

6. REFERENCES

Bruce, M.E., Will, R.G., Ironside, J.W., McConnell, I., Drummond, D., Suttie, A., McCardle, L., Chree, A., Hope, J., Birkett, C., Cousens, S., Fraser, H., & Bostock, C.J. (1997) *Transmissions to mice indicate that new variant CJD is caused by the BSE agent*. Nature **389** 498-501.

Collinge, J., Hill, A.F., Desbruslais, M., Joiner, S., Sidle, K.C.L. and Gowland, I. (1997) *The same prion strain causes vCJD and BSE*. Nature **389** 448-450.

Crystal Ball Version 4.0; Decisioneering Inc, Denver, Colorado (www.decisioneering.com).

Diringer, H., (1999) *Bovine spongiform Encephalopathy (BSE) and Public Health*. In Aggett, P.J., Kuiper, H.A., (Eds) 1999. Risk Assessment in the food chain of children. Nestlé Nutrition Workshop Series, **44**, 225-233. Nestlé Ltd., Vevey/Lippincott Williams & Wilkins Publishers, Philadelphia.

DNV (1997a): “*Assessment of risk from Possible BSE Infectivity in Dorsal Root Ganglia*”, Report to the Ministry of Agriculture Fisheries and Food and the Spongiform Encephalopathy Advisory Committee, Det Norske Veritas C7831, December 1997.

DNV (1997b): “*Overview of Risks from BSE via Environmental Pathways*”, Report to Environment Agency, Det Norske Veritas C7243, June 1997.

Scientific Steering Committee, EC (2000) *Opinion: Oral Exposure to Humans of the BSE Agent: Infective Dose and Species Barrier* Adopted by the SSC at its meeting on the 13th - 14th April 2000.

Wells, G.A.H. et al (1998): “*Preliminary Observations on the pathogenesis of experimental bovine spongiform encephalopathy (BSE): an update*”, The Veterinary Record **142**, 103-106.

APPENDIX I
MODEL INPUT DATA

RISKS FROM BSE INFECTIVITY IN DORSAL ROOT GANGLIA

a) Input Data for Probabilistic Variables

The variables shown below have been assigned distributions as input to the Monte Carlo simulation. All other variables have fixed values and are given in Section b) below.

Crystal Ball Report

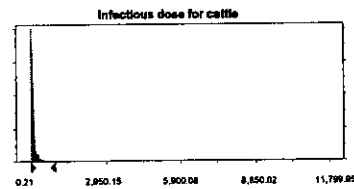
Simulation started on 01-7-31 at 17:36:08
 Simulation stopped on 01-7-31 at 17:36:27

Assumptions

Assumption: Infectious dose for cattle

Lognormal distribution with parameters:
 Geometric Mean 50.00
 95% - tile 1,000.00

Selected range is from 10.00 to 1,000.00
 Mean value in simulation was 147.06

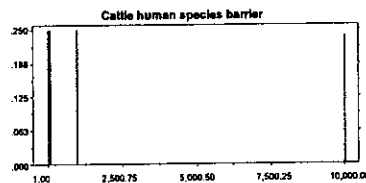


Assumption: Cattle human species barrier

Custom distribution with parameters:
 Single point 1.00
 Single point 10.00
 Single point 100.00
 Single point 1,000.00
 Single point 10,000.00

	<u>Relative Prob.</u>
Single point 1.00	0.010000
Single point 10.00	0.250000
Single point 100.00	0.250000
Single point 1,000.00	0.250000
Single point 10,000.00	0.240000
Total Relative Probability	1.000000

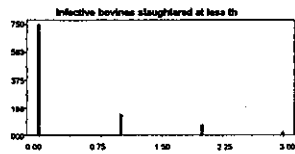
Mean value in simulation was 2,677.51



Assumption: Infective bovines slaughtered at less than 30 months

Custom distribution with parameters:		<u>Relative Prob.</u>
Single point	0.00	0.750000
Single point	1.00	0.150000
Single point	2.00	0.075000
Single point	3.00	0.025000
Total Relative Probability		1.000000

Mean value in simulation was 0.38



Assumption: Infective bovines slaughtered 30 to 36 months

Custom distribution with parameters:		<u>Relative Prob.</u>
Single point	0.00	0.750000
Single point	1.00	0.150000
Single point	2.00	0.075000
Single point	3.00	0.025000
Total Relative Probability		1.000000

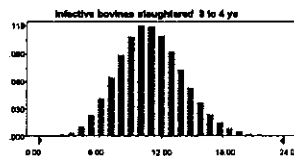
Mean value in simulation was 0.38



Assumption: Infective bovines slaughtered 3 to 4 yeears

Poisson distribution with parameters:
 Rate 11.00

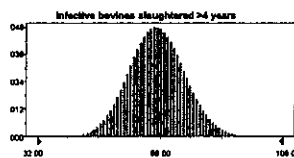
Selected range is from 0.00 to +Infinity
 Mean value in simulation was 11.00



Assumption: Infective bovines slaughtered >4 years

Poisson distribution with parameters:
 Rate 68.00

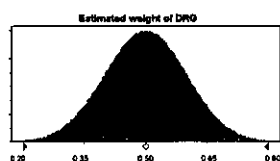
Selected range is from 0.00 to +Infinity
 Mean value in simulation was 68.00



Assumption: Estimated weight of DRG

Normal distribution with parameters:
 Mean 0.50
 Standard Dev. 0.10

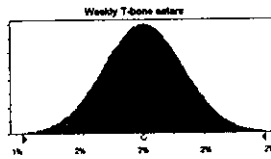
Selected range is from 0.00 to +Infinity
 Mean value in simulation was 0.50



Assumption: Weekly T-bone eaters

Normal distribution with parameters:
 Mean 2%
 Standard Dev. 0%

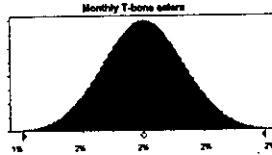
Selected range is from 0% to +Infinity
 Mean value in simulation was 2%



Assumption: Monthly T-bone eaters

Normal distribution with parameters:
 Mean 2%
 Standard Dev. 0%

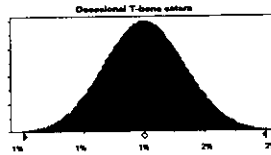
Selected range is from 0% to +Infinity
 Mean value in simulation was 2%



Assumption: Occasional T-bone eaters

Normal distribution with parameters:
 Mean 1%
 Standard Dev. 0%

Selected range is from -Infinity to +Infinity
 Mean value in simulation was 1%



Assumption: Weekly beef eaters

Normal distribution with parameters:
 Mean 67%
 Standard Dev. 7%

Selected range is from 0% to 100%
 Mean value in simulation was 67%



Assumption: Daily beef eaters

Normal distribution with parameters:
 Mean 2%
 Standard Dev. 0%

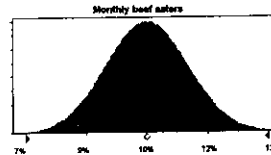
Selected range is from -Infinity to +Infinity
 Mean value in simulation was 2%



Assumption: Monthly beef eaters

Normal distribution with parameters:
 Mean 10%
 Standard Dev. 1%

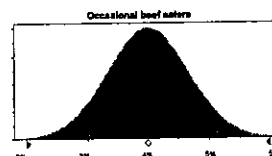
Selected range is from -Infinity to +Infinity
 Mean value in simulation was 10%



Assumption: Occasional beef eaters

Normal distribution with parameters:
 Mean 4%
 Standard Dev. 0%

Selected range is from -Infinity to +Infinity
 Mean value in simulation was 4%

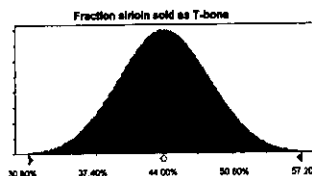


Assumption: Fraction sirloin sold as T-bone

Normal distribution with parameters:

Mean 44.00%
Standard Dev. 4.40%

Selected range is from -Infinity to +Infinity
Mean value in simulation was 44.00%

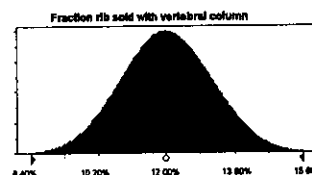


Assumption: Fraction rib sold with vertebral column

Normal distribution with parameters:

Mean 12.00%
Standard Dev. 1.20%

Selected range is from -Infinity to +Infinity
Mean value in simulation was 12.00%

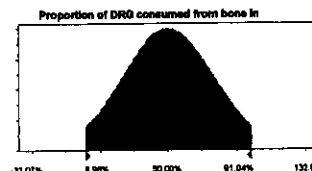


Assumption: Proportion of DRG consumed from bone in

Normal distribution with parameters:

5% - tile 5.00%
95% - tile 95.00%

Selected range is from 0.00% to 100.00%
Mean value in simulation was 50.00%



End of Assumptions

b) Input Data for Fixed Variables

Age Profile of Cattle Slaughtered in 2000 (as Table 2.1)

Proportion of domestic consumption from export plant: 33.3%

Age range	Domestic consumption		Export approved meat plants		Total
	Quantity	Percentage	Quantity	Percentage	
1. Less than 30 months	177,330	86.2%	791,431	45.4%	909,651
2. 30 to 36 months	18,070	8.8%	395,063	22.7%	407,110
3. 3 years to 4 years	7,535	3.7%	230,309	13.2%	235,332
4. Greater than 4 years	2,769	1.3%	326,409	18.7%	328,255
	205,704		1,743,212		1,880,348

DRG in Carcase

Number of DRG in split carcase	31	
DRG in Sirloin section	9	29.0%
DRG in forerib section	4	12.9%
Remaining DRG	18	58.1%

Exposure to DRG

	Case 1	Case 2
Proportion of DRG removed with bone	99.0%	99.9%

Irish Population in 2000: 3,626,087 (1996 census)