



## **MODELLING OF SPECIFIED RISK MATERIAL CONTROLS IN ABATTOIRS AND CUTTING PLANTS**

### **ISSUE**

1. The Food Standards Agency (FSA) is carrying out a policy review of the supervision of Specified Risk Material (SRM) controls in abattoirs and cutting plants. The review has been initiated as the current incidence of BSE is significantly lower than that observed in 1996 when levels of supervision were set. The level of supervision of abattoirs and cutting plants has remained unchanged despite this widely accepted reduced risk of BSE transmission to humans.
2. The FSA asked Det Norske Veritas Consulting (DNV) to assess the potential for exposure to TSE infectivity in light of the current SRM controls and enforcement regimes. SEAC is requested to review this model.

### **BACKGROUND**

3. A modelling study to review SRM controls in UK abattoirs was completed by DNV, on behalf of the FSA, in 2004. This model was developed to assess the implications of alternative SRM inspection strategies on the risk of exposure to BSE infectivity from cattle to the UK population, compared with exposure to BSE given the SRM controls in place at that time.
4. This research has now been extended as a result of the changes to the OTM rule, in November 2005, and changes to the SRM controls applied in the UK in May 2006. SEAC has not considered this work in the past. The results of this modelling will inform the evaluation of alternative options for the way SRM controls are enforced in abattoirs and cutting plants.
5. The revised model is incomplete at the time of writing, however the committee will be provided with a powerpoint overview of the model one week before SEAC 95 and will receive a presentation on the model at SEAC 95. A summary of the methodology used to construct and revise the model is provided below.

## SRM Controls Model

6. The SRM Controls Model investigates the impact of the changes to the OTM rule and SRM control enforcement strategies. It has been developed as a set of linked event trees using Precision Tree<sup>1</sup>. The model estimates the amount of BSE infective material, in terms of bovine oral ID<sub>50</sub> units, that could enter the food chain for a defined set of supervision conditions. The model takes into account that OTM animals may now be slaughtered for food, provided they were born after August 1996 and produce negative results in a BSE test. Lifting of the beef export ban and the resulting harmonisation of SRM controls are also considered. The effects of these measures are assessed separately so that the effect of each change can be determined. As harmonisation of the SRM controls now allows the consumption of UK head meat, an assessment on the extent to which head meat will be harvested in the UK will be performed. This assessment will determine whether harvesting of head meat is influenced by factors such as the age of cattle.
7. The model uses the probabilistic risk assessment tool @RISK<sup>1</sup> which runs the model many times and for many randomly selected combinations of varying parameters. These values are chosen from specific probability distributions defined for each parameter.
8. The model requires two separate sets of input data, the first set relating to the 'branch' probabilities that concern SRM removal and the enforcement of SRM controls. The second concerns BSE infectivity for the various SRM tissues. For this, the model builds on the data and assumptions used for the Over Thirty Month Review risk assessment (Comer and Huntly, 2004<sup>2</sup>) updated in subsequent studies including DNV (2005<sup>3</sup>) and EFSA (2005<sup>4</sup>).
9. So that all the activities affecting the possible risk of exposure to infectivity are covered, the slaughter process has been divided into stages. Each stage is modelled as an event tree with processes categorised as lairage, post mortem inspection, harvesting the

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<sup>1</sup> Precision Tree and @RISK are decision analysis and risk analysis tools. [www.palisade-europe.com](http://www.palisade-europe.com)

<sup>2</sup> Comer, P. J and Huntly, P.J. (2004). Exposure of the Human Population to BSE Infectivity Over the course of the BSE Epidemic in Great Britain and the Impact of Changes to the Over Thirty Month Rule. *Journal of Risk Research*, 7 (5), 523-543.

<sup>3</sup> DNV (2005) *Assessment of Risk from under thirty month beef-on-the-bone* for UK Food Standards Agency. Det Norske Veritas Report 22308490, Rev 1, 22<sup>nd</sup> April 2005.

<sup>4</sup> EFSA (2005), Quantitative assessment of the residual BSE risk in bovine derived products; EFSA QRA Report, 2004 - Working Document. *The EFSA Journal* (2005), 307, 1-135.

tongue, harvesting the head meat, spinal cord removal and final inspection.

10. The final stage of the model estimates the potential exposure to infectivity. This stage combines estimates of the likelihood that SRM tissues may get into the food chain with estimates of infectivity for each of the tissues.
11. Updated estimates of the prevalence of late stage BSE infection in cattle have been obtained from the VLA model (Arnold and Wilesmith, 2004<sup>5</sup>) for three groups of animals: 1) animals under 30 month old at the time of slaughter; 2) animals older than 30 months but born after 1<sup>st</sup> August 1996; and 3) animals born before 1<sup>st</sup> August 1996.
12. Comer and Huntly (2004<sup>2</sup>) showed that most exposure to infectivity if an animal, with late stage BSE infection, was slaughtered and entered the human food supply was due to the dorsal root ganglia (DRG). Other sources of infectivity could be possible contamination of tongue with CNS tissues during slaughter, brain emboli and carcass contamination. The possible infectivity from DRG has been included in the estimate of infectivity entering the food supply by combining the prevalence of BSE infection with the BSE infectivity of DRG.

### **ADVICE SOUGHT FROM THE COMMITTEE**

13. The committee is requested to assess the suitability of the model and model assumptions to determine the risk to the UK population from exposure to BSE for the given options.

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<sup>5</sup> Arnold ME, Wilesmith JW. Estimation of the age-dependent risk of infection to BSE of dairy cattle in Great Britain. *Prev Vet Med.* 2004 Dec 15;66(1-4):35-47



**Presentation of  
DNV Modelling of SRM Controls in Abattoirs and Cutting Plants.**

Copies of the presentation will be forwarded to members one week before SEAC 95.