

### STATEMENT ON OPTIONS RELATING TO MODIFICATION OF THE TOTAL FEED BAN

#### Issue

1. United Kingdom Rural Affairs Departments and the Food Standards Agency requested advice on the potential for further bovine spongiform encephalopathy (BSE) or other transmissible spongiform encephalopathy (TSE) infections and epidemics to arise as a result of the implementation of various options for modifying the present BSE-related feed controls.
2. The options are:
  - the introduction of tolerance levels for certain types of processed animal protein (PAP) in feed,
  - the inclusion of fish meal in young ruminant diets and
  - the feeding of non-ruminant PAP to non-ruminants of a different species.

#### Background

3. Commission Decision 94/381/EC introduced a ban on feeding mammalian meat and bone meal (MBM) to ruminants (“the ruminant feed ban”). Commission Decision 2000/766/EC (as amended) extended this ban to prohibit, with certain exceptions, the feeding of animal protein to ruminants and PAP to all animals farmed for food production (the “total feed ban”). In 2005, in light of the decline of the BSE epidemic as a result of these measures, the Commission published the TSE Roadmap<sup>1</sup> which discussed options to modify BSE controls and surveillance whilst maintaining public health protection and the objective to eradicate BSE.

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<sup>1</sup> European Commission (2005) TSE Roadmap.  
[http://ec.europa.eu/food/food/biosafety/bse/roadmap\\_en.pdf](http://ec.europa.eu/food/food/biosafety/bse/roadmap_en.pdf)

4. Having been asked for advice on the potential risks of the options, SEAC reviewed relevant scientific information<sup>2</sup> and considered (i) the options given in paragraph 2 and the consequent risks for transmission of BSE, (ii) the implications of modifying BSE controls on the assessment and management of the risks from BSE and (iii) the wider implications of modifications to controls for TSE risks<sup>3</sup>.

## **Options to alter controls and the risks of BSE transmission**

### *Tolerance levels for certain types of PAP in feed*

5. Any introduction of tolerance levels for certain types of PAP in feed must take account of contamination that is difficult to avoid technically, or is accidental. However, such an approach would be critically dependent on the availability of robust analytical methods and sampling procedures. In order to be effective, these methods need to be capable of identifying the species of origin and of measuring the concentration of PAP as a very minor constituent in feed.
6. Although methods are under development and being evaluated, currently there are insufficient data to enable SEAC to be confident of the performance of analytical tests to detect, identify and quantify PAP in feed when used to enforce control measures. This applies particularly to basing controls on estimated assay sensitivities and specificities. The desired test characteristics depend on the context in which tests are going to be used and the regulatory regime in which these will operate. In the absence of robust methodology, any tolerance levels would be meaningless and the potential risk to human health could not be assessed.

### *Fish meal in young ruminant diets*

7. A number of fish species appear to have genes homologous to mammalian prion protein genes. Therefore, it is possible some fish may be able to develop some features of the pathology seen in mammalian TSE infections. Studies of a small number of fish species fed classical scrapie or BSE infectivity showed<sup>4,5</sup> rapid clearance of the original inoculum, but there is some preliminary

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<sup>2</sup> SEAC paper 99/4 <http://www.seac.gov.uk/papers/99-4.pdf>

<sup>3</sup> Minutes of SEAC 99 and 100. <http://www.seac.gov.uk/papers/papers.htm>

<sup>4</sup> Ingrosso *et al.* (2006) Scrapie infectivity is quickly cleared in tissues of orally-infected farmed fish. *BMC Vet Res.* 2, 21-28.

<sup>5</sup> EFSA (2007) Opinion on the assessment of the health risks of feeding of ruminants with fishmeal in relation to the risk of TSE *EFSA Journal.* 443, 1-26. [http://www.efsa.europa.eu/EFSA/efsa\\_locale-1178620753812\\_1178620775416.htm](http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178620775416.htm)

evidence<sup>6</sup> of transmission of mammalian TSEs to certain fish species and further studies are to be undertaken to determine the possible transmission risks.

8. The inclusion of fish meal in young ruminant diets provides a potential route for young cattle to be exposed to mammalian PAP should fish meal become contaminated with mammalian PAP during feed manufacture, mixing and/or storage, or if residual mammalian PAP were present in fish fed with mammalian PAP and then used to make fish meal. Although young cattle are considered to be relatively susceptible to BSE, the very low prevalence of BSE in the UK herd, and its apparent absence from sheep and goats now, means that the risk of BSE infections arising from feeding feed containing fish meal to young ruminants is likely to be very low to negligible. Caution should be exercised when considering fish meal sourced from countries where there is insufficient surveillance to ascertain whether or not the prevalence of BSE is very low to negligible. However, this latter potential route of infection is unlikely to generate an epidemic.

#### *Feeding of non-ruminant PAP to non-ruminants*

9. Inclusion of PAP in feed for non-ruminants could potentially give rise to cross-contamination between ruminant and non-ruminant feed during feed manufacture, mixing and/or storage. This could lead to feed including PAP from one species being fed to animals of the same, or a closely related, species or to ruminants. In addition, increases in the cost of feed or feed ingredients may increase the risk that inappropriate ingredients or feed may be used.
10. However, for there to be a risk of BSE transmission, the introduction of material, and especially specified risk material, from BSE infected animals would need to occur at some point during feed production and/or supply chain and be fed to susceptible animals of the same or a different species. The experience of BSE cases born after the introduction of the reinforced feed ban in the UK (in 1996) suggests that the amount of contaminated material that can result in transmission may be very small. Thus, even a low level of BSE contamination of non-ruminant feed would provide a potential route for BSE transmission if it were fed to cattle (this is

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<sup>6</sup> Salta, E., Panagiotidis, C., Petrakis, S., Eleftheriadis, E., Karagiannis, D., Aggelidis, P., Teliouis, K., Kaldrimidou, E., Krey, G., Sklaviadis, T. Evaluation of the possible transmission of prions to the two closely related teleost species, sea bream and sea bass. Abstract P3.18. Prion 2008 Abstracts (Sponsored by Min de Ciencia y Innovacion, Spain, INIA, the Commission, 6<sup>th</sup> Framework Programme & Neuroprion), Madrid, Spain. 8-10 October 2008.

also a risk with plant-based feed). Rules to prevent such cross-contamination could be difficult to enforce, and elimination of BSE could not be assured in such circumstances.

11. The BSE risks from including PAP in animal feed depend on the extent to which the source of PAP and its inclusion rate can be controlled. However, if PAP were derived from material which would otherwise have been considered fit for human consumption and then pressure rendered, the risks of BSE infections arising would be very low<sup>7</sup>. Inclusion of PAP in feed to non-ruminants, even if it results in low-level contamination of ruminant feed, is unlikely to lead to a level of amplification of BSE infectivity via intra-species recycling that would be sufficient to generate a self-sustaining BSE epidemic.

### **Implications for assessing and managing BSE risks**

12. The continuing decline in the BSE epidemic, which is undoubtedly attributable to the ruminant and reinforced feed bans, clearly reduces the animal and human health risk from BSE and allows modification of the BSE control measures to be considered.
13. SEAC considers it good practice that consideration of modifications to BSE control measures be supported by quantitative assessments of the risk associated with changes to the control regime (for example, such as that published<sup>8</sup> by the European Food Safety Authority on meat and bone meal risks). However, as the effectiveness of one control measure may be influenced by others, an assessment of the BSE risk would properly not only consider the effects of single modifications in isolation, but should estimate combined effects on the control regime when multiple changes to controls are being considered. However, such assessments are difficult as many of the risk factors may be unquantifiable.
14. If the critical animal and human health protection measures<sup>9</sup> stay in place, then any additional BSE risks arising from modifying less critical controls are likely to remain low and further epidemics of

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<sup>7</sup> DNV Consulting (2006) Assessment of the risk potential of reintroduction of certain processed animal proteins into animal feeds.

<sup>8</sup> EFSA (2005) Opinion on the quantitative risk assessment of the animal BSE risk posed by meat and bone meal with respect to the residual BSE risk. The EFSA Journal (2005) 257, 1-30. [http://www.efsa.eu.int/science/biohaz/biohaz\\_opinions/1148\\_en.html](http://www.efsa.eu.int/science/biohaz/biohaz_opinions/1148_en.html)

<sup>9</sup> The ruminant-to-ruminant feed ban, the specified risk material controls and high temperature/pressure processing of PAP

BSE should be prevented. However, enforcement to ensure that the critical animal and human health protection measures are adhered to and appropriately applied is important to minimise the BSE risks, although it must also be recognised that no enforcement regime can be one hundred percent effective.

15. Modification of any aspect of the BSE control regime might in principle result in an increased risk of BSE transmission to cattle. Increasing that risk might make the Government's aim of eliminating BSE from the UK herd more difficult to achieve in the short-term and to validate.

### **Wider implications of modifications to controls for TSE risks**

16. If controls are modified, it would be important to retain suitable surveillance measures to monitor any consequent changes to the incidence of animal and human TSEs. However, because of the long incubation period of TSEs, and the lack of a generally applicable ante-mortem test for TSE infections, there could be very considerable delay (potentially decades in the case of human health) in detection by surveillance of adverse effects, should these ever arise. As a result it may be too late to re-introduce interventions to prevent large-scale infections.
17. It is possible that new TSE strains might emerge as a result of mutation of TSE strains following the consumption of material from one species by another as a result of changes to feed controls. Such emerging strains could be zoonotic, and could even be of greater transmissibility to humans than BSE. However, the host range and the barrier to transmission from one species to another of a novel TSE strain cannot be predicted.
18. The BSE epidemic in cattle and the kuru outbreak in man provide evidence that intra-species recycling of mammalian material can give rise to and sustain TSE epidemics. Therefore, avoiding intra-species recycling of animal material via animal feed, whilst not preventing the emergence of new TSEs, should prevent the amplification of established and emerging TSE agents and avert further TSE epidemics arising in farmed animals. In this regard, any additional risks arising from modifying less critical controls are likely to remain low and further TSE epidemics should be prevented.