4. The ruminant feed ban

Introduction

4.1 In this chapter we describe the introduction of the ruminant feed ban. We consider the merits of the decision to grant a period of grace before the ban came into force. We look ahead at evidence which demonstrated that the ban had not been fully implemented, and consider how this came about.

4.2 Had it been possible for the ruminant feed ban to remove at a stroke all ruminant protein from the diet of cattle, later chapters of the BSE story would have made much happier reading. The incidence of BSE would have been confined to cattle born before the ban, save insofar as infection was directly transmitted between animals. The important question of whether such transmission could occur would have been more readily answered. Cattle born after the ban (BABs) would have been limited to comparatively few, if any, cases of maternal transmission (see vol. 2: Science). Culling of the offspring of known victims of BSE cows would have hastened the elimination of the disease. The human health risk would have been reduced and the easing of export restrictions would have been likely.

4.3 In the event, a growing number of BABs brought first concern and then consternation as realisation dawned that there had been initial widespread disregard of the ruminant feed ban and, much later, that cross-contamination at renderers and in feedmills and on farms had been permitting the infection of cattle as a consequence of small quantities of ruminant protein, some of it consisting of Specified Bovine Offal (SBO), being mixed into cattle feed. On our analysis the primary causes of this sorry story were not so much shortcomings in monitoring the Regulations, but a lack of foresight when the Regulations were introduced, coupled with false assumptions as to the size of a fatal dose. We shall first set out the relevant facts in relation to the ruminant feed ban before turning to analyse what went wrong.

Mr MacGregor’s decision

4.4 Mr Rees’s submission to Mr John MacGregor on 6 May 1988 (see paragraph 3.62) coupled a recommendation on ruminant feed with a recommendation of a slaughter policy (see Chapter 5). The latter we deal with elsewhere. So far as the former is concerned, Mr Rees’s objective was:

To eliminate the continuing source of infection by a temporary withdrawal of meat and bonemeal from ruminant feedingstuffs until effective processing systems are operating. ³⁷³

4.5 The submission recommended that the withdrawal be sought on a voluntary basis but that if the feed industry did not cooperate, a mandatory ban could be introduced by subordinate legislation under the Animal Health Act 1981. ³⁷⁴

³⁷³ YB88/5/6/6.7
³⁷⁴ YB88/5/6/6.5
4.6 The submission explained that investigations were in train, which might take some months to complete, to see whether it was possible to differentiate between ‘safe’ plants and processes and those which were not safe. The proposed withdrawal would not apply to pig and poultry feed, principally because there was no evidence that these species were susceptible to the disease. Even if they were, clinical symptoms were unlikely to develop within their life cycle. As most MBM was used for pig and poultry feed, the ruminant feed ban was unlikely to have significant economic consequences.375

4.7 When Mr Rees gave oral evidence, he explained to us that he had advocated a voluntary ban as he considered that this would be the most speedy way of introducing the ban, provided that the industry cooperated. He had no reason to believe at this stage that they would not.376

4.8 Mr Cruickshank gave us a rather different explanation of the recommendation of a voluntary ban. He said it was a consequence of officials’ disappointment at what they saw as Mr MacGregor’s peremptory rejection of their slaughter and compensation recommendation. This led them to shade their advice in relation to a ruminant feed ban in such a way as to maximise its chance of success. They would all have preferred a compulsory ban but feared that it would be difficult to get Ministers to agree on even voluntary action. In the event the Minister’s perception had changed. Had this been appreciated, the submission would have proposed a compulsory ban.377

4.9 On 18 May 1988, during Mr Rees’s absence abroad, Mr Meldrum (who was to succeed him as CVO at the end of the month) met with Mr John MacGregor, Mr Donald Thompson and MAFF officials, including Mr Andrews and Mr Cruickshank, to discuss Mr Rees’s submission. It was reiterated that all the evidence pointed to the cause of BSE being MBM derived from sheep material. Any scrapie agent in that material could only be inactivated at a high temperature. Given that there were so many uncertainties, a complete withdrawal of the MBM material from feed for ruminants was considered to be the only safe solution. After prolonged discussions of the relative merits of a voluntary and a compulsory ban the Minister took the view that:

All the evidence pointed to a speedy and compulsory ban of sheepmeat material in feed for ruminants until effective processing systems were operating. A negative resolution SI [Statutory Instrument] would be needed. It was important to act quickly and to be seen to be taking adequate measures.378

4.10 Mr MacGregor was wise to opt for a compulsory ban. At their meeting on 11 May the feed executive committee of UKASTA had concluded that:

Since there was no firm evidence confirming that the disease was spread through the feed route . . . a voluntary ban was not the way to solve the problem.379

375 YB88/5.6/6.4–6.5
376 T54 p. 135
377 S75B Cruickshank para. 27
378 YB88/5.19/5.1; S184 Meldrum para. 63
379 YB88/5.11/1.1
4.11 Sir Richard Southwood was told of the proposed ban by Mr Andrews on 19 May and commented that this was an excellent first step and one that he had intended to advise.380

4.12 On 24 May 1988 Mr Lawrence minuted MAFF’s legal division asking them to prepare urgently a draft Order to introduce the feed ban. He said that he and various colleagues whom he had consulted believed that something on the following lines might suffice:

The use of any animal derived protein for incorporation into rations for feeding to ruminants is prohibited.381

4.13 Mr Lawrence suggested that animal-derived protein might be defined as ‘any protein material which derives from the carcass of any bovine, ovine or caprine species’. This definition would have the benefit of excluding tallow produced from the fat element of the rendering process. He added:

We would also like to supplement this provision with another which would place a responsibility on farmers (owners) not to use rations for ruminants which contain any animal derived protein. The idea is that this would provide a long-stop and would cover the initial period when prohibited feed material was still in the pipeline.382

4.14 Mr Lawrence told us that he could not now remember the origin of this proposal. He believed he must have discussed it with others at Tolworth such as Mr Suich, Mr Taylor, or the CVO.383

The meeting with the industry

4.15 Mr Meldrum’s first act on taking office as CVO was to chair a meeting on 1 June with representatives from UKRA, UKASTA, GAFTA, FAC, the NFU, and other representative bodies and MAFF officials. He explained that 515 cases of BSE had now been confirmed on 423 farms and that this probably understated the true position. There was strong circumstantial evidence to link BSE with the use of animal feed. Visits to 11 rendering plants had indicated that their processes would not involve sufficient heat to destroy the scrapie agent.

4.16 At the meeting Mr Cruickshank explained that an Order would be made covering Great Britain which would suspend the use in ruminant feeds of animal protein containing material from ruminants, and the sale of such protein for this purpose, until the end of the year. This would also apply to imports. During this period all renderers would be checked to see if any of them produced material which was ‘safe’. Mr Meldrum added that it would still be lawful to feed all animal proteins to pigs, poultry and horses, and to maintain exports. UKRA indicated that there was a danger that the industry would not use animal protein in any feeds once it was prohibited in ruminant feed and that the pet food industry would stop using animal protein. Mr Meldrum said that MAFF would seek to persuade those

380 T3 p. 82; YB88/5.19/4.1. See vol. 4: The Southwood Working Party, 1988–89
381 YB88/5.24/1.1
382 YB88/5.24/1.1
383 T97 p. 47
concerned that the ban need have no consequences for pig, poultry and pet food. UKASTA raised the question of stocks of the prohibited feedstuffs held by its members, to which Mr Meldrum replied that there would be a 21-day lead-in period after the Order was made during which these could be used.384

4.17 On the same day Mr Meldrum chaired a meeting with representatives of the cattle and dairy industries to inform them of the proposed ban. At both meetings there was also discussion of the introduction of a requirement of notification of BSE cases and of the possibility of compulsory slaughter of these, matters which we deal with in Chapter 5.385

4.18 In a news release of 1 June MAFF, together with the Scottish and Welsh Agricultural Departments, announced that the feeding to ruminants of rations containing animal protein would be suspended until 31 December 1988.386

4.19 On 3 June UKASTA sent its members ‘Feed Circular 412’, which informed them of the ban and stated that:

   Animal protein is defined as any protein material which is derived from the carcass of a mammal (both ruminant and pigs).387

4.20 The circular said that enforcement would be undertaken by local authorities and added:

   On the use of existing stocks, MAFF hoped that the 21-day period during which the legislation is before Parliament will provide the feed industry with sufficient time to clear stocks (if this is not likely to be the case, could you please let us know as soon as possible with the reasons why).388

4.21 This was followed on the same day by ‘Feed Circular 413’ which stated that, after representations from the industry, the definition of animal protein had been revised to mean ‘any protein which is derived from the carcass of a ruminating animal’.389

4.22 This sequence of events is something of a mystery, which witnesses from UKASTA were unable to resolve. We are satisfied that it had, from at least 24 May, been the intention of all at MAFF involved in formulating the feed ban that it should be restricted to a ban on ruminant protein.

4.23 On 7 June Mr Andrews received a letter from BOCM Silcock, a major animal feed manufacturer, expressing support for the ruminant feed ban and stating that they had already reformulated their ruminant diets.390 They had, however, 5,000 tons of finished product in stock, of which 2,000 tons would remain by the end of June. In these circumstances they asked for the regulations to permit finished stocks to be consumed until the end of July. On receipt this letter was circulated within the Animal Health Division at MAFF. At the same time this company wrote to all feed

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384 YB88/6.1/4.1
385 YB88/6.1/4.1
386 YB88/6.1/5.1
387 YB88/6.3/3.1
388 YB88/6.3/3.1–3.2
389 YB88/6.3/4.1
390 YB88/6.6/10.1
merchants drawing attention to the obligation to ensure that finished products in store were sold and used on farm by the time the ban came into operation.391

The decision to grant a period of grace

4.24 On 7 June 1988 UKASTA wrote to Mr MacGregor to make the following plea:

We would urge you most strongly to allow feed compounders time to clear stocks of ruminant feeds containing the proscribed animal protein. These feeds have been manufactured before members heard of the Ministry’s announcement last week and thus will already be in the system, either on-farm or in the various distribution channels used by individual feed compounders. Unless the industry has the opportunity to clear stocks, individual members could be faced with considerable claims from farmers, either for compensation or for the feed to be removed from farm. We would thus be grateful if you could defer the enforcement of that section of the new Order suspending the use of animal proteins in ruminant rations for as long as possible. Failure to do this could, in turn, result in our having to press for compensation from the Government.392

4.25 On the following day Mr Lawrence sought Ministers’ agreement and signature to the Bovine Spongiform Encephalopathy Order 1988. This was simultaneously presented to MAFF, Scottish and Welsh Ministers for approval. In his minute he explained why it was that the Order was allowing a two-month period of grace:

A particular concern of the feed industry (which was not registered at the meeting but has come to light since) is pipeline stocks. UKASTA, GAFTA, the UK Renderers and a number of individual companies have stressed the difficulties which will arise if stocks in the pipeline cannot be used up prior to the prohibition. We believe this to be a genuine problem, which will not be resolved through the 21 days which elapse between the making of the Order and its coming into force. UKASTA has suggested that three months should be allowed to elapse before the prohibition bites. We consider that this is too long a period but that there are no overriding veterinary reasons why we should not permit them a two month period of grace from the date of making before this particular part of the legislation comes into force.393

4.26 This led Mr J Coe of MAFF’s Information Division to warn the Minister that if a two-month period of grace were given to the industry:

. . . it is likely to ruin the generally good press reception that our original announcement received. We will be accused of risking the further spread of the disease simply to make life easy for the industry. Our position would be very difficult to defend.394

4.27 After discussion with Mr Thompson, Mr MacGregor’s response was, by way of compromise, to defer the date upon which the feed ban would come into force to
18 July. He suggested, however, that there was no justification for granting this period of grace to renderers, by which he intended to mean the producers of animal feed.\textsuperscript{395} To this suggestion, Mr Cruickshank responded:

The position of the renderers is that they produce protein products for incorporation in animal feeds. We are not proposing to ban the production of these products – just their incorporation in ruminant feeds. Use in pig and poultry rations will continue to be permitted. I understand the Minister’s concern is that the prohibition on incorporation in ruminant feeds should be imposed as quickly as possible. The effect of this would be felt primarily not by the renderers but by those who prepare the final feeds for cattle. This includes a wide range of businesses ranging from the large compounders through small local feed mixers to the farmers who mix their own feed.

Although as I said in my minute of 9 June\textsuperscript{396} we believe most compounders have already stopped incorporating animal protein, there are certainly many farmers who have drums of protein supplements on their farms. As I have indicated, it will be impossible in practice to prevent farmers from using the material in the next few weeks. I think it would be very difficult also to try to distinguish between farmers who mix their own feed and small local feed mixers – not least because farm mixers may supply feed to neighbouring farmers as well as using it themselves. It would be equally difficult to distinguish between small local mixers and large compounders. What we are dealing with is a long graduation with no clear break-point.

I would therefore suggest that we apply the 18 July cut-off to all incorporation of the material in question, whoever carries out the incorporation.\textsuperscript{397}

\textbf{4.28} Mr MacGregor accepted this advice. The Bovine Spongiform Encephalopathy Order 1988, which he signed on 14 June, included the following provision which came into effect on 18 July 1988:

Prohibition of sale, supply and use of certain feedingstuff for feeding to ruminating animals

7. (1) No person shall knowingly sell or supply for feeding to animals any feedingstuff in which he knows or has reason to suspect any animal protein has been incorporated.

(2) No person shall feed to an animal any feedingstuff in which he knows or has reason to suspect that any animal protein has been incorporated.

(3) This article shall cease to have effect on 1 January 1989.\textsuperscript{398}
4.29 ‘Animals’ were defined to mean ruminant animals and ‘animal protein’ was, by a rather complex chain of definitions, restricted to protein derived from the carcass of a ruminant animal. 399

4.30 This Order [the ruminant feed ban] only applied within Great Britain. The history of the decision to delay parallel provisions in Northern Ireland is set out in vol. 9: Wales, Scotland and Northern Ireland.

4.31 On 25 July the European Commission was officially informed of the ruminant feed ban, and the following day BSE was first discussed by the Standing Veterinary Committee in Brussels. 400

The extension of the ban

4.32 The ban had been imposed for a period ending on 31 December 1988 in the hope that, by that date, the survey of rendering plants would have disclosed some whose processes could be relied upon to inactivate the BSE agent. These could then be licensed to supply ruminant-derived animal protein for incorporation in ruminant feed. To some people, including the Southwood Working Party, this had always seemed optimistic. 401 At their meeting on 10 November 1988, the Working Party considered a paper provided by Mr Meldrum which gave details of the result of the rendering survey. 402 They concluded that it seemed unlikely that the existing rendering plants could ever be relied upon to produce protein that was safe. On 14 November Sir Richard Southwood wrote to Mr Andrews informing him of this conclusion and making a strong recommendation that the ban should be extended indefinitely. 403 In briefing Mr MacGregor for a meeting with Sir Richard, Mr Cruickshank recommended that the ban should be extended for a further year rather than indefinitely. This would enable discussions to take place with the NPU on the relationship between rendering systems and the thermal sensitivity of the scrapie agent, in the light of which it might prove possible to devise conditions under which ruminant protein could be heat-treated prior to inclusion in ruminant rations. 404

4.33 When the Minister met Sir Richard on 24 November and suggested an extension of a further year, Sir Richard was only prepared to accede to this if it was made absolutely clear that the removal of the ban was dependent on the demonstration of a method that was completely safe and would destroy the agent. 405 Despite expressions of dismay by UKRA, Mr MacGregor, on 30 November 1988, issued a news release in which he announced the extension of the ruminant feed ban for a further year and made it clear that the prohibition would have to continue thereafter unless processing methods which were sufficient to destroy the causal agent had been identified and were widely available. 406 The year’s extension to the ban was made on 27 December by the Bovine Spongiform Encephalopathy (No. 2) Order 1988, and came into force on 30 December 1988. 407 The pre-condition to lifting the ban was never satisfied and it was extended indefinitely.

399 L2 tab 1 article 3
400 YB88/7.25/3.1–3.3; YB88/7.27/3.1
401 See vol. 4: The Southwood Working Party, 1988–89
402 YB88/11.10/2.4–2.5
403 YB88/11.14/1.1
404 YB88/11.22/1.1–1.6
405 YB88/11.25/1.1
406 YB88/11.28/2.1; YB88/11.30/1.1
407 L2 tab 3
Discussion

Was there undue delay in recommending a ruminant feed ban?

4.34 By the end of December 1987 Mr Wilesmith, by a process of elimination, had identified feed as the probable source of BSE infection. Mr Rees told us that by this time they were fairly sure that MBM containing material from sheep was the cause of the disease. Yet Mr Wilesmith did not recommend a ban on including MBM in ruminant feed until 3 May and Mr Rees, in his turn, did not submit a similar recommendation to the Minister until 6 May. We have considered whether there was culpable delay in recommending this measure. We have concluded that there was not. The process of elimination had identified feed as the prime suspect, but Mr Wilesmith had not made, as at December 1987, any positive identification of any novel factor that explained why BSE had emerged where and when it did. MBM had been included in cattle feed for decades, not merely in this country, but abroad. Logic suggested that a peculiar factor must have intervened in the production of cattle feed in England to explain the outbreak of the disease. In the absence of any such factor the identification of feed as the vector of infection was necessarily speculative and tentative.

4.35 As at 11 December 1987, out of a total of 315 suspected cows, 95 cases had been confirmed on 80 farms (see the table following paragraph 2.130). The situation was not so desperate as to call for the imposition of a feed ban on a holding basis. The decision to pursue urgent investigations in an attempt to discover an explanation for the suspected contamination of the feed was a reasonable one. Over the next four months the investigations undertaken by Mr Peter Smith identified a number of changes both in rendering methods and in the content of MBM since 1980. Although there was no certainty that these were associated with the outbreak of BSE, they at least provided the possibility of an explanation for it. Mr Meldrum described his reaction to the situation as follows:

> Although investigations into all rendering plants were not at that stage complete, there was sufficient evidence to justify approaching the industry with a view to withdrawing meat and bone meal. Investigations had clearly shown that the time and temperatures of processing systems in use at many of the plants visited would not inactivate the transmissible agent if it was present in material being rendered to produce meat and bone meal animal feed and if the agent behaved in a similar manner to the other TSE agents in its resistance to heat.409

4.36 We consider that Mr Rees acted boldly in reporting to the Minister that he was ‘satisfied’ that MBM derived from sheep material was the source of the transmissible agent which had caused BSE. By 6 May confirmed cases of BSE had

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408 L2 tab 4
409 S184 Meldrum para. 61
increased to 458. We can understand why he felt that it was time to ‘bite the bullet’ and make a positive statement to the Minister. We commend his action in doing so, as we do Mr Wilesmith’s advice that he should take this course.

The scope of the ban

4.37 Mr MacGregor had concluded that the evidence pointed to a ban sheep meat material in feed for ruminants, given that scrapie had been identified as the likely source of BSE. The ban imposed extended to all ruminant protein and protected all ruminants. Mr Taylor told us that he was quite clear that the ban was intended to cover sheep to cattle, cattle to cattle, cattle to sheep and sheep to sheep. Although scrapie was believed to be the original source of infection, the danger of recycling was appreciated and addressed.

4.38 While the wisdom of the width of these precautions seems obvious with hindsight, no restriction had hitherto been placed on feeding sheep offal to sheep, and the veterinarians at MAFF deserve credit for ensuring that the ruminant feed ban had the scope that it did.

4.39 We have considered whether MAFF should have gone further and imposed a ban on feeding all animal protein to all animals. The reasons why this was not recommended were explained in Mr Rees’s submission of 6 May (see paragraphs 4.4–4.6). We are in no doubt that, having regard to what was known at the time, such a ban would have appeared disproportionate and been open to attack in the Courts. Pigs and poultry had not been seen to be susceptible to spongiform encephalopathies and had survived a diet that included ruminant protein with apparent impunity. If MBM was infecting cattle, it was not having the same effect on pigs. The emergence of BSE in cattle did not, on the scanty knowledge available at the time, justify a wider ban than that which was imposed.

Should UKASTA have sought a period of grace?

4.40 As a private trade association of suppliers of animal feed, UKASTA’s primary duty was to its members. UKASTA was informed by MAFF that it was probable that some, at least, of the MBM that was being incorporated into cattle feed was infecting the cattle that consumed it. In such circumstances it might be thought that suppliers would be anxious to cease supplying MBM without delay and that UKASTA would urge them to adopt this course. In the event, when members were informed by UKASTA of the proposal to introduce a ban with a lead time of only 21 days, the reaction of many was to seek a longer period of grace. This led UKASTA to request a delay of three months before the ban came into force. We asked UKASTA to explain how they came to take this course. They replied that they took account of all the information that they had received from officials relating to the disease, including the theories as to its origin and how animals became infected. This led them to accept without argument that a temporary ban should be introduced, but did not suggest that Ministers or officials saw a need for extreme urgency in its implementation.
UKASTA drew our attention to evidence given by MAFF officials, which we shall consider in detail in due course, that there was a lot of scepticism around as to the validity of the MBM hypothesis, and a belief that after six years a further month was not really going to make that much difference. UKASTA held similar views. They understood that the principal reason why officials had a relaxed attitude to timing was that animals had to ingest a massive dose of the infected material before they would succumb to the disease. It followed that even several weeks of further consumption would be unlikely to make the difference between animals succumbing or not in more than a tiny handful of cases. They added:

We were further encouraged in these views by the decisions of government that the ban initially was to be for a limited period, that neither the import nor export of MBM was to be restricted, and that its usage in feed for other farm livestock, for non-ruminating game and zoo animals, and for pets, should continue. Above all, the absence of any request or even suggestion that feed containing MBM should be recalled from merchants and farm premises and an obvious willingness to allow the inevitable consequence (that the feed would be used) led us to assume there was no reason to adopt anything but a practical and pragmatic attitude to the forthcoming ban. At the time of the ruminant feed ban, there was no certainty that MBM was the vector (no one ever suggested that MBM was the cause) of the disease. It was also very much less certain that BSE had its origin in scrapie infected sheep. Even in the days immediately preceding the making of the Order introducing the temporary ruminant feed ban, it was far from clear to UKASTA to what the ban would eventually be applied. Would it apply to all rendered products, all mammalian protein, MBM and tallow, or what else? Given that uncertainty, we would not have known what to advise our members immediately and voluntarily to exclude from their ruminant feeding stuffs.

To minimise the potential costs to our members of implementing the Order, the clearance of existing stocks . . . was clearly desirable. It may have been assumed that this was the sole reason we sought a delay in implementation to enable feed compounders to clear their existing stocks. However, as stated above mills do not normally hold large stocks of finished cattle feedingstuffs, and certainly not in high summer when demand and production are low; thus, unless there had been an immediate ban, most of these would have been delivered to meet existing orders in the normal way. Farmers tend to order a short time ahead of requirement but then demand rapid delivery as their animals have to be fed. We were not unduly concerned about members using up stocks of MBM as the government clearly wished its use in pig and poultry rations to continue. What was of greater concern, as borne out in the evidence already given to the Inquiry by several MAFF officials, was the practicality of all those in the feed supply chain, including merchants, on-farm mixers and farmers purchasing compound feedingstuffs, complying so quickly with the temporary ban.

UKASTA went on to consider the extent to which it would have been practical for the association and its members to bring a speedy end to the practice of feeding to cattle feed that incorporated MBM:
In June 1988, the known danger to cattle was small. Without the knowledge of what the ensuing years would bring, advice to members in 1988 to take steps immediately to terminate consumption of MBM by cattle would have been regarded not only as impracticable but also as a dangerous over-reaction likely to cause unnecessary commercial disruption in the feed and farming industries. There is no doubt compounders within UKASTA could have managed to implement a voluntary recall scheme. In the absence of a government Order to that effect, however, they might well have faced compensation claims for breaking contracts and considerable costs through having simultaneously to replace all the feed recovered, since the cows had to be fed. Any feed so recalled, unless it could have been reworked into rations for non-ruminant species, would have had to be destroyed. No facilities were available to our members for such destruction, and government assistance would have been essential. It is far from certain that all farmers would have cooperated in a full and effective recall in the absence of government calling for one. It is probable that ministers and officials would have furiously opposed such extreme voluntary action (witness their reaction in 1989 when UKASTA exceeded government advice and introduced a voluntary ban on SBOs in feed). It follows that non-member compounders and non-member traders in MBM and other feed materials would have seen little reason to join in, so that a significant part of the market would have had no action taken towards the recovery of suspect materials.414

4.43 We question whether the members of UKASTA responsible for policy were swayed by all the considerations enumerated in their evidence when seeking a lengthy period of grace before the implementation of the ban. We think it more likely that they were simply responding to requests from their members for more time.

4.44 We have concluded, however, that there is force in the points made by UKASTA about the lead given by MAFF and the practical difficulties that would have arisen had they sought to persuade members to cease supplying cattle feed containing MBM with immediate effect. We do not consider that UKASTA should be criticised for seeking to persuade MAFF to grant a period of grace before bringing the ban into effect. We now turn to consider whether MAFF should have acceded to that request.

Should MAFF have granted a period of grace?

4.45 Mr Lawrence’s original instructions to MAFF’s legal division requested a provision in the Order forbidding farmers from making use of pipeline stocks.415 Yet after UKASTA had sought a three-month period of grace to clear pipeline stocks, Mr Lawrence advised the Minister that, while three months was considered too long, there were no overriding veterinary reasons why there should not be a ‘breathing space’ of two months from the date of making the Order before the ban came into effect.416 When Mr Lawrence gave evidence, we asked him to explain the thinking behind this recommendation. He replied that he found it very difficult to explain. It was a conclusion he would have reached after discussion with colleagues.
at Tolworth, but it was difficult to argue for it in veterinary terms.417 Mr Lawrence had no specific recollection of discussing this matter with his colleagues at Tolworth,418 but he thought he would have discussed it with his Head of Division and the senior vets at Tolworth. Two months was probably considered to be a reasonable balance. In a subsequent statement Mr Lawrence explained that his reference to ‘no overriding veterinary reasons’ may simply have been a reflection of the fact that he had consulted his veterinary and administrative colleagues at Tolworth and they agreed that a period of grace was acceptable.419 Mr Lawrence said that it was his responsibility, not that of the scientists and veterinarians, to make an assessment of the practical difficulties and decide what was an acceptable balance.420 It was put to him that a two-month period of grace was not consistent with the idea of taking urgent action, to which he responded:

Well, so far as I was concerned, the urgent action was to agree with lawyers and to get the legislation in place and implemented; and that is, I think, what I did. You know, the period of grace was a separate issue which reflected the serious concerns that the feed industry had about actually implementing it in a very short space of time.421

He added:

I think one of the factors in certainly some people’s mind, whether it was in my mind or not, you know, most of these animals had been fed this stuff for quite a long time and so to that extent a few weeks may not have made any difference. That does not answer the question for young animals coming on to it for the first time who, you know, are then exposed for the first time.422

4.46 Mr Kevin Taylor told us that he may well have been the source of the advice given to Mr Lawrence. His approach to the details of the ban was pragmatic, reflecting his ‘tremendous field experience’. He described his reaction to the period of grace:

. . . the period of grace, the delay, to me was entirely reasonable because, if there had not been a period of grace, in other words a delay before the feed ban came in, it would have been impossible. Nobody would have kept to it.

There was a discussion, clearly, about how long that period of grace should be and my view was that that was not really a particularly important veterinary question. Clearly, the effect of having a delay in introducing a feed ban would be that some animals which were not already infected would become infected. However, as I have said in the last statement, the cattle industry as a whole had already been exposed to infected feed for about 380 weeks. Three weeks more in the context of that is not really going to make a great deal of difference. In fact, three weeks was not a particular period which bothered me. If somebody had said it has to be two months because that would allow more of the material to drain out of the system, from a veterinary point of view that would have been perfectly acceptable.423
From a veterinary point of view I had no problem with three weeks, but I would have had no problem with four weeks, five weeks or six weeks because I thought, in the context of the epidemic, on the basis of the information that we had available, then it really was not going to make very much difference. 424

4.47 Mr John MacGregor’s initial reaction was to place an immediate ban on the producers of feed, but to give the farmers a period of grace until 18 July to use up their stocks. He had been informed by Mr Cruickshank that most feedmills had stopped using MBM as soon as the ban was announced. When Mr Cruickshank advised that it would not be practical to distinguish between farmers and producers, Mr MacGregor agreed to grant a period of grace to all up to 18 July. As he put it in evidence:

What all the discussion centred on was what we could do actually with existing stocks already on the farm before the ban was announced. As a practical measure it seemed to me that in order to show ourselves being not wholly unreasonable, we should allow a very short period to allow those to be used up. 425

4.48 We can see no ground for criticising Mr MacGregor for granting a short period of grace up to 18 July, when it had been reported to him that there was no overriding veterinary reason why a period of two months should not be granted. The more pertinent question is whether that veterinary advice, which probably emanated from Mr Kevin Taylor, was sound, having regard to the state of knowledge at the time. What was that state of knowledge?

4.49 Cases were being confirmed at a rate of about 60 a month. 426 These were believed by Mr Wilesmith – the source of the epidemiological advice on which the ruminant feed ban was based – to be index cases, probably infected from scrapie as much as five years previously. It was considered that this source of infection would have been continuing to infect cattle over the intervening period. While the possibility that a degree of recycling was taking place was foreseeable, and indeed foreseen, the extent of it was not.

4.50 The position, as it was generally appreciated by MAFF officials at the time, is well illustrated by an answer provided by the CVL to one of 20 ‘leading questions’ put by Farmers Weekly to the CVL and reprinted in its edition of 15 July:

Q. If disease spread is not the cause why is there an increasing number of reports?

A. The epidemiological study reveals the present situation can be explained as ‘an extended common source epidemic’. This means that, so far, each confirmed case is a primary case and may be treated as having been exposed to a single common source rather than contracting the disease indirectly from another infected or affected animal.

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424 T122 p. 28
425 T90 p. 57
426 Veterinary Record, vol. 123, 17 December 1988, p. 640
This type of epidemic results in a constant number of new cases as we are seeing at present.\textsuperscript{427}

4.51 In these circumstances we can understand Mr Taylor’s conclusion that, if an orderly imposition of the ban required pipeline stocks to be consumed over a period of as much as two months, this could be accepted. As to this, there were strong practical considerations in favour of a period of grace. Had the matter been explored in greater detail at the time in the light of what was then known, these considerations would still in our view have supported the reasoning underlying Mr MacGregor’s decision to grant a period of grace.

4.52 The decision to grant such a period was taken in a robust manner without the detailed consideration and discussion that might have taken place had time allowed. Witnesses who have considered the matter with hindsight have drawn our attention to the following considerations which supported the decision.

4.53 Sir Derek Andrews, former MAFF Permanent Secretary, commented:

If we had sought to impose an immediate cut-off date there would have been serious problems with the pre-bagged stocks and supplies in various distribution channels. Since reformulation would have taken time, the disruption in the supply chain could have left some farmers without necessary feed for their animals. This could have resulted in a widespread disregard of what would have been presented as unreasonable legislation.\textsuperscript{428}

4.54 Mr Meldrum elaborated on this theme:

If the ruminant feed ban had come into force overnight there would have been no period within which (a) feed mills could be emptied of meat and bone meal to be restocked with suitable replacement feed ingredients (such as soya), (b) ruminant feed recipes could be reformulated, (c) new feed could be prepared to the new recipes and (d) new feed could be distributed to suppliers and get to farmers. In the meantime, compounders would have no feed which they could legally supply to dairy farmers and farmers would have no feed that they could legally feed to their cattle – and this particularly applies to dairy cows which are fed compound rations throughout their lactation. In addition, compounders and distribution premises would have no facilities for storage of both new compound feed containing no meat and bone meal and old compound rations formulated for use for ruminants for which there would be no end use. In a sentence, an overnight ban would have caused chaos and, apart from the problems that would arise for the bulk storage of two different rations on farm, would have resulted in a welfare problem on farms with cattle suffering metabolic problems through the sudden withdrawal of compound rations and equally rapid re-introduction of new rations.\textsuperscript{429}

4.55 Mr Cruickshank added this consideration:

If compounders had been required to cease supply at once they would have had to destroy or reformulate the compound feeds which they had in stock.
This would clearly have involved substantial costs. It is very easy with the benefit of hindsight to say these costs should have been accepted, but at the time our knowledge of the disease and our assessment of the risks did not justify imposing such a financial burden. As always, we had to satisfy ourselves that burdens we were imposing could be defended against any legal challenge on the basis of proportionality to the problem we were addressing. 430

4.56 All these matters lead to the conclusion that the decision to grant a period of grace was reasonable, having regard to the scale of the problem as it appeared at the time.

4.57 Closely allied to the question of whether any period of grace should have been allowed, was whether MAFF should have instituted a feed recall scheme. If no period of grace had been granted, there would have been compounders, merchants and farmers left holding large stocks of cattle feed, the use of which was forbidden by law. In practice it would have been difficult for MAFF to introduce an immediate ban without coupling this with a feed recall scheme.

4.58 We explored with MAFF officials whether they had given consideration to a feed recall scheme and concluded that they had not. We were persuaded, however, that such a scheme would have been complex and expensive and would have taken months to implement. In effect all feed that might contain ruminant protein would have had to be recalled, because there was, in most cases, no way of ascertaining the nature of the protein element in the feed. It appears to us that the cost of the scheme would substantially have exceeded the value of the number of cattle that would have seemed likely at the time to be infected if the feed was not recalled.

4.59 It is right to bear in mind the fact that MAFF officials had identified that BSE might pose a risk to human health, and that this was an additional reason for seeking to eradicate the disease as swiftly and as thoroughly as possible. We do not consider that this factor should have led MAFF officials to recommend a feed recall scheme. Had they considered the matter they could reasonably have concluded that, by the time any cattle infected during the period of grace developed symptoms, the question of whether they posed a risk to human health would have been resolved and any necessary precautionary measure put in place.

The effect of the ban

4.60 The intention of the ruminant feed ban was that all feeding to ruminants of feed containing ruminant protein would cease on 18 July. No animal would contract BSE from feed after that date. Mr MacGregor told us that he had been informed that the great majority of feed compounders had stopped supplying cattle feed containing ruminant protein before 18 July. He thought that he was being reasonable in giving farmers a certain amount of time to use up their stocks, after which this would be illegal. 431

4.61 The extent to which Mr MacGregor’s intention was confounded is apparent from the number of cattle that, in due course, developed the clinical symptoms of BSE despite being born after the ban (BABs). A full table of these appears below.
No less than 3,589 BABs were later shown to have been born in September 1988. For the period from 18 July to the end of 1988 the figure was 11,947. For every case that developed clinical symptoms there were probably several that were slaughtered before symptoms developed. A small proportion of all these cases may have been infected as a result of maternal transmission, but MAFF’s investigations indicate that the majority were the result of eating feed containing ruminant protein.

Table 4.1: Confirmed BSE cases born after the feed ban (BABs) by month of birth, Great Britain

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<tbody>
<tr>
<td>January</td>
<td>n.a.</td>
<td>1,266</td>
<td>706</td>
<td>367</td>
<td>308</td>
<td>190</td>
<td>98</td>
<td>48</td>
</tr>
<tr>
<td>February</td>
<td>n.a.</td>
<td>464</td>
<td>271</td>
<td>162</td>
<td>147</td>
<td>102</td>
<td>73</td>
<td>20</td>
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<tr>
<td>March</td>
<td>n.a.</td>
<td>598</td>
<td>296</td>
<td>225</td>
<td>148</td>
<td>110</td>
<td>66</td>
<td>22</td>
</tr>
<tr>
<td>April</td>
<td>n.a.</td>
<td>387</td>
<td>231</td>
<td>165</td>
<td>118</td>
<td>85</td>
<td>56</td>
<td>16</td>
</tr>
<tr>
<td>May</td>
<td>n.a.</td>
<td>309</td>
<td>220</td>
<td>164</td>
<td>96</td>
<td>107</td>
<td>56</td>
<td>13</td>
</tr>
<tr>
<td>June</td>
<td>n.a.</td>
<td>649</td>
<td>332</td>
<td>318</td>
<td>200</td>
<td>204</td>
<td>103</td>
<td>22</td>
</tr>
<tr>
<td>July</td>
<td>514</td>
<td>1,117</td>
<td>593</td>
<td>586</td>
<td>372</td>
<td>320</td>
<td>147</td>
<td>32</td>
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<tr>
<td>August</td>
<td>2,791</td>
<td>2,204</td>
<td>907</td>
<td>793</td>
<td>496</td>
<td>347</td>
<td>166</td>
<td>21</td>
</tr>
<tr>
<td>September</td>
<td>3,592</td>
<td>2,426</td>
<td>856</td>
<td>750</td>
<td>441</td>
<td>294</td>
<td>134</td>
<td>13</td>
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<tr>
<td>October</td>
<td>2,479</td>
<td>1,555</td>
<td>568</td>
<td>455</td>
<td>342</td>
<td>219</td>
<td>87</td>
<td>11</td>
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<tr>
<td>November</td>
<td>1,453</td>
<td>952</td>
<td>336</td>
<td>290</td>
<td>236</td>
<td>150</td>
<td>75</td>
<td>11</td>
</tr>
<tr>
<td>December</td>
<td>1,124</td>
<td>716</td>
<td>320</td>
<td>286</td>
<td>211</td>
<td>156</td>
<td>51</td>
<td>3</td>
</tr>
<tr>
<td>Totals</td>
<td>11,953</td>
<td>12,643</td>
<td>5,636</td>
<td>4,561</td>
<td>3,115</td>
<td>2,284</td>
<td>1,112</td>
<td>232</td>
</tr>
</tbody>
</table>

Overall total as at end June 2000: 41,536. By 7 July 2000 two cases of BSE had emerged in cattle born in 1996: one in January and one in August.

Source: Ministry of Agriculture, Fisheries and Food

n.a. = not applicable

4.62 These depressing statistics should not obscure the positive effect of the ruminant feed ban. Professor Roger Morris of Massey University, when addressing the Inquiry by video link from New Zealand, gave evidence based on epidemiological calculations of the effect of the ruminant feed ban on the risk of a cow contracting BSE. That risk had increased 25-fold between 1985 and 1987. But for the ruminant feed ban it would have been over 40 times as great in 1988 as in 1985, and continued to escalate thereafter. In the event, the ban produced an immediate reduction of risk of 80 per cent, and the risk continued to fall as the effectiveness of the ban increased in the following years. Professor Morris described the ban as:

. . . a spectacularly successful control measure . . . one of the notable success stories of global disease control. 432

4.63 When giving evidence to us Mr Kevin Taylor remarked that Professor Morris’s view:

. . . reflects the comments that I have heard over a period of many years from vets all over the world, that they believe that what we did was incredibly

432 T111 pp. 33–4
successful... the view that what was done was unsuccessful seems to be peculiar to this country. 433

4.64 We have already commended the identification of feed as the vector for BSE and the decisive action taken in the light of it. We do not consider, however, that the result of the ruminant feed ban is cause for satisfaction. Once it was identified that the outbreak of BSE was the result of the incorporation in cattle feed of ruminant protein, it ought to have been possible to bring this practice to a speedy end and thus totally to eradicate this cause of infection. Why did this not occur?

4.65 The very large number of BABs that were born in the six months following the ban clearly indicates that farmers were continuing to give their cattle feed in which ruminant protein had been deliberately incorporated. Some of this feed would have been purchased before 18 July. Farmers would have had no means of knowing whether it contained ruminant protein and, in those circumstances, would have committed no breach of the law in feeding it to their cattle.

4.66 We are satisfied, however, that a substantial proportion of the BABs born in 1988 must have been given feed containing ruminant protein which had been supplied to farmers after 18 July 1988.

Deliberate breach of the ban

4.67 Whereas farmers who used the feed may well have been unaware of its contents, and were thus not breaking the law, some at least of those who sold it must have been acting, knowingly, in breach of the Regulations. Our conclusion conflicts with the position presented to us by witnesses from the feed trade and we should explain why we have felt unable to accept their evidence on this point.

4.68 Evidence about the ruminant feed ban was given by witnesses from the feed trade, including representatives of UKASTA and GAFTA, on 2 October 1988. They told us that feedmills would have disposed of cattle feed containing MBM by 18 July. Mr Jim Reed, the Director-General of UKASTA, told us that the focus of their attention was that the mills should ‘stop producing the stuff that had been banned’. 434 UKASTA did not hear of anyone who at 18 July was left with unsaleable material. 435 A representative of GAFTA likewise told us that he believed that trade in ruminant feed containing ruminant protein would have ceased on 18 July. 436 A witness from one major feed producer even went so far as to say that the expectation was that cattle feed containing ruminant protein would have been consumed by 18 July. 437

4.69 After receiving this evidence we became aware of written reports of a meeting between UKASTA and MAFF on 10 November 1992, when MAFF was investigating possible causes of the contraction of BSE by BABs. UKASTA’s report of this meeting included the following passages:

UKASTA reported that a survey had been carried out amongst the members of the Feed Executive Committee which represented approximately 50% of

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433 T122 p. 33
434 T61 p. 26
435 T61 p. 25
436 T61 p. 27
437 T61 p. 30
the tonnage of commercially manufactured dairy compound feedingstuffs in the United Kingdom. All the information provided had been made anonymous and copies were made available to the Ministry officials on the strict understanding that the contents were to be treated in the utmost confidence. MAFF agreed to honour this undertaking.

The point that caused the Chief Veterinary Officer most concern was the fact that some companies had supplied ruminant rations containing ruminant meat and bone meal after 18 July 1988. No feed containing this material had, however, been manufactured after that date.

UKASTA explained that in completing the proformas, individual companies had been totally honest in reporting that ruminant feeds containing ruminant meat and bone meal could have been supplied after the introduction of the ban. This was essentially because the feedingstuff would have a shelf life of between three to four months from the date of manufacture. Thus the latest date on which stocks would have been cleared from compounding premises and/or distribution premises/merchant stores would have been October at the latest...

Mr Meldrum reiterated his concern that the ban had not been immediately observed. It was expected that the Ministry could be challenged, in due course, to what action officials were going to take in view of the fact that compound feed containing ruminant animal proteins was sold after the introduction of the ban. He did, however, reconfirm that the information that he had been handed would be treated in the utmost confidence and stated that he wanted no further information on companies that might have supplied feed after the imposition of the ban. He also stated that the information provided by UKASTA would provide MAFF officials with a clear lead in the investigations being carried out into the incidence of BSE in cattle born after the ban.438

4.70 MAFF’s minutes of this meeting went into more detail:

2. In order to meet our request for information, UKASTA had asked all the companies represented on its Executive Committee, which together account for more than 50% of ruminant compound feed production, to complete a questionnaire. Copies of the replies, edited and made anonymous, were handed around. UKASTA stressed that the information was provided in strictest confidence and must not be divulged in specific terms by MAFF.

3. UKASTA summarised the findings as follows:

(a) Date when incorporation of ruminant protein in ruminant rations stopped.

Two companies replied that they did not use animal protein. The other replies ranged from December 1987 to July 1988 with most saying July 1988.
(b) Date when such stocks were cleared from compounders premises.


(c) Date when stocks were cleared from distribution premises or merchants’ stores.

The point was made that merchants’ stores were not under the control of compounders. As in (b) replies ranged from February 1988 to October 1988 with most saying end August or end September 1988 . . .

5. The CVO thanked UKASTA for the information it provided but expressed his extreme concern that compounders had supplied ruminant rations containing ruminant protein after the ban was introduced. It had always been recognised that stocks on farm would have been used up but it had not been expected that material would continue to have been supplied. UKASTA’s reaction was to claim that recalling stocks was not practical and to say that the questionnaire replies were of course the outside possibilities when such feed might have been supplied.439

4.71 We raised in correspondence with UKASTA the apparent conflict between these records and the oral evidence that had been given to us. Mr Reed dealt with this in the following passages from a supplementary statement provided by UKASTA:

UKASTA have already stated in evidence to the Inquiry that, in practice, most or all compounders had no difficulty in ceasing the inclusion of MBM in ruminant rations and in disposing of their stocks before the eventual deadline of 18 July 1988. Evidence from an anonymous survey of some UKASTA members carried out at MAFF’s request in 1992 and discussed at a meeting between UKASTA and MAFF representatives on 10 November 1992 supported this conclusion in general although it also suggested that in a minority of cases the clearance of ruminant feed containing MBM was not completed until after the ban took effect. Although at the meeting concern was expressed by the CVO that ruminant feedingstuffs containing ruminant protein may have been supplied after the date of the ban, the survey did not in fact reveal any such illegal disposal. Failure to clear stocks was equally consistent with their eventually being re-worked into other legally permitted rations or disposed of via authorised waste disposal channels.440

4.72 We were not persuaded by this. At the oral hearing, we asked whether compounders could have re-mixed feed made up for cattle into a product suitable for pigs and poultry and were told by a nutritionist employed by one of the feed companies:

There is a much bigger nutritional problem. Many of the ingredients used in cattle feed are not very palatable to pigs and poultry. The fibre level of cattle feeds is considerably higher than pig and poultry feeds and therefore the

439 YB92/11.12/1.1–1.2
440 S24C Reed para. 9
selection of ingredients used is different. You are much more likely to be 
able to use a pig or poultry feed for cattle than the other way round. 441

4.73 Mr Meldrum reacted with some indignation to UKASTA’s suggestion that 
the survey did not reveal any illegal disposal of ruminant protein. This was not 
consistent with the individual survey results, of which he had been given copies. 
He cited one response which said that the date on which the company stopped 
incorporating ruminant protein in ruminant rations was 18 July, the very day upon 
which it became illegal to use such feed. 442 Furthermore, UKASTA had not 
suggested at the time that stocks were cleared after 18 July by reworking. 443

4.74 The UKASTA survey was carried out in order to assist MAFF to determine 
the reasons for the BABs. If those responding to the survey had disposed of surplus 
stocks in ways that would have precluded their use as cattle feed, we have no doubt 
that they would have said so. As it is, we think it is quite clear that some of the Feed 
Executive Committee were accepting that their companies disregarded the ban by 
supplying ruminant feed containing ruminant protein after 18 July.

4.75 The companies represented on the Feed Executive Committee were the larger 
ones in the trade. Mr Reed told us that the smaller companies would have had more 
difficulty than the larger manufacturers in complying with the ban. 444 We suspect 
that a greater proportion of the smaller mills continued to dispose of stocks of the 
proscribed feed after 18 July than those on the Feed Executive Committee of 
UKASTA. We note that in a report of 2 April 1992 Mr Wilesmith commented on 
his investigation into BABs:

. . . a general feeling from going through these cases, suggests that there is a 
disproportionate number of small feed compounders of the rations fed to the 
BABs. This is plausible as only the biggest five compounders were privy to 
the findings and discussions on the possible role of meat and bone meal from 
the end of 1987 until the announcement of the ban. 445

4.76 One of the farmers who gave evidence told us that he had carried out a small 
survey of 50 cases of BSE in the Feed Buying and Discussion Group of which he 
was a member. The results led him to conclude that there was a possibility that 
compounders might have disposed of stock that incorporated MBM after 18 July. 446 
While hearsay evidence of this nature is of limited value, it provides some further 
corroborative of what we find is a clear picture.

4.77 Our conclusion is that the compromise date of 18 July did not allow all feed 
manufacturers enough time to dispose of all their stocks of cattle feed containing 
ruminant protein before that date, and that there was a significant disregard of the 
ban through continued stock disposal thereafter. The same was no doubt true of 
intermediaries in the chain between manufacturers and farmers. The BAB figures 
lend strong support to this conclusion.

4.78 This significant disregard of the law by elements of the feed trade after the 
introduction of the ruminant feed ban was regrettable.

441 T61 p. 27
442 T120 p. 67
443 T120 p. 65; S184E Meldrum para. B18
444 T61 p. 24
445 M66 tab 4 pp. 1–2
446 T57 p. 30
Was carry-over foreseen?

4.79 It does not seem that anyone at MAFF anticipated that significant numbers of cattle would be infected with BSE as a result of eating contaminated feed after the ban came into force. In March 1991 the first BAB to be reported occasioned a report to the Minister.\(^{447}\) Writing about this in June of the following year, Mr Meldrum commented:

At the time, although it had not been possible to obtain details of all ingredients in concentrates fed to the animal in calfhood, it was assumed that the ruminant feed ban had been effective from July, and that the risk via feed should have been zero. On reflection, taking into account more recent information gathered about carry-over of feed on farm, and from the compounding industry about carry-over of stocks manufactured before July 1988, we are now able to acknowledge that there is some risk of exposure via compound feed.\(^{448}\)

4.80 In a written statement to us Mr Meldrum said:

... whilst it may have been accepted that there would be some carry-over of existing stocks on farm, it was never contemplated that stocks containing meat and bone meal would have been consigned to farmers right up until the 18 July 1988 deadline, because they could not legally be fed to ruminants ... 

As to consideration in June 1988 of the likelihood of born after the ban cases (‘BABs’) occurring, I and my advisers never contemplated that they would occur. It was believed that the ruminant feed ban would reduce the effective exposure to a level that would prevent cases of BSE occurring in cattle born after the feed ban.\(^{449}\)

Could carry-over have been foreseen?

4.81 On 18 September 1992 Mr Meldrum wrote to Mr Reed, the Director-General of UKASTA:

My concern at the moment is the extent to which there was slippage in full implementation of the ruminant feed ban. Realistically we could not expect an absolute ban from 18 July and carry-over on farm was expected. Furthermore we were aware from discussion with major compounders before the ban came into effect that it would take considerably longer than the few weeks given to them for stocks of concentrate containing meat and bone meal to be cleared.\(^{450}\)

4.82 In November 1992 Dr Danny Matthews (a Senior Veterinary Officer) wrote of:

\(^{447}\) YB91/3.26/2.1
\(^{448}\) YB92/6.25/5.1
\(^{449}\) S184E Meldrum paras B17 and B19
\(^{450}\) YB92/9.18/1.1
... the expected slight time lag in clearing the supply chain, which in effect could have continued the feeding of contaminated meal on some farms into 1989.\footnote{YB92/11.18/1.6}

\section{In August 1993, when drafting a BSE update, Mr Wilesmith wrote:}

The occurrence of cases in animals born after 18 July 1988 is not unexpected because at this time there would have been several months’ supply of finished feedstuffs within the food chain and on farms.\footnote{YB93/8.27/2.11}

\section{We do not believe that these statements accurately reflect what was foreseen at the time of the introduction of the ruminant feed ban. They were made with the benefit of hindsight at a time when officials at MAFF were keen to emphasise that BABs were attributable to contaminated feed lest the more alarming conclusion be drawn that they were attributable to maternal transmission. They nonetheless reinforce the conclusion that we have reached independently that the possibility both of release of pipeline stocks after 18 July and of carry-over on farms could have been foreseen at the time that the ruminant feed ban was introduced.}

\section{Vol. 13: \textit{Industry Processes and Controls} includes a description of the chain of supply by which animal feed reaches the farmer. UKASTA’s request for a three-month period of grace was a clear indication of the possibility that some compounders at least needed more time than they were being granted to dispose of stocks of ruminant feed that they had already compounded. They were likely to be disposing of these right up to the 18 July deadline and some would be tempted to ignore that deadline. The same was true of the intermediaries between the compounders and the farmers.}

\section{As for the farmers, all witnesses agreed that the likelihood was that they would give their cattle any feed that remained on their farms. This was because firstly, few, if any of them, would be in a position to know whether their feed contained ruminant protein. And secondly, there was no compelling reason to conclude that, if it was acceptable to continue using up their stocks until 18 July, it was essential not to do so thereafter. As one representative of a farmers’ union put it to us:}

\begin{quote}
I would assume that any logical thinking person would say, ‘Well it was all right on Tuesday, it has to be all right on Wednesday’.\footnote{T57 p. 97}
\end{quote}

\section{Of the veterinarians or administrators at MAFF who were involved in the introduction of the ruminant feed ban, it seems to us that only Mr Meldrum gave rigorous thought either to the problem of pipeline stocks or to that of carry-over on farms. The reason for this was that they were working under pressure to comply with the Minister’s request for a speedy introduction of the ban. Any thought they did give to these matters did not lead them to conclude that they were of great significance.}

\section{So far as pipeline stocks are concerned, we have already commented (paragraphs 4.45–4.56) on Mr Taylor’s advice that a two-month period of grace was acceptable. MAFF had had indications that major compounders had reformulated...}
their ruminant feed and were aiming to cease supplying ruminant feed that contained ruminant protein before the 18 July deadline was reached.\textsuperscript{454} It was not unreasonable to expect the majority of compounders to respect the law. The additional cases of infection that might occur if some pipeline stocks were supplied after 18 July would have seemed likely to be small in number.

4.89 So far as carry-over on farms was concerned, we received a substantial body of evidence from a variety of sources that suggested that this was likely to be of limited significance. Mr Peter Sanderson of BOCM Pauls told us:

Farmers tend to order on a monthly basis, perhaps even shorter than that. Particularly bearing in mind that bulk feed is manufactured on day one with delivery on day two or three and to order. By changing formulations in June, then by the time July 18 had come along that feed would have been consumed. That was the expectation.\textsuperscript{455}

4.90 A number of farmers told us that they would not have had stocks of cattle feed on their farms when the ruminant feed ban came into force.\textsuperscript{456} Mr Roger Eddy, a veterinary surgeon in private practice, told us that:

Concentrates on the farms rarely last more than a month. It was quite normal to order a month’s supply unless you are a large farm and have it weekly. At that time of year there would not be large quantities being used because it is July and it is a time of year when cows would be on grass. Calf rations may last more than a month.\textsuperscript{457}

4.91 Both Mr Meldrum and Mr Taylor gave evidence that accorded with this. Mr Meldrum said that he would have expected on-farm stocks to be consumed within weeks.\textsuperscript{458} Mr Taylor told us from his own experience that most animal feed was stored on farms for only a short time because of limited storage capacity.\textsuperscript{459}

4.92 For all these reasons there was nothing to alert MAFF officials to the risk that disregard of the Order might take place on a scale that would have significant consequences in the future, or to the need to take steps to address that risk.

What additional steps might have been taken?

4.93 Had MAFF officials anticipated the possibility of non-compliance with the ruminant feed ban on a scale that would involve serious consequences, what additional steps could they have taken to prevent this?

\textsuperscript{454} T43 p. 104
\textsuperscript{455} T61 p. 30
\textsuperscript{456} T57 pp. 27–29, 96
\textsuperscript{457} T62 p. 85
\textsuperscript{458} S184E Meldrum para. B38
\textsuperscript{459} S92D Taylor para. 2(f)
The statutory regime

4.94 Article 9 of the BSE Order provided:

Where an inspector of the Minister has reasonable grounds for supposing that the provisions of Article 7 of this Order have not been or are not being complied with he may take from any feedingstuff such samples as he considers necessary in order to establish the correctness of that supposition.460

4.95 Article 12 of the Order provided:

The provisions of this Order shall, except where otherwise provided, be executed and enforced by the local authority.461

4.96 The effect of these provisions was that the County Councils and Unitary Authorities were given the statutory duty to enforce the ruminant feed ban, but a power to enter to take samples was reserved for the Minister’s inspectors – in effect the State Veterinary Service – though only upon reasonable grounds for suspecting a breach of the Order. This power would seem to evidence a recognition that MAFF had overall responsibility for monitoring the due implementation of subordinate legislation under the Animal Health Act, as indeed it did.

Practicability of sampling

4.97 Prior to the Order being made, Mrs Elizabeth Owen, of Branch B of MAFF’s Food Standards, Fertilisers and Feedstuffs Division, sent a minute to Mr Lawrence dated 10 June. She expressed concern:

. . . that the Order bans only the use of meal derived from ruminants. Colleagues in nutrition and analytical chemistry (our own expert microscopists) are not convinced that analytical techniques are sufficiently advanced to distinguish between ruminant meal and meal from other mammals and poultry. I appreciate there is a case for minimising the damage to the rendering industry. Nevertheless there are clearly problems in drafting legislation in which we know the essential point to be unenforceable. 462

4.98 Mr Meldrum sought comments on Mrs Owen’s suggestion that the ruminant feed ban was unenforceable. Dr Peter Dawson responded attaching a note which tended to confirm that there was no technique currently available that was capable of identifying ruminant protein, or indeed any animal protein. The note identified that the Meat Research Institute at Bristol was believed to have an ELISA technique for meat species identification. ELISA stood for Enzyme Linked ImmunoSorbent Assay, a testing technique which produced rapid, sensitive and specific results. The technique, it was thought, had ‘some potential in determining the species of origin of processed protein’.463

460 L2 tab 1 article 9
461 L2 tab 1 article 12
462 YB88/6.10/8.1
463 YB88/6.27/2.3
4.99 A technical description of the ELISA technique can be found in vol. 2: Science, and the steps taken to develop the test can be found in vol. 5: Animal Health, 1989–96. For present purposes it is enough to note that there was no test capable of identification of ruminant protein in cattle feed at the time that the ruminant feed ban was introduced.

4.100 If sampling was impracticable, it was still possible for the Trading Standards Officers of local authorities to check the records of feedmills to ensure that the ingredients of cattle feed did not include ruminant protein. We had evidence that some did so. But MAFF took no steps to encourage such enforcement. The local authorities and their associations were not consulted before the Order was introduced, nor given any guidance on enforcement of the Order. A representative of North Yorkshire County Council told us:

. . . we saw reluctance in the Ministry, certainly at local level and perhaps through my dealings at national level, to actually give it, if you like, a high profile. It seemed to be – the correct word, more of a face-saving exercise, a retracting exercise from their point of view. I do not think they seemed to be keen at that time on what you would call really effective and strong enforcement. We saw that for a period of years, so I think that was our perspective of the situation.

Perception and communication

4.101 So far as compliance on the part of compounders and others in the feed chain is concerned, we believe that the major problem was one of perception. There was industry scepticism about the MBM hypothesis, to which Mr Meldrum referred. We have mentioned above UKASTA’s realistic perception that there was a lack of urgency about the ruminant feed ban. The farmers shared this perception. As one said to us:

. . . if it was so imperative the government should have bought it back and then there would be no loss to farmers.

4.102 Mr John MacGregor proposed that the introduction of the ruminant feed ban should be ‘handled in a low key way’, but he did so on the assumption that ‘we have a system for notifying all affected people (renderers, compounders and perhaps most importantly farmers, etc) of the situation which will apply from 18 July’.

4.103 We asked him if he knew whether this was done. He replied:

I assume it must have been done because we normally had mechanisms for informing everyone of steps like this. I mean obviously it was announced in Parliament. Obviously it was in all the farming journals, but it was to get it through to the people on the ground because not everyone reads those sort of things.
4.104 Contrary to Mr MacGregor’s assumption, MAFF did not ensure that information about the ruminant feed ban was conveyed to individual farmers ‘on the ground’. Mr Taylor told us that there were methods of circulating letters to individual farmers, although there was no certainty that farmers would open the envelope and read the contents. ‘There was always the theory that most of them were behind the alarm clock on the mantelpiece.’\textsuperscript{469} Mr Eddy told us that a leaflet went out to farmers in about 1990 which would have drawn their attention to the feed controls.\textsuperscript{470} We are not aware that MAFF circulated any information before then.

4.105 One line of communication with farmers was the Veterinary Field Service (VFS). On 15 June 1988 written instructions and information about BSE in the form of ‘Inset 25’ were circulated to VFS staff. This informed them that the BSE Order 1988 imposed:

Prohibition on the sale, supply and use of animal protein derived from ruminant animals for feeding to ruminants from July to 31 December 1988.\textsuperscript{471}

4.106 This fell short of providing the VFS with a cogent message to pass on to farmers, particularly as it does not seem to us that vets were any better placed than farmers to know whether compound feed held in stock contained ruminant protein. MAFF did, however, take other steps to publicise the ban. They issued a position statement giving details of the ban and took steps to inform the representative bodies. We have already referred to the meeting chaired by Mr Meldrum on 1 June (paragraphs 4.15–4.16). This resulted in the NFU issuing a Position Statement reporting:

There is some evidence that the disease is being spread by bone and blood meal in compound feed. The NFU has therefore welcomed the announcement that the inclusion of these products in compound feed for ruminant animals is to be suspended. This does not apply to pig and poultry rations.\textsuperscript{472}

4.107 The ruminant feed ban received a degree of coverage in the farming press, but, for the most part, only as a subordinate item to the notification requirement (see Chapter 5).

4.108 Mr Peter Rudman, secretary of the NFU’s Animal Health and Welfare Committee, told us:

I think it had been agreed that the NFU should be the vehicle for publicising to farmers the requirements and I think it was seen to be a more practical and effective method of getting the message across.

4.109 He explained to us:

As far as NFU members were concerned, their main source of information was verbal communication, via their attendance at local NFU branch
meetings where information was passed down from Headquarters and County Committee meetings, so as to keep the members up to date. Additionally, the contents of written briefings (which were prepared by Headquarters specialist staff) were relayed to members, either in summary form in NFU county journals or explained by NFU staff at local branch meetings. NFU comment and Position Statements were invariably reported in other farming journals, such as *Farmers Weekly*, *Farmers Guardian*, *Farming News*, *The Dairy Farmer* and *Big Farm Weekly*. Most farmers would purchase one or more of these magazines, so as to enable them to keep abreast of agricultural matters.473

4.110 On 28 June Mr Meldrum chaired a meeting of bodies representing, or otherwise involved in, the cattle industry. These included the NFU and the Farmers’ Union of Wales. At this meeting Mr Lawrence (of MAFF) summarised the provisions of the BSE Order 1988. He explained that from 18 July to 31 December the use of ruminant protein in ruminant feed would be prohibited. In the meantime, MAFF teams would investigate the protein processing plants to see which processes could destroy the infective agent.

4.111 Dr Matthews, when giving evidence to us, referred to the practice of using trade associations as avenues of communication: ‘We would provide them with detail and they would cascade that down through their branches.’474

4.112 We took evidence from seven farmers and asked them about their normal sources of information on agricultural matters.475 Most of them emphasised the importance of publications; mention was also made of ‘Farming Today’, and one said he listened to ‘The Archers’.

4.113 These witnesses had no reliable recollection of when or how they first learned of the ruminant feed ban. When asked to comment on the likelihood that farmers would have continued to use existing stocks of feedstuff after 18 July, one said:

I think that when we were talking about this time, very few farmers had more than a sprinkling of cases, one I think was the average on farms – which we lose more than that in normal circumstances. It does not make a huge, huge difference, so I think that they did not really understand the gravity of the situation at that time and so consequently that is why they continued to use it and really were not as vigilant as we would be under today’s situation of the merchants that were delivering feed to them.476

4.114 However, looking back on what occurred, we are doubtful whether, had MAFF taken additional steps to emphasise to local authorities, the feed industry and farmers the importance of strict compliance with the ruminant feed ban, this would have had much effect on the outcome. The period of grace and the absence of any feed recall scheme demonstrated too clearly the reality, which was that the apparent scale of the epidemic did not seem to call for stringent action to effect an immediate and total elimination of ruminant protein from ruminant feed.

473 S137 Rudman para. 11
474 T36 p. 22
475 T57
476 T57 p. 37
4.115 In the earlier stages of the Inquiry we had a concern that MAFF officials may have been at fault for failing to anticipate and prevent the breaches of the ruminant feed ban that occurred in the months immediately after it came into effect. On reflection we have concluded that we were being influenced in our views by hindsight. The reaction to the emergence of BSE was bedevilled by the length of the incubation period of the disease. When the ruminant feed ban was introduced, the scale of the epidemic was still latent. Mr MacGregor called for a speedy ban on the incorporation of ruminant protein in ruminant feed. The ban was introduced speedily. The importance of immediate and rigorous compliance was not apparent and thus was not addressed.

Cross-contamination

4.116 It is now recognised that there was, from the outset, another factor which led to cattle becoming infected by ruminant protein after the ruminant feed ban had been introduced. This was the accidental contamination of ruminant feed, in which no animal protein had been incorporated, by other feed which contained ruminant protein. The circumstances in which this occurred and in which it then came to be appreciated are dealt with in detail in vol. 5: Animal Health, 1989–96, Chapter 2 (‘The ruminant feed ban’). In short, cross-contamination occurred at feedmills which were using the same plant to produce ruminant feed, which no longer contained animal protein, and non-ruminant feed, which did contain animal protein. Cross-contamination occurred when the same vehicles were used to deliver in bulk: on one occasion non-ruminant feed and on the next ruminant feed. It occurred on farms where ruminant feed supplied before 18 July remained clinging to hoppers and other containers of bulk feed. And it occurred on mixed farms that handled, or mixed, feed for both ruminants and non-ruminants.

Was cross-contamination foreseen?

4.117 We are satisfied by the evidence, which is set out in detail in vol. 5: Animal Health, 1989–96, that once the pipeline stocks of ruminant feed containing MBM had been consumed, the principal cause of cattle continuing to become infected with BSE was cross-contamination of their feed. Ruminant feed that contained no MBM became contaminated with feed for non-ruminants that did contain MBM. Was the danger of this cross-contamination foreseen?

4.118 It was well known that, where feedmills compounded different batches of feed for different animals, cross-contamination could occur between one batch and the next. This was cause for concern insofar as the ingredients of a feed designed for one animal could have an adverse effect on another. The problem was particularly acute in respect of medicinal additives, an area governed by statutory regulation.

4.119 In 1982 UKASTA issued a Code of Practice, which was updated in 1984, recommending measures to minimise cross-contamination in feedmills with specific reference to medicinal products. We received evidence from four of the major feed compounders, in addition to evidence from UKASTA, as to the measures that they adopted to reduce cross-contamination. They all applied the UKASTA Code. More generally they told us that as and when they updated their...
plant, they attempted to do so in a manner which reduced the possibility of cross-contamination. All were clear, however, that a degree of cross-contamination was inevitable.478

4.120 When the ruminant feed ban was introduced, neither officials at MAFF concerned with its introduction nor the feedmills which had to comply with it foresaw that cross-contamination of ruminant feed with non-ruminant feed might render the former infective. One reason for this was a belief that the quantity of any contaminating feed would be too small to contain an infective dose of BSE.

4.121 In a supplementary witness statement to the Inquiry Mr Meldrum said:

> . . . if I, or indeed any other of the MAFF or industry representatives, had known at that time that the infective dose was really so low as to lead to cross-contamination problems, the issue would have been pursued, as indeed it was at a later stage as a result of investigations into BABs and the use of the ELISA test in the field. The lack of knowledge at the time as to cross-contamination in the context of BSE is reflected by my response to two queries raised at a cattle industry meeting on 28 June 1988.479

4.122 The queries to which Mr Meldrum referred were raised at a meeting, which he chaired, attended by representatives of the cattle industry and by MAFF officials who included Mr Cruickshank, Mr Kevin Taylor, Mr Wilesmith and Mr Lawrence. Mr Meldrum is recorded as saying, in the course of discussion about standards in renderers:

> . . . feed compounding mills presented, at worst, only a low contamination risk and would not be investigated.480

4.123 To a question whether the use of MBM in fertiliser was acceptable, Mr Meldrum replied:

> At present there was no evidence of a need to ban the use of meat and bone meal in fertiliser as the dose received by animals grazing the fields thus fertilised would almost certainly be too low to cause disease.481

4.124 We raised with Mr Meldrum the question whether he ought to have warned the feedmills of the danger of cross-contamination. His response was:

> It logically follows . . . that if, as at June 1988, the evidence was not available as to either the size of the infective dose or the extent of any cross-contamination that might occur through continued production of ruminant-derived meat and bone meal, it is unreasonable to expect me to ensure that a clear warning of the danger of cross-contamination was publicised. The existence of such a danger was not considered to exist at that time.482

478 T61
479 S184E Meldrum para. B23
480 YB88/6.28/1.3
481 YB88/6.28/1.3
482 S184E Meldrum para. B27
4.125 We asked Mr Meldrum about his understanding in 1988 of the amount of infective material a calf would have to eat in order to become infected with BSE. His answer was:

... we simply did not know what volume of material, what weight of material in meat and bone meal would cause disease in calves.\textsuperscript{483}

4.126 He and his colleagues envisaged pockets of infectivity in the MBM but did not know the size of the pockets.

4.127 Mr Meldrum was referred to a note of an earlier meeting with UKRA, UKASTA and GAFTA that he chaired in March 1988. Mr Wilesmith was recorded as saying:

The effective dose of the disease was very small, and the smaller the dose the longer it took to show itself.\textsuperscript{484}

4.128 Mr Meldrum said he had no recollection of that statement, and that:

That was now the view, the corporate view that we held at the time based on the advice we received from experts. We did not know. And I do not think John [Wilesmith] knew either, frankly.\textsuperscript{485}

4.129 Mr Kevin Taylor commented in a supplementary statement:

The risks of cross-contamination were not and could not have been foreseen in the absence of epidemiological evidence or knowledge of the effectiveness of rendering procedures and of the size of the oral infective dose of cattle tissues to cattle . . .

The possibility of cross-contamination of feed which did not include ruminant MBM by other feeds which did was not considered at that time, so far as I am aware, and on the evidence then available I can see no reason why it should have been.\textsuperscript{486}

4.130 In oral evidence Mr Taylor made the point that he did not share Mr Meldrum’s knowledge of the feed industry. He had no knowledge of UKASTA’s Code of Practice. He had no recollection of discussing dose at the time of the introduction of the ruminant feed ban.\textsuperscript{487}

4.131 When giving oral evidence to the Inquiry, Mr Cruickshank said:

I think it is important to bear in mind that at that time and for some considerable time afterwards everybody believed that for a cow to go down with BSE, it had to ingest a massive dose of infected material.\textsuperscript{488}

4.132 Mr Cruickshank elaborated on this when he returned to give evidence in Phase 2 of the Inquiry. He said that he recalled many conversations in which

\textsuperscript{483} T120 p. 102
\textsuperscript{484} Y88/3.4/5.2
\textsuperscript{485} T120 p. 108
\textsuperscript{486} S92D Taylor paras 14–15
\textsuperscript{487} T122 p. 40
\textsuperscript{488} T32 p. 146
veterinary colleagues said: ‘Of course you can only pass on the disease if the animal takes in a large dose.’\textsuperscript{489} He understood dose to mean ‘the amount of contaminated sheep-origin material in the rations that were fed to the cattle’.\textsuperscript{490}

4.133 He was referred to evidence that Mr Wilesmith had not believed that a large dose was necessary to infect. He said:

I find it quite amazing, because I had many conversations with John Wilesmith, and it just never came across.\textsuperscript{491}

4.134 Mr Lawrence stated that cross-contamination was not perceived as being a problem at the time. The consensus was that BSE was ‘dose-related’ and therefore required a significant quantity of infective material in order to transmit the disease.\textsuperscript{492}

4.135 Witnesses from the feed industry told us that they did not understand that cross-contamination was a matter for concern in relation to BSE. Thus Dr Brian Cooke of Dalgety Agriculture Ltd said:

Both the industry in the form of UKASTA and ourselves in Dalgety Agriculture were reassured in the period up to 1994 by indications from MAFF that a significant level of cross-contamination of meat and bone meal from pig and poultry feeds into ruminant feeds would be necessary to infect a cow with BSE.\textsuperscript{493}

4.136 Mr Reed, the Director-General of UKASTA, told us that statements by MAFF officials over a very long period suggested to UKASTA that, for infection to occur, it was necessary to have a very high quantity of contaminated feed or feeding over a substantial length of time, or both.\textsuperscript{494}

4.137 Some support for this statement can be derived from a UKASTA file note of 2 October 1992 which recorded:

It was noted that MAFF were not concerned about cross-contamination of feeding stuffs in mills because the dose rate of meat and bone meal would be too low.\textsuperscript{495}

4.138 There is, however, no documentary evidence of any discussion with UKASTA about the size of the infective dose or the risk of cross-contamination at the time that the ruminant feed ban was introduced.

4.139 In this respect the position in Great Britain differs from that in Northern Ireland. On 2 June 1988 a meeting took place between officials in DANI and representatives of the animal feed and rendering industries at which a proposal to follow MAFF’s lead in introducing a ruminant feed ban was discussed. The minutes record that the question was raised:
... of how much cross-contamination would be acceptable in compounding mills and how mills could control this. Because of the possible risk of cross-contamination it was suggested that some firms may refuse to handle meat and bone meal.\textsuperscript{496}

4.140 Nevertheless, Mr Edward Sullivan, the Chief Veterinary Officer for Northern Ireland at the time, told us that their thinking then was that a considerable dose of the infective material would need to be incorporated into the MBM to cause the disease and that the various processes involved would produce tremendous dilution:

So in the back of our minds we thought that contamination trouble from that source was practically near to negligible.\textsuperscript{497}

**Should the possibility of cross-contamination have been foreseen?**

4.141 Mr Kevin Taylor expressed the view that to suggest that steps should have been taken to address the risk of cross-contamination in 1988 was to use hindsight. The problem was viewed as an animal health problem, not a public health problem:

... in animal control terms it is perfectly normal to put in place what seems to be a logical and simple control. There is no virtue in going for complexity, it is better to go for simplicity, and to observe what happens. When you get evidence that what you have done is either unsuccessful or could be improved, if you find evidence that it could be improved or that it is failing in some way, then you look again at the situation and you make the changes which are necessary to block the leakage, if you like. It is like blocking a dam with stones. It is easy to block a big part of the transmission and it is only later that you become aware that it has been leaking a bit round the edge, so then you block the bits round the edge.

That is exactly what was done with BSE and it is exactly what historically has been done with other animal diseases.\textsuperscript{498}

4.142 We accept that the approach described by Mr Taylor may be appropriate when dealing with animal diseases with a short incubation period. It was not, however, appropriate for BSE. The lengthy incubation period of the disease meant that several years would elapse before it would become apparent whether the dam had leaks, or was even holding. That factor alone meant that a rigorous appraisal of any steps necessary to ensure the practical efficacy of the ban was desirable – at least once it was appreciated that MAFF was dealing with a sizeable epidemic.

4.143 In addition, it was not correct to proceed on the footing that BSE posed only an animal health problem. The fact that BSE posed a potential risk to human health, even if the risk was seen as remote, was appreciated at the time that the ruminant feed ban was introduced.

4.144 In 1995, in a paper on risk communication strategy, Mr Danny Matthews cited, as an example of crisis management which had not occurred, anticipation, as
early as 1988 or 1989, of the partial failure or delayed implementation of the ruminant feed ban:

By asking ourselves ‘What do we do if cases occur after the ban?’ we might have anticipated the means by which we could ensure early compliance . . .

4.145 We believe that this comment is particularly apt in relation to the risk of cross-contamination.

4.146 At the heart of the complacency that existed in relation to this risk was a failure on the part of those most directly concerned with the introduction of the ruminant feed ban to appreciate the possibility that a very small quantity of infective material might suffice to infect an animal orally.

4.147 Evidence from many quarters has demonstrated that there was a widespread belief that a substantial quantity of infective material had to be eaten before a cow would become infected with BSE. That belief persisted until early 1995, when results from the attack rate experiment were released (see vol. 2: Science). These demonstrated that 1 gram of infective brain tissue had sufficed for oral infection of a cow. The volume of 1 gram is equivalent to two peppercorns.

4.148 The many to whom this result came as a surprise included Dr David Shannon and Dr Kenneth MacOwan of the Chief Scientists Group of MAFF and Professor Eric Lamming, who said of his Committee’s understanding in 1991:

We were under the impression from the evidence available that it would require much larger quantities than that.

4.149 Mr Bradley told us that he ‘would not have had a clue, in a nutshell’ about the size of an infective dose, though it would ‘not necessarily be expected to be extraordinarily large’. He continued:

I mean I am talking about small quantities, less than let us say 100 grammes of brain material. But what that amount would be to cause disease in the same species in regard to BSE was speculation, which I could not really comment upon.

4.150 Dr Watson endorsed Mr Bradley’s evidence, observing that it was ‘purely conjecture’ and that both he and Mr Bradley were surprised at the small amount of material from the central nervous system that did transmit orally to cattle. Mr Wells also expressed surprise that a single gram of brain homogenate proved to be an effective dose.

4.151 The widespread misconceptions about the amount of infective material necessary to transmit BSE to a cow reflect the fact that this question does not appear to have been thought to be of sufficient significance to merit detailed consideration.

499 YB95/1 5/1 3
500 T39 p. 125
501 T39 pp. 125–6
502 T7 p. 66. The Lamming Committee was the ‘Expert Group on Animal Feedingstuffs’
503 T42 p. 63
504 T42 p. 64
505 T51 p. 78. Homogenate is a ‘suspension of cell fragments and constituents obtained when tissue is homogenised’ (Concise Oxford Dictionary, 10th Edition)
The attack rate experiment was designed not to ascertain the minimum amount of material necessary to infect a calf, but as a precursor to the pathogenesis study. It was not begun until 1992. The Tyrrell Committee had not recommended an attack rate study – which, with hindsight, Mr Meldrum found surprising.506

4.152 Attack rate experiments take time, but discussions with Mr Wilesmith, Dr Kimberlin and the scientists at the NPU would have made it possible, at the time of the ruminant feed ban, to reach an informed view that it was at least possible that a very small quantity of infective material would suffice to infect a cow. We shall summarise the views on dose that these scientists held.

4.153 We have already referred to Mr Wilesmith’s contemporary statement that ‘the effective dose of the disease was very small’ (see paragraph 4.127). In oral evidence, he told us that he considered that a very small amount of the tissues with high infective doses would provide an effective exposure. He considered that this view was, or should have been, widely shared by administrators at MAFF, though he declined to name individuals:

. . . they were perfectly aware of what the likely amount, that being a small amount, was necessary to infect animals, because everybody was aware of what those inclusion rates were. They were somewhere between 2 and 4 per cent of calf rations if any meat and bone meal was included. So there was a knowledge of it. But I think my concern is that it seems to have been ignored.507

4.154 In 1991 Dr Kimberlin was to express the view to the Lamming Committee that the dosage level required to infect an animal was likely to be very low.508 He advised on the design of the attack rate experiment. His selection of 1 gram for the lowest dose in the experiment indicates that, as he confirmed to us, he considered it possible that this dose would achieve oral transmission.509

4.155 Between June and August 1988 the NPU set up an experiment titled ‘Transmission of BSE and natural scrapie into sheep and goats by intracerebral and oral routes’. It used, for this experiment, brain material from BSE-affected cattle supplied by MAFF. The quantities used were determined simply by the amount of this material left over after other experiments. An oral dose of 0.5 grams was given to six ‘positive-line’ sheep, six ‘negative-line’ sheep and three goats. The doses used indicate that those designing the experiment at least envisaged the possibility that quantities as small as 0.5 grams would prove orally infective.

4.156 There was no valid basis upon which Mr Meldrum could be confident in 1988 that cross-contamination in the feedmill would not involve sufficient quantities of infective material to give rise to a risk of transmission. It seems to us that he must have simply assumed this to be the case. It is right to note that Mr Wilesmith was present at the meeting where Mr Meldrum stated that feed compounding mills would not be investigated because they presented, at worst, only a low contamination risk. Mr Wilesmith did not comment on that statement.

506 T123 p. 25. The Tyrrell Committee was the ‘Consultative Committee on Research’, established in February 1989 to advise MAFF and DH on research into spongiform encephalopathies – see vol. 11: Scientists after Southwood
507 T52 pp. 15–16
508 YB91/5.20/3.2
509 595C Kimberlin paras 76–7
4.157 We have already observed that, at the time the ruminant feed ban was introduced, the true scale of the BSE epidemic was latent. The apparent rate of infection was only about 60 cases a month. In those circumstances we can understand a failure to attach significance to the possibility of infection as a result of cross-contamination of feed. After the introduction of compulsory notification, the picture changed. In the course of the month of September 1988, 435 cases were reported in Great Britain. Once these figures were apparent, if not before, Mr Meldrum should have addressed the problem of cross-contamination.

4.158 We have considered whether there were other officials at MAFF who should have given consideration to the potential risk of cross-contamination in feedmills. While we have indicated our dissent from Mr Kevin Taylor’s approach to controlling BSE (see paragraphs 4.141–4.143), we accept that he lacked the knowledge of the operation of feedmills that was needed if the risk of cross-contamination there was to be appreciated.

4.159 Dr Peter Dawson was the ACVO who headed the VI Service. He has made the point that he had no involvement in the introduction of the ruminant feed ban. That is correct. What is more to the point is that he had no personal experience of what happened in feedmills and, thus, could not have been expected to foresee potential problems of cross-contamination.

4.160 Mr Cruickshank has told us that he had been advised by his veterinary colleagues that cross-contamination was not a problem.\footnote{S75B Cruickshank para. 29} His understanding about this would have been confirmed as a result of being present when Mr Meldrum stated to representatives of the cattle industry that feed compounding mills presented, at worst, only a low contamination risk.\footnote{YB88/6.28/1.3} Furthermore, he had been informed by his colleagues that a very large dose was required to infect.

4.161 We are not aware who provided Mr Cruickshank with the information to which he has referred, but his understanding about the need for a large dose, by which we understood him to mean a large amount of infective material, was one that was shared by a number of witnesses, including Mr Lawrence.\footnote{S76F Lawrence paras 25–6} We do not consider that Mr Cruickshank should have appreciated the risk of cross-contamination.

What should have been done?

4.162 We think that the first thing Mr Meldrum should have done was to seek guidance from those best placed to form a view on the quantity of infective material that might be capable of transmitting BSE. This was no easy question, involving as it did the extent to which the processes of rendering and feed compounding would dilute infective material. He would not have received definite advice, but whether he turned to the CVL, to Dr Kimberlin or to the NPU, he would have been likely to be told that there was a real possibility that a small quantity of brain or spinal cord might suffice to infect.

4.163 He should then have ensured that a warning of the dangers of cross-contamination was given, not merely to feedmills, but also to farmers, many of

\footnotesize{510 S75B Cruickshank para. 29  
511 YB88/6.28/1.3  
512 S76F Lawrence paras 25–6}
whom mixed their own feed. An example of the guidance that would have been appropriate and helpful is the ‘Notice to Manufacturers and Mixers of Animal Feedingstuffs’ sent out by Mr Kevin Taylor on 10 August 1995. 513

4.164 Mr Meldrum told us that he was well aware that those who manufactured feed knew of the risk of cross-contamination with medicinal products and the means by which this could be avoided with the aid of the UKASTA Code of Practice. He assumed that they would employ the same precautions to guard against the risk of cross-contamination of ruminant feed by feed prepared for non-ruminants. He added:

I am as certain as I can be that when I would have discussed this with them in 1988 I would have said: ‘Yes, I am of course aware of what routine precautions you take; and on that basis I am not unduly worried about the risks from BSE’. 514

4.165 We do not believe that such a conversation took place. Had Mr Meldrum considered at the time that it was necessary for feedmills to apply the UKASTA Code in order to prevent cross-contamination between ruminant and non-ruminant feed, we believe that he would have ensured that specific advice was given to feedmills of the need for this. It would not have been safe to rely upon them to do this on their own initiative.

4.166 Mr Reed of UKASTA provided us with some information as to whether the UKASTA Code of Practice would always have been applied by mills in order to segregate ruminant feed from non-ruminant feed. He informed us:

The measures included in the 1984 UKASTA Code would have been adopted as routine in feedmills whenever it was appropriate. If a non-ruminant feed did not contain materials known adversely to affect a ruminant, then the degree of clean-out between products could be less rigorous. Some non-ruminant feeds contained neither meat and bone meal nor medicinal additives and hence would not adversely affect the following feed even if the conveying equipment carried over a small quantity.

On the other hand if any such non-ruminant feed contained a known potentially deleterious material or an ingredient which would adversely affect the next product, the plant would be purged with ‘clean’ material such as wheatfeed or ground wheat, or production runs re-scheduled to ensure that no sensitive feed followed. 515

4.167 In the course of 1994 MAFF received information that made it plain that, while some feedmills were taking steps to prevent cross-contamination, others were taking none: see vol. 5: Animal Health, 1989–96.

4.168 This information should have occasioned no surprise – nor did it. It was not reasonable to expect that all feedmills would take steps to prevent cross-contamination of ruminant feed unless given express guidance that this was necessary.

513 YB95/8.10/5.1
514 T132 p. 192
515 S24E Reed paras 9–10
4.169 As to this, Mr Reed stated:

At the time when the ruminant feed ban was introduced in July 1988, we were given no reason to believe that the risk to ruminants arising from cross-contamination with MBM existed at the minimal levels likely to occur where the normal practices of scheduling, cleaning out, etc laid down in industry and company codes of practice were applied in multi-species mills.

The issue of the size of infective dose for BSE was given no special significance in discussions between the Government and industry until much later – after a number of BAB cases had occurred. In the past, the removal from a formulation of a specific ingredient known to cause a problem, combined with the procedures already in place to minimise cross-contamination, had proved successful in preventing the problem continuing even when the same ingredient was still included in other products for other species. In the absence therefore of any knowledge of what might constitute a dangerous level of carry-over or guidance from MAFF as to what if any additional measures to take, the existing methods were deemed adequate. 516

4.170 On 14 October 1994 Prosper De Mulder met with UKASTA to discuss cross-contamination. UKASTA’s minute of the meeting records:

Reference was made to the discussions, for which no official records were known to be available, in the late 1980’s when trace contamination was not considered to be a problem. 517

We had no other evidence about any discussions involving UKASTA in the 1980s when cross-contamination was discussed. UKASTA did, however, discuss with MAFF concerns about cross-contamination in late 1990. 518 It seems to us possible that they may have received some reassurance on that occasion (see vol. 5: Animal Health, 1989–96, Chapter 2).

4.171 There was also a need to inform farmers of the dangers of cross-contamination. We had little evidence as to the extent to which cross-contamination may have taken place on the farm. We have concluded, however, that there must have been some scope for this.

4.172 Evidence given to the Lamming Committee suggests that as much as 40 per cent of feed is mixed on the farm. 519 Methods of mixing varied, widely from a use of specialist machinery to mixing feed in a bucket. It was thought in 1995 that home mixers were unlikely to mix rations for more than one species. 520 Whether or not they were home mixers, however, farmers should have been warned of the need to avoid any contamination of their ruminant feed by any trace of MBM or non-ruminant feed that might contain it.

516 S24E Reed paras 6–7
517 YB94/10.14/4/1
518 YB90/11.14/2.1
519 IBD1 tab 11 p. 57
520 YB95/5.15/1.2
The need for a test

4.173 In vol. 5: *Animal Health, 1989–96* we examine the leisurely course of attempts made by MAFF ‘in-house’ to develop an ELISA test for the presence of ruminant protein in animal feed. This became a matter of critical importance only when it was realised that cross-contamination was probably resulting in transmission of BSE via cattle feed. Had this possibility been identified at the outset, we believe that this task would have been given higher priority and might have been treated as an important R&D project.

The lesson

4.174 Failure to address the risk of cross-contamination of ruminant feed with non-ruminant rations resulted from a failure to give rigorous thought to the question of dose. The best time for rigorous consideration of the practical implications of a set of Regulations is at the time of their introduction. Once Regulations are in place, there is a tendency not to consider potential problems, but to wait to see whether any arise in practice. The question whether cross-contamination would be a problem was an obvious one to anyone with knowledge of how feedmills operated. The question was raised, but dismissed by Mr Meldrum without the rigorous consideration that he should have seen it received. No one could know the minimum quantity of infective matter necessary for oral transmission. In the absence of knowledge, the ruminant feed ban should have been implemented on a ‘worst case’ assumption.