested, members agreed there should be no need to retain the carcasses pending results of each sample and recommended the relevant legislation be reviewed to facilitate the monitoring of increased numbers of sheep for evidence of TSE infection.
88. In February 2002 the Committee discussed the outcome of a Defra working group on sheep surveillance strategies to gauge both the prevalence of scrapie infection within UK sheep, and whether BSE is present in the flock. Surveys aimed at determining the prevalence of scrapie in the UK flock required an unbiased sample taken from across the flock to assess the overall level of TSE infection. A different approach was required to gauge whether BSE is present in the flock. The reported incidence of scrapie in the national flock was low therefore targeted surveillance, directed specifically at animals known to have a TSE infection, would be required to obtain a sufficiently large sample which could be examined for evidence of a BSE-like strain. The working group had concluded an inverse sampling regime should be considered. Animals would be sampled until a specified number had tested positive. Details of the sampling regime were being worked out in consultation with VLA.
89. The surveillance working group noted that under EC requirements the UK would be required to carry out TSE surveillance on 66,000 sheep, but considered that the UK sampling strategy should not be constrained by EC requirements. The group recognised the importance of reaching Europe-wide agreement on both the testing protocol and the interpretation of diagnostic tests to differentiate between scrapie and BSE. They

recommended a small group of experts from across Europe should convene to reach a consensus on this issue.

**Matrix of sheep breeds and genotypes employed in the experimental BSE research programme**

90. In November 2001 members requested more information on the range of breeds in the commercial UK flock. There was some concern that the animals used in the research programme may not reflect the genetic make up of the majority of crossbred sheep entering the food chain. The Committee was informed that the sheep used in the research programme were sourced from New Zealand (which is free from TSEs), and the genotype were selected to reflect the range of genotypes found in the national flock. The Committee acknowledged that to match the range of breeds and genotypes in the research flocks with those present in the UK flock would require large numbers of animals and the costs would be high. The committee considered in the first instance it was important to refine further the role that specific alleles play in susceptibility to and development of TSE infection, and that this was best done in a limited number of key breeds.

**Safety of heterozygote animals entering the food chain if BSE is found in sheep**

91. In February 2002, at FSA's request the SEAC NSP working group reviewed the 2001 advice on this issue in the light of new scientific information.
92. SEAC's previous advice suggested that if BSE were found in sheep, a possible risk reduction strategy was to restrict genotypes of animals entering the food chain to those carrying at least one ARR allele coupled to an age cut-off around one year of age. This advice was based on experimental work on the pathogenesis of BSE in sheep which showed all tissues from sheep carrying the ARR allele were negative up to 22 months post challenge (pc). A 12 month cut off was decided as a precautionary and practical measure as sheep at this age could be identified by dentition. In February 2002, although the group noted that the VLA pathogenesis experiment had not found evidence of infection in ARR heterozygote or homozygote sheep at 34 months pc, it considered that, on a precautionary basis, a 12-month cut off was still appropriate for ARR heterozygote animals. As no TSE had been confirmed in an ARR homozygote sheep an age cut-off for ARR homozygote animals was not warranted.
93. As ARQ/ARQ sheep were the most susceptible to experimental BSE and presented the greatest risk these should be excluded from the food chain in the event of a BSE in sheep scenario. Although there was no experimental evidence on susceptibility of VRQ/VRQ sheep to BSE infection at present,

and this genotype was scrapie susceptible, on a precautionary basis these animals also would be excluded from the food chain if BSE were found in sheep.

94. As TSE infectivity is found throughout the lymphoreticular system of infected sheep and lymphocytes are found in milk, it was theoretically possible that small ruminant milk may carry some infectivity. Therefore the group confirmed previous SEAC advice that if BSE were found in sheep, sheep and goats should not be used for dairy production with the exception of ARR/ARR sheep. Members also stressed the need to implement research to examine infectivity in small ruminant milk.

## **F. Committee Business**

### **Government's Interim Response to the Phillips Inquiry Report**

95. The Committee was asked to consider the Government's interim response to the Phillips Inquiry report and consider whether the Committee wished to make any response to this document. They reiterated several of the points which had been raised when the BSE Inquiry Report was originally discussed by the Committee in November 2000.

### **Update on guidance for Advisory Committees-consultation with the Committee**

96. SEAC was consulted by Office of Science and Technology (OST) on the new code of practice for scientific advisory Committees (SAC) at the meeting in April 2001. The draft guidelines make clear the importance of sharing important research within the Committee. Members recognised that this was fundamental to the quality of Committee discussions and advice, but because of the increasingly competitive nature of academic funding, there was an increasing pressure from sponsoring departments to maintain control on recent innovation to prevent intellectual property from being jeopardised.

**Abbreviations**

ACDP	Advisory Committee on Dangerous Pathogens
BSE	Bovine Spongiform Encephalopathy
CNS	Central Nervous System
CJD	Creutzfeldt Jakob Disease
Defra	Department for Environment, Food and Rural Affairs
DH	Department of Health
EU	European Union
FSA	Food Standards Agency
GB	Great Britain
MAFF	Ministry of Agriculture Fisheries and Food
NHS	National Health Service
NSP	National Scrapie Plan
OTM	Over Thirty Month
OTMS	Over Thirty Month Scheme
SEAC	Spongiform Encephalopathy Advisory Committee
SRM	Specified Risk Material
TSE	Transmissible Spongiform Encephalopathy
US	United States
VCJD	Variant Creutzfeldt Jakob Disease
NCJDSU	National CJD Surveillance Unit
MRC	Medical Research Council
VLA	Veterinary Laboratory Agency



**Indemnity by the Minister for Environment, Food and Rural Affairs and the Secretary of State for Health, to members of the Spongiform Encephalopathy Advisory Committee and Related Committees.**

1. The Minister and the Secretary of State ("the Ministers") hereby jointly undertake with each of the members of the Spongiform Encephalopathy Advisory Committee and all of its sub-groups covered by the code of practice ("the members") that they will indemnify them, their estates and their heirs against all personal civil liabilities in respect of any action or claim which may be brought, or threatened to be brought, against them either individually or collectively by reason of or in connection with the performance at any time of their duties as members, whether before or after the date of this indemnity, including all costs, charges and expenses which the members or any member may properly and reasonably suffer or incur in disputing any such action or claim.
2. The members or any member shall as soon as reasonably practicable notify the Ministers if any action or claim is brought or threatened to be brought against them or any of them in respect of which indemnity may be sought pursuant to paragraph 1. If any action or claim is brought the Ministers shall be entitled to assume the defence. The Ministers shall notify the members or member as soon as practicable if the Ministers intend to assume the defence and the members or member shall then provide such information as the Ministers reasonably request, subject to the Ministers reimbursing all out of pocket expenses properly and reasonably incurred by members or any of them. The Ministers shall, where reasonable and practicable, consult with and keep the members or any of them informed of the progress of the action or claim. Where Ministers do not assume the defence, members or any of them shall keep the Ministers fully informed on its progress and any consequent legal proceedings and consult with the Ministers as and when reasonably required by them or any of them concerning the action or claim.
3. The indemnity contained in paragraph 1 shall not extend to any losses, claims, damages, costs, charges, expenses or any other liabilities:
  - a) in respect of which members are indemnified by or through any defence organisation or insurers; or
  - b) which may result from bad faith or wilful default or recklessness on the part of the members; or
  - c) which may result from any of the following circumstances (without the prior written consent of the Ministers having been obtained such consent not to be unreasonably withheld):
    - any settlement made or compromise effected of any action or claim brought, or threatened to be brought, against them; or

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- any admission by the members of any liability or responsibility in respect of any action or claim brought, or threatened to be brought, against them; or
- members taking action that they were aware, or ought reasonably to have been aware, might prejudice the successful defence of any action or claim, once the members had become aware that such an action or claim had been brought or was likely to be brought.

Signed on behalf of the Minister of Agriculture, Fisheries and Food and the Secretary of State for Health:

Signature:

Name:

Date:

Signed:

Members name:

Date:

Up to date information on Members indemnity can be found on the Defra Website:

<http://www.Defra.gov.uk/animalh/bse/bse-science/level-4-seac.html>

## Register of Members' Interests at 31 March 2001

SEAC Member	Commercial interests		Non-commercial interests	
	Name of organisation	Nature of interests	Name of organisation	Nature of interest
<b>Professor P G Smith</b>	None	None	Department of Health	Grant holder
<b>Professor A Aguzzi</b>	Boehringer Ingelheim	Occasional consultancy	Swiss National Foundation No: 31-36059.92 3100-040827.94	Principal investigator
	Abbott Laboratories (Chicago)	Support of some laboratory costs e.g. care of mice, instrumentation	Cancer league of the Kanton Zurich	Principal investigator
	Immuno A G (Vienna)	Support of some laboratory costs e.g. care of mice, instrumentation	European Union No. BMHI-CT93-1142	Co-investigator
			National Institute of Health	Co-investigator
			Swiss National Research Program NFP38 & NFP38+	Principal investigator
<b>Professor. R Anderson</b>	Decode	Scientific Advisory Board	The Wellcome Trust	Governor
	SKB	Scientific consultancy	Tropical Health	Trustee

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			and Education Trust (THET)	
	Abbott Pharmaceuticals	Scientific consultancy	London School of Hygiene and Tropical Medicine	Court of Governors
		Non Exec. Chairman	Hamburg Institute of Tropical Medicine	Scientific Advisory Board
			Isaac Newton Institute, Cambridge	Scientific Advisory Board
			Maxwell Institute, Edinburgh	Scientific Advisory Board
<b>Mr R Bradley</b>	European Natural Sausage Casings Association	Advisor	World Health Organisation	Advisor
	Meat and Livestock Commission	Advisor	Office International des Epizooties	Advisor
	Kraft Foods R & D (formerly Kraft Jacobs-Suchard - Munich, Germany)	Advisor	European Commission	Advisor
	De Mulder.	Advisor	National Governments and individuals; especially in Africa, Europe and Americas	Advisor
	Smithkline Glaxo Biologicals (Rixensart,	Advisor	Harder Brothers Ltd	Advisor

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	Belgium)			
	Irish Edible Oils	Advisor	Crackwillow Ltd.	Advisor
	Chiron Behring	Advisor		
	Boyauderie Blesoise	Advisor		
	Glenfarm Holdings Ltd	Advisor	International Natural Sausage Casings Assoc (INSCA)  North American Natural Casing Assoc (NANCA) Natural Sausage Casings Association (NSCA)	Advisor
	Taylor by-products USA	Advisor	Animal Proteins Corporation (APC) Europe SA	Advisor
	Peter Gelhard, Naturdarme, Ransach- Baumbach, Germany	Advisor		
	Envirotech Industries Ltd, Dublin	Advisor		

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<p><b>Professor C J Bostock</b>          (Appointed as an expert from the Institute for Animal Health (IAH), a Biotechnology and Biological Sciences Research Council sponsored institute)</p>	<p>Safeway</p>	<p>Share holding</p>	<p>The UK and some overseas Governments</p>	<p>Research contracts with IAH</p>
			<p>Non-governmental organisations and companies, spanning a wide range of interests including food, agriculture, chemicals and pharmaceuticals. Further details of customers of IAH can be found on the Institute's website (<a href="http://www.iah.bbsrc.ac.uk">www.iah.bbsrc.ac.uk</a>)</p>	<p>Research contracts with IAH</p>
<p><b>Professor J Collinge</b></p>	<p>None</p>	<p>None</p>	<p>Welcome Trust</p>	<p>Research grant holder</p>
			<p>Dept of Health</p>	<p>Research grant holder</p>

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			European Commission BIOMED programme	Research grant holder
			Medical Research Council	Unit Director and Research grant holder
			Motor Neurone Disease Assoc	Chairman, Research Advisory Panel
			Glaxo Welcome PLC	Research collaboration
			World Health Organisation	Ad hoc Advisor
<b>Professor J Ironsides</b>	Merck, USA	Temporary Advisor	Baxter Healthcare USA	Research investigator on a Baxter funded project on the transmission of CJD (Principal investigator Dr Paul Brown USA)
			Department of Health	Research grant holder: Surveillance of CJD (neuropathology) DoH 1216469 - National retrospective review of CJD and respective disorders DoH 1216982 - Immunocytochemical testing for disease-associated prion protein in lymphoid tissues Advisor: Decontamination of surgical instruments Assessment of risk of exposure to vCJD: infectivity in blood and blood products
			Medical Research Council	Grant holder: G9708080 - Edinburgh HIV brain and

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				tissue resource G9627376 - Phenotypic variation in CJD, a clinical pathological and molecular study
			BBSRC	Grant holder: 15/BS204814 - Neuronal pathology in CJD: an immunocytochemical study with quantitative and microscopic analysis 201/BS410537 - The relationship between neurone damage and clinical disease: relating murine and ovine scrapie to BSE and CJD Advisor: BSEP
			European Union	Grant Holder: EC BI04-98-6046 - Diagnosis of TSE using PrP <sup>SC</sup> /PrP <sup>C</sup> EC CT98-6015 - European centralised facility for human transmissible spongiform encephalopathies (prion disease) EC PL97-6003 - Transgenic mice expressing human prion protein. Use for characterisation of human encephalopathies and sensitivity for detection of infectivity EU CT98-6048 - Quantitative analysis of MR scans in CJD (QAMRIC) Advisor
			Committee on safety of medicines	Advisor
			World Health Organisation	Advisor

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			UK Xenotransplantation Interim Regulatory Body	Advisor
<b>Peter Jinman</b>			British Veterinary Association	Vice President
<b>Professor H Kimbell</b>	Bass Plc	Small share holding		
	Tesco's Plc	Small share holding		
<b>Professor C Masters</b>	Merck	Consultant	National Health and Medical Research Council of Australia Several research grants	Principal and Associate investigator
	PRANA Biotechnology Plc	Director	World Health Organisation	Occasional consultancies on CJD
			Australian Government	Occasional consultancy on CJD and Director of the National CJD Registry
<b>Professor I McConnell</b>	Marks & Spencer	Veterinary consultant on occasional basis	Welcome Trust	Fellowship holder Research grant holder Panel member for Veterinary Interest Group
			BBSRC	Research grant holder
<b>Dr J Safar</b>		Dr Safar has no commercial interests but according to the intellectual property policies	National Institute of Health, Grant # AGO-10770	Co-investigator

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		of the University of California (UC) is entitled to a portion of income when UC licences to a commercial entity any patents on which he is named as an inventor.		
			World Health Organisation	Advisor
			Swiss National Research Programme	Advisor
			Medical Research Council	Advisor
			Non-governmental organisations and companies	Research contracts with UCSF
<b>Professor R Carrell</b>	Canterbury Scientific	Director and Shareholder	Wellcome Trust	Research
<b>Dr D Cunningham</b>	None	None	Standing Medical Advisory Committee	Chair

**Membership of the SEAC Epidemiology Sub-Group on vCJD  
at 31 March 2002**

**Chairman:**

**Professor PG Smith**

Department of Infectious and Tropical  
Diseases  
London School of Hygiene and Tropical  
Medicine.

**Professor R M Anderson**

Department of Infectious Disease  
Epidemiology  
Imperial College School of Medicine

**Dr N Gill**

PHLS Communicable Disease  
Surveillance Centre

**Mr S N Cousens**

London School of Hygiene & Tropical  
Medicine

**Professor A Hall**

London School of Hygiene and  
Tropical Medicine

**Professor C J Bostock**

Institute for Animal Health

**Dr R Eglin**

National Blood Service

**Dr S Bird**

MRC Biostatistics Unit,  
Cambridge

**Dr G Medley**

Department of Biological Science  
University of Warwick

**Professor R G Will**

National CJD Surveillance Unit  
Western General Hospital  
Edinburgh

**Dr H Ward**

National CJD Surveillance Unit  
Western General Hospital  
Edinburgh

**Professor R N Curnow**

Department of Applied Statistics  
University of Reading

**Dr C P Farrington**

Faculty of Mathematics and  
Computing, The Open University

**Professor N Day**

Institute of Public Health Service  
University of Cambridge

**Professor J Wilesmith**

Epidemiology Department  
Veterinary Laboratories Agency

**Annex V**

**Membership of the SEAC Working Group to discuss issues relating to the National Scrapie Plan (NSP) at 4 March 2002**

**Chairman:**

**Professor PG Smith**

Department of Infectious and Tropical Diseases  
London School of Hygiene and Tropical Medicine.

**Professor R M Anderson**

Department of Infectious Disease  
Epidemiology  
Imperial College School of Medicine

**Professor C J Bostock**

Institute for Animal Health

**Mr R Bradley**

Veterinary Pathologist

**Professor R Carrell**

Professor of Haematology  
University of Cambridge

**Professor I McConnell**

Institute of Public Health Service  
University of Cambridge

**Mr P Jinman**

Private Veterinary Surgeon

**Membership of the SEAC/ACDP Working Group at 31 March 2002**

**Chairman:**

**Professor D J Jeffries**  
ACDP Member

**Members:**

**Dr M Painter**  
Consultant in Communicable  
Disease Control

**Professor P G Smith**  
London School of Hygiene &  
Tropical Medicine

**Professor J Ironside**  
National CJD Surveillance Unit

**Mr R Bradley**  
Private BSE Consultant

**Mr B Clare**  
Director  
Bob Clare Associates

**Dr J Hope**  
Institute for Animal Health

**Dr P Jones**  
Institute for Animal Health

**Mr J Richards**  
Unison

**Dr T Wyatt**  
Consultant Clinical Scientist

**Dr G Ridgway**  
University College hospital

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