PROPOSAL TO RELAX CERTAIN PROVISIONS OF THE CURRENT FEED BAN

Report by Alison Gleadle, Director of Food Safety

1. SUMMARY

1.1 The European Commission is proposing to amend European Union (EU) rules to allow the feeding of processed animal protein (PAP) derived from non-ruminants (other than fish) to non-ruminants of a different species. The Commission anticipates taking a vote on the proposal later this year. Implementation would be subject to the availability of validated tests to monitor compliance. The Board is asked for its advice on food safety and the other interests of consumers in relation to this proposal, in order to inform Ministerial decisions on the position the UK Government should take in the forthcoming negotiations.

1.2 On the food safety implications, the Board is recommended to agree to advise Ministers that
- the proposed relaxations of the feed ban would pose a negligible risk to consumers of exposure to bovine spongiform encephalopathy (BSE), provided that separate channelling of material derived from different species is strictly maintained throughout the feed chain and a suitable, validated DNA-based test to monitor compliance is available before the entry into force of any changes;
- the UK should not support the changes unless effective enforcement of, and a high level of compliance with, the controls to prevent cross-contamination of feed for different species can be assured;
- there is no evidence that the proposed changes could give rise to a new risk from a pig or poultry transmissible spongiform encephalopathy (TSE), although some uncertainty on the susceptibility of non-ruminants to TSEs exists;
- if, following adoption of the proposed changes, a TSE were identified in pigs or poultry under natural conditions, it would be necessary immediately to reinstate the full feed ban until a further risk assessment had been carried out.

1.3 On the views of consumers, the Board is recommended to agree to advise Ministers that
- the consumer engagement work carried out by the FSA, limited though it is, indicates that the majority of consumers spoken to are averse to the proposed changes, because of the perception that the feeding practices proposed would be unnatural and because they consider that controls should not be changed if doing so would result in an increase in risk, however small;
- further communication with consumers is recommended to help their understanding of the risks and potential benefits of the changes.
2. INTRODUCTION

2.1 Policy, budgetary and operational responsibility for the BSE feed controls in the UK is held by the Department for Environment, Food and Rural Affairs (Defra) and the rural affairs departments in the devolved administrations.

2.2 The origin of the first case of BSE remains unknown. However, the evidence from the BSE epidemic in cattle is that feeding animals with material derived from animals of the same species (intra-species recycling) can result in a TSE epidemic. The feed ban is the key control that aims to prevent the recycling in cattle feed of infective material from cattle that caused the spread of BSE.

2.3 A ban on feeding ruminant protein to ruminants (cattle, sheep and goats) was first introduced in Great Britain (GB) in 1988 (1989 in Northern Ireland (NI)). From June 1994, the EU prohibited the feeding of mammalian protein to ruminants in all Member States including the UK. The ban was applied to mammalian protein for enforcement reasons, because processed protein from ruminants could not be distinguished from that from other mammalian species. Following the announcement of a link between BSE and vCJD in 1996, UK feed controls were extended from April 1996 to prohibit the feeding of mammalian meat and bone meal (MBM) to all farmed livestock.

2.4 In the face of a sharp increase in the number of cases of BSE in other European countries, some born after the 1994 ban on feeding mammalian protein to ruminants, a ‘total feed ban’ was introduced at EU level in 2001. This measure, which is fully applied in the UK, bans (with certain exceptions) the feeding of PAP, from both ruminants and non-ruminants, to all farmed animals. The ‘total’ ban was intended to reinforce the 1994 ban and minimise any risk of ruminants eating ruminant MBM via cross-contaminated feed, thereby assuring the effectiveness of the ruminant to ruminant feed ban. The extension of the ban to feed for all farmed animals was not due to any concerns about TSEs in non-ruminants (pigs, poultry or fish).

2.5 PAP is defined in EU animal by-product (ABP) legislation as animal protein derived entirely from low risk (‘category 3’) material that has been processed in accordance with ABP rules so as to make it suitable for use in animal feed. Category 3 broadly comprises parts of slaughtered animals that are fit but not intended for human consumption, parts of animals rejected as unfit for human consumption but derived from carcases that are fit for human consumption and by-products derived from products for human consumption. Higher risk (‘category 1 or 2’) ABP must be treated, permanently marked with a resistant chemical (GTH1) and disposed of in accordance with ABP legislation and thus may not legally enter the feed chain. EU ABP legislation bans the feeding of terrestrial animals with PAP derived from animals of the same species and the feeding of farmed fish with PAP derived from farmed fish of the same species.

2.6 The EU rules provide for some limited exceptions to the ‘total’ feed ban that allow certain ‘permitted’ animal proteins (e.g. milk, eggs) to be fed to all

1 Glyceroltriheptanoate
farmed animals and certain ‘restricted’ animal proteins (e.g. fishmeal) to be fed to non-ruminants, subject to compliance with ABP legislation. A summary of the current BSE-related feed controls is at Annexe A.

2.7 The EU rules exceed international standards, applicable to imports from third countries. In order to be categorized as ‘controlled’ or ‘negligible’ risk for BSE, countries must prohibit the feeding of ruminant protein to ruminants. Countries categorized as ‘undetermined’ risk for BSE may have no controls on feeding animal proteins to farmed animals.

2.8 The TSE Roadmap 2 outlines the European Commission’s strategy for continuing the review of the TSE controls over the period 2010-2015. One of Roadmap 2’s strategic goals is to review certain provisions of the current feed ban when certain conditions are met. The Roadmap notes that PAP may be a source of proteins for non-ruminant farmed animals which need to be fed with high quality proteins. It therefore considers the possibility of lifting the ban on the feeding of non-ruminant PAP to non-ruminants of a different species, subject to the availability of validated tests to determine the species of origin of PAP and correct channelling of PAP from different species.

2.9 The overall effectiveness of the BSE control regime in protecting human and animal health depends on the combined effect of two main measures. The removal and disposal of specified risk material (SRM) is the main control that protects consumers from risk from food, but also prevents this material from entering feed. The feed ban, especially the ban on feeding ruminant-derived PAP to ruminants, is the main control that prevents exposure of animals to BSE. The effectiveness of these measures in controlling BSE is monitored by BSE surveillance. A key question in considering a change to any of these measures is whether or not the change would modify an aspect of the BSE control system that is critical to its effectiveness and hence would undermine the protective effect of the system as a whole. This paper addresses that question in relation to the proposed lifting of the ban on feeding non-ruminant PAP. No proposals for change in the SRM controls or in the surveillance of cattle in which BSE is more likely to be detected (e.g. suspected clinical cases of BSE, fallen stock or emergency slaughtered cattle) are currently expected.

2.10 In 1992, at the peak of the epidemic, some 37,000 cases of BSE were identified in UK cattle. In 2010, 11 BSE cases were identified in UK (all in GB), of which 5 were born after August 1996, when the UK feed ban came fully into effect. In 2011, 4 UK BSE cases have been identified up to 31 July, 2 in GB (both born after August 1996\(^2\)) and 2 in NI (of which one was born after August 1996).

3. STRATEGIC AIMS

3.1 Provided the key measures that prevent exposure of farmed animals to BSE are fully maintained and can be effectively enforced, the proposed changes to

\(^2\) one of these was a case of atypical BSE - the origin of atypical BSE cases is currently unknown
the feed ban would have no impact on the strategic outcome that foods produced or sold in the UK are safe to eat.

4. **THE COMMISSION DRAFT PROPOSAL**

4.1 The draft proposal would allow the feeding of PAP derived from non-ruminants (other than fish) to non-ruminants of a different species, i.e. the feeding of poultry protein to pigs and fish and pig protein to poultry and fish (fishmeal is already permitted in feed for non-ruminants). The bans on feeding PAP to the same species and ruminant PAP to all farmed animals would remain in place. The position after the proposed changes is shown in the table below.

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<thead>
<tr>
<th></th>
<th>Ruminants (cattle, sheep, goats)</th>
<th>Pigs</th>
<th>Poultry</th>
<th>Farmed fish</th>
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<tbody>
<tr>
<td>Ruminant PAP</td>
<td>Banned</td>
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<td>Banned</td>
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<tr>
<td>Pig PAP</td>
<td>Banned</td>
<td>Banned</td>
<td>Permitted</td>
<td>Permitted</td>
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<tr>
<td>Poultry PAP</td>
<td>Banned</td>
<td>Permitted</td>
<td>Banned</td>
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**Application in the UK**

4.2 If the proposed legislation were to enter into force, Defra advice is that the UK would have a discretion as to whether or not to authorise feed mills within the UK to produce such feed, but that there would be a risk of Judicial Review if EU law were not implemented properly by not approving such feed mill operations. Defra also advises that the UK could not legally impose a unilateral ban on the import of such feed into UK territory and that seeking to do so would put the UK at risk of legal challenge under World Trade Organisation rules as well as EU infraction.

**Proposed controls**

4.3 The draft proposal attaches conditions to the use of non-ruminant PAP in feed aimed at preventing cross-contamination from occurring at any point in the chain of manufacture, supply and use of feed for different non-ruminant species, or for ruminants. These conditions require non-ruminant ABP that is intended for production of PAP for use in feed to be derived from slaughterhouses that do not slaughter ruminants. They also require the non-ruminant PAP, and feedingstuffs containing that PAP, to be produced in establishments dedicated to a single species. However, the proposal allows the competent authority (CA) to derogate from these requirements where it is satisfied that the plant has effective measures in place that ensure physical separation of streams of material derived from different species. The proposed conditions (in version 2 of the Commission’s draft proposal, which is subject to change) are set out in more detail in Annexe B.

4.4 The CA is required to carry out risk-based checks on compliance with the feed controls, including testing for presence of PAP. The current statutory test for
PAP in feed\(^3\) is microscopy. Microscopy is capable of detecting constituents of animal origin in feed (e.g. muscle fibres, bone fragments, bristles, fish scales etc.). However microscopy offers only limited species differentiation and would not, for example, enable the mammalian or bird species of any animal material detected to be determined.

4.5 Requirements for separate channelling of PAP from different species and of feedingstuffs containing such PAP could therefore be monitored and enforced only if validated analytical techniques to determine the species origin of PAP were available. The EU Reference Laboratory (EURL) for animal proteins in feed is validating a DNA-based PCR\(^4\) test which can detect PAP in feed and determine the species of origin. EURL aims to complete the validation of the PCR test during 2011.

4.6 The Commission has stated that it will continue discussions on the draft proposal with Member States in parallel with the validation of the new test. The Commission anticipates taking a vote on the draft proposal in late 2011 with a view to its coming into force in 2012, subject to a validated DNA-based test being in place.

5. **RISK IMPLICATIONS OF ALLOWING NON-RUMINANT PAP IN ANIMAL FEED**

**BSE risk to cattle**

5.1 A [Quantitative Risk Assessment](#) (QRA) by the European Food Safety Authority (EFSA), updated in 2011, estimates the BSE risk to cattle that could be posed by bovine-derived PAP should some use of non-ruminant PAP in animal feed be permitted (e.g. feeding pig PAP to poultry).

5.2 EFSA states that non-ruminant PAP would not in itself represent any TSE risk to ruminants. However, the QRA considers the potential risk that, by allowing some PAP to be used in some animal feed, there is a greater chance that feed for cattle could be contaminated. For cattle feed to be contaminated with the BSE agent, the QRA assumes that two independent contamination events would need to occur:

   a. first, non-ruminant PAP must be contaminated with ruminant PAP. For the purpose of the QRA, EFSA assumes that that ruminant PAP is derived from a batch including an animal with BSE from which the SRM has been incompletely removed;
   b. secondly, ruminant feed must be contaminated with the contaminated non-ruminant PAP.

5.3 Based on the contamination levels modelled, EFSA’s QRA concludes that the total amount of BSE infectivity that could enter cattle feed per year via the above contamination pathway would be less than one bovine oral infectious

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\(^3\) under Regulation (EC) No.152/2009

\(^4\) Polymerase Chain Reaction – a scientific technique that greatly amplifies the amounts of a specific region ‘marker’ of DNA that can then be analysed to determine species of origin
dose, which would mean that less than one additional BSE-infected animal could be expected in the EU cattle population per year.

**BSE risk to pigs, poultry and humans**

5.4 A EFSA opinion of October 2007 assesses the risk of feeding processed animal protein (PAP) from pigs to poultry and vice versa. This opinion advises that

a. although there is evidence that pigs are susceptible to BSE when inoculated with infective material directly into the brain/body, to date no TSE (including BSE) has been identified as occurring in pigs under natural conditions;

b. according to current knowledge, the risk of transmitting BSE to birds is considered negligible and that, to date, no TSE has been identified as occurring in birds under natural conditions.

5.5 Taking into account the current low level of BSE in the EU and the controls that would remain in place to avoid the exposure of pigs or poultry to BSE-contaminated material, EFSA concludes that there is a negligible risk of either transmitting BSE to pigs by using poultry PAP, or transmitting BSE to poultry by using pig PAP.

5.6 Consequently, EFSA considers that, in either case, any increase in the risk of human exposure to BSE is negligible. The opinion however underlines that this assessment remains valid only in the context of continuation of SRM removal and the bans on intra-species recycling and use of proteins derived from ruminants in feed.

**Spongiform Encephalopathy Advisory Committee (SEAC) advice**

5.7 In 2007, the UK rural affairs departments and the FSA sought advice from SEAC on the potential for further BSE or other TSE infections and epidemics to arise as a result of changes to the feed controls. SEAC’s advice in 2008 noted the risk that the “inclusion of PAP in feed for non-ruminants could potentially give rise to cross-contamination between ruminant and non-ruminant feed. This could lead to feed including PAP from one species being fed to animals of the same, or a closely related, species or to ruminants”. SEAC also noted that, for there to be a risk of BSE transmission, “the introduction of material, and especially SRM, from BSE-infected animals would need to occur at some point during feed production and/or supply chain and be fed to susceptible animals of the same or a different species”. Given the very small amount of infective material that can transmit BSE to cattle, SEAC considered that “even a low level of BSE contamination of non-ruminant feed would provide a potential route for BSE transmission if it were fed to cattle (this is also a risk with plant-based feed). Rules to prevent such cross-contamination could be difficult to enforce, and elimination of BSE could not be assured in such circumstances.”

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5 this statement remains valid, as no TSE has been identified as occurring under natural conditions in pigs or poultry since October 2007

6 as above
5.8 SEAC advised, however, that:
- if PAP were derived from material that would otherwise have been considered fit for human consumption and then pressure rendered, the risks of BSE infections arising would be very low;
- inclusion of PAP in feed to non-ruminants, even if it results in low-level contamination of ruminant feed, is unlikely to lead to a level of amplification of BSE infectivity via intra-species recycling that would be sufficient to generate a self-sustaining BSE epidemic;
- it would be important to maintain suitable surveillance if the controls were relaxed.

Non-TSE risks
5.9 Defra’s Animal Health and Veterinary Laboratories Agency (AHVLA) has carried out a qualitative veterinary risk assessment (attached) on the non-TSE disease risks that might arise through the inclusion of non-ruminant PAP in feed for non-ruminants. AHVLA’s conclusion is that feeding non-ruminant PAP derived from terrestrial animals to non-ruminants of a different species should not result in an unacceptable risk to animal or public health provided the current ABP controls are complied with. EU ABP rules allow the processing of some category 3 ABP (e.g. non-mammalian or blood) for use in feed using processing ‘method 7’. The CA may authorize any method of processing as ‘method 7’, provided the operator has demonstrated that relevant hazards in the starting material have been identified and that the method is capable of reducing those hazards to acceptable levels. The risk assessment notes in particular that, where processing ‘method 7’ is used, the operator must ensure that exotic notifiable disease viruses have been considered, in addition to other relevant hazards such as endemic zoonotic pathogens (e.g. Campylobacter, Salmonella).

Conclusions on risk
5.10 The SEAC advice and EFSA QRA support the conclusion that, as long as SRM is properly removed and disposed of and the controls to prevent contamination of cattle feed with ruminant material are effective and enforced, there is a negligible risk of a new BSE epidemic in cattle as a result of allowing the feeding of non-ruminant PAP to non-ruminants.

5.11 The EFSA 2007 opinion supports the conclusion that, under current conditions, use of pig or poultry PAP in feed poses a negligible risk of exposing pigs or poultry to BSE.

5.12 The risk assessments all assume that some SRM might by-pass the controls and contaminate feed for non-ruminants. In actuality, incomplete removal and disposal of SRM should not occur, given the high priority the FSA continues to give to enforcement of the SRM controls. In addition, correct application of the ABP rules and channelling controls in the draft proposal should provide a safeguard against contamination of non-ruminant PAP with ruminant material. If contamination of non-ruminant PAP is prevented, it would follow that there would be no BSE risk if feed containing that uncontaminated non-ruminant PAP were fed, inadvertently or deliberately, to a species for which it was not
intended. However, intra-species recycling would remain a hazard if same-species feeding were carried out.

5.13 The EFSA 2007 opinion expresses some uncertainty in its conclusions on risk, as:
- they are based on limited evidence on the susceptibility of non-ruminants to TSEs;
- experiments in mice expressing the porcine prion protein suggest that pigs could acquire a transmissible, sub-clinical, infection from bovine BSE and that pigs are highly susceptible to ovine BSE. This means that the enforcement of the controls to prevent intra-species recycling in non-ruminants is important in reducing the risk to humans.

5.14 The EFSA 2007 opinion also states that, if a TSE were identified in pigs or poultry under natural conditions, the assessment that the proposed changes to the feed ban would pose negligible risk would no longer be valid.

5.15 Given that the proposed changes allow for indirect recycling – pig PAP being fed to poultry and poultry PAP being fed back to pigs in a continuous cycle - the caveat noted in 5.14 is extremely important.

5.16 Neither EFSA nor SEAC has looked directly at the proposed feeding of non-ruminant PAP to fish. Feeding of non-ruminant blood meal (a PAP) to fish is already permitted. There is limited scientific evidence that when fish are experimentally-dosed with BSE-infected brain tissue there are changes in the fish brain that could be some form of pre-clinical TSE. However experiments to clarify if these changes are transmissible are still ongoing. Should BSE be transmissible to fish, a risk could arise if fish feed were to be contaminated with ruminant PAP and fishmeal, derived from fish that had been fed the contaminated feed, were, in turn, to contaminate ruminant feed. Given the low level of BSE in Europe - and providing that the controls are fully enforced - the risk of triggering a BSE epidemic in this way is considered negligible. If it were to be demonstrated that fish could acquire a zoonotic TSE, then the risk would have to be re-assessed.

6. CONTROLS AND ENFORCEMENT

6.1 The current legal pathways for ABP, as well as the potential pathway for contamination of animal feed with high-risk (category 1) material if non-ruminant PAP were allowed in feed for non-ruminants, are indicated in the diagram at Annexe C. (Category 2 material is not shown as this material does not give rise to a TSE risk and may not be used as raw material for PAP).

Slaughterhouses and cutting plants

6.2 Under EU ABP rules, as soon as operators generate ABP they are required to identify them and ensure that they are disposed of in accordance with ABP rules. EU TSE and ABP legislation requires operators to stain and dispose of SRM as category 1 ABP. Compliance with these requirements in
slaughterhouses and cutting plants in GB is monitored and enforced by FSA Operations Group (DARD in NI).

6.3 Every carcase is required to undergo official inspection before application of the health mark to signify that both hygiene and SRM requirements have been met. The number of instances in which Operations Group inspection staff have reported finding incomplete removal of SRM during the course of inspections is very low (11 in the period July 2010 to June 2011), which indicates a high level of operator compliance with the SRM requirements. In each case, immediate corrective action is taken and referral for prosecution considered.

6.4 Any risk that non-ruminant ABP that is intended for production of PAP for use in feed could be contaminated by ruminant material, and specifically SRM, at the slaughterhouse, would be avoided if such ABP were to be sourced only from slaughterhouses that do not slaughter ruminants. However, if, as the Commission proposes (see Annexe B), abattoirs producing such non-ruminant ABP could be authorised to slaughter ruminants, then controls would be needed to ensure that the non-ruminant ABP could not become contaminated with any ruminant material. The responsibility for enforcing such controls in GB could also (subject to agreement with Defra and the devolved administrations for Wales and Scotland) fall to FSA Operations Group.

ABP processing plants

6.5 The next stage in the chain for most ABP is the processing plant, where ABP is rendered prior to either destruction or placing on the market for a permitted use, depending on the category of the material. Maintaining separation of the different categories of ABP throughout transport and processing, until the derived product leaves the processing plant, is fundamental to ensuring that, once it has been identified as category 1 ABP, SRM does not contaminate low-risk material.

6.6 All processing plants must under EU ABP rules be approved by the competent authority (Defra or the relevant devolved administration). One of the key requirements is that the plant must have procedures in place to ensure that different categories of ABP are kept separate from each other at all times, appropriately treated and, where necessary, sent for disposal by a permitted route. These procedures are well-established and are monitored and enforced by the AHVLA in GB and the Department of Agriculture and Rural Development (DARD) in NI. The requirement to mark products derived from category 1 or 2 ABP with GTH is intended to enable any contamination of category 3 ABP with higher risk material to be checked. Despite these controls, a risk of accidental cross-contamination exists, e.g. during transport, leading to material getting into the wrong processing line. There is also an incentive for deliberate switching of material, given the difference in value of products derived from category 1 and category 3 material.

6.7 If non-ruminant PAP were to be allowed to be used in feed for non-ruminants of a different species, then additional separation requirements for production
of PAP from pigs and poultry would need to be built into the existing requirements for separation of different categories of ABP at any plant processing pig and/or poultry ABP. This would require a review of the plant’s approval and potentially changes to its structure and operations. Plants processing ABP from more than one species that wish to produce PAP for use in feed for non-ruminants would require authorization to do so by the CA, which must be satisfied that effective measures to prevent cross-contamination are in place. Alternatively, should more plants opt for single-species processing following such a change, the controls needed would be simplified and any risks of cross contamination at the plant reduced.

The BSE-related controls on production and use of feed

6.8 AHVLA is responsible, on behalf of Defra and the devolved administrations in Wales and Scotland, for carrying out a GB programme of inspections and feed sampling that meets the requirements of GB and EU TSE legislation (the national feed audit (NFA))\(^7\). AHVLA is also responsible in GB for enforcing compliance with the feed ban in conjunction with the local authority. DARD has similar responsibilities in NI.

6.9 AHVLA and DARD already have experience under the NFA of applying controls on the use of restricted protein (which may be fed to non-ruminant but not ruminant farmed animals). The restricted protein most used in the UK is fishmeal. The controls that would be required in relation to the use of non-ruminant PAP in feed if the ban were relaxed would be analogous to those currently applied to use of fishmeal and other restricted proteins. More detail of the control activity under the NFA is at Annexe D.

6.10 The results of the feed inspection and sampling programme carried out by AHVLA and DARD indicate a high level of compliance with the feed controls. In 2010 in GB, a total of 2,690 inspections were carried out with two breaches found. A total of 6,562 samples of feed materials or compound feed were tested, of which three were found to contain prohibited PAP. In NI in 2010, 177 inspections were carried out and 242 samples taken, with no breaches found.

7. STAKEHOLDER AND CONSUMER ENGAGEMENT

7.1 Defra and the devolved rural affairs departments have written to industry and consumer representatives inviting their views on the Commission proposal and its scope. A summary of the responses received, provided by the relevant departments, is at Annexe E.

7.2 Which? advocates a particularly cautious approach, given that failure in the early years of the BSE crisis to implement effective feed controls allowed the disease to continue to spread with consequences for human health. Which? notes that the EFSA QRA relies on the continuation of other measures such as SRM controls and highlighted two areas that it considers need to be

\(^7\) these controls are separate from the feed hygiene controls, for which the Agency has policy responsibility
addressed before the controls are relaxed: the uncertainties related to atypical BSE and the continued development of analytical methods to improve the limit of detection of animal proteins in feed. Which? concludes that it is appropriate to review the controls over PAP but is concerned that changes at this stage may be premature and urges Defra and FSA to ensure that the Government’s position continues to be based on a precautionary approach. Effective enforcement of the controls must also be ensured.

7.3 Industry respondents broadly support the proposal, with several considering the change to be scientifically justified and that it provides a sustainable source of high quality protein for animal feed. One large poultry producer cites health and welfare benefits to poultry of feeding a more digestible protein.

7.4 However, industry responses are qualified in various ways. Several regard consumer acceptance as critical to market acceptance of non-ruminant PAP as a feed material. The Agricultural Industries Confederation (AIC) and the NI Grain Trade Association (NIGTA) assess the current market acceptance level as zero, but expresses concern about the competitive position of the UK feed and livestock industry if products derived from animals fed on diets containing non-ruminant PAP were imported from other Member States. AIC and NIGTA note that there is already competition from third countries where there are no restrictions on feeding non-ruminant PAP. The joint response from the Foodchain and Biomass Renewables Association and the UK Renderers Association supports the channelling controls and the need to prevent intra-species recycling, and notes that the great majority of poultry PAP produced in UK is processed in dedicated facilities, although this is not yet common practice for pig PAP. AIC and NIGTA are however concerned about the lack of single species feed mills and consider that the cost of complying with requirements for strict separation could be prohibitive. Some respondents raise practical issues about achieving strict segregation and consider that some tolerance for cross-contamination should be permitted. Two respondents raise concerns about the proposal to apply less stringent restrictions to home compounders than to feedmills.

7.5 The All Party Parliamentary Group on Agroecology welcomes the proposal but is concerned that the benefits may be realised only by large pig or poultry farms and large poultry- or pig-specific slaughterhouses. It therefore supports those derogations that would allow the participation of small-medium sized mixed farms and slaughterhouses. It is also concerned that the compliance costs would negate any benefits of the change and calls for an in-depth study of the costs and benefits of introducing the relevant derogations.

7.6 There was no response from Muslim or Jewish organisations to the consultation. However, previous FSA dialogue with Muslim organisations on added water and pork protein in chicken indicates that the feeding of pig protein to poultry is likely to be unacceptable to Muslims.

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8 individual farmers who purchase restricted protein feed ingredients (e.g. fishmeal) and mix them with other feed ingredients to produce compound feed for use on their own farm
FSA consumer engagement work
7.7 The FSA has undertaken some work to gauge consumer views on the proposal.

7.8 In the first phase, four groups of consumers were recruited to take part in discussions. Participants were informed that pigs and poultry were omnivores and that use of pig and poultry PAP in feed had potential benefits for sustainability. On the whole, most participants were against the idea of feeding animals to other animals, considering it unnatural or unethical. A slight divide was apparent between younger and older participants. Younger participants were generally more malleable in their view and, whilst not necessary liking the idea of feeding PAP to other animals, appeared more likely to accept it as part of modern farming practice. The stronger recall of the BSE crisis of older participants pushed them further towards ‘against’ relaxing the ban. There was a strong sense in three of the four groups that consumers were risk-averse in relation to BSE and saw no compelling reason to change the current regulations, as they appeared to have worked well. Concerns about ‘human error’ and the risks of non-compliance by farmers were also quite prevalent.

7.9 Further work with consumers is being carried out. A full report of the findings will be available for the Board meeting.

Chief Medical Officers
7.10 The views of the UK Chief Medical Officers have been sought and will be reported to the Board when received.

8. VIEW OF THE ADVISORY COMMITTEE ON ANIMAL FEEDINGSTUFFS (ACAF)

8.1 ACAF considered the draft proposal at its meeting of 1 June 2011. A number of questions relating to the enforcement of the controls on feeding of non-ruminant PAP, including the testing methods to be used, were discussed. Possible benefits of allowing PAP back into feed for pigs and poultry, for example to animal health, were mentioned, as was the need for a cautious and precautionary approach in order to retain consumer confidence.

8.2 The relevant extract from the minutes of ACAF’s meeting is attached at Annexe F.

9. IMPACT AND SUSTAINABILITY

9.1 In principle, allowing pig and poultry PAP to be used in feed could have environmental and sustainability benefits. Rather than potentially having to be destroyed at a cost to industry (and leading to increased emission of CO₂), non-ruminant PAP could provide a sustainable source of high quality protein and minerals for animal feed, thereby reducing the scale of the EU’s protein deficit and reliance on imported and possibly unsustainable, environmentally-
damaging protein/mineral sources, such as soya grown on former rainforest land. In addition, as EU rules on feeding PAP exceed international standards, EU producers are potentially at a competitive disadvantage to non-EU producers exporting into the EU. The changes proposed could also create new export markets for EU non-ruminant PAP, as EU producers are not permitted to export non-ruminant PAP to third countries for uses prohibited within the EU.

9.2 A report, ‘Non-Ruminant Processed Animal Protein Market – Current Trends and Future Prospects’ (Damien Beaumard, August 2009), provides evidence on likely demand for non-ruminant PAP in feed for non-ruminants in relation to 14 member states, including UK, that represent 86% of pigmeat and 80% of poultry meat production. The report notes that the market for non-ruminant PAP has changed dramatically since the feed ban and that, over the years, demand from the petfood industry has greatly increased so that it now accounts for 80% of the supply of non-ruminant PAP in EU 14. Subject to some caveats, the report provides evidence based on a model that looks at ingredient price and nutrient content that, in EU 14, if the EU lifts the ban:
   (i) the demand for poultry meal in pig feed is likely to be zero;
   (ii) the only demand for pig meal in poultry feed is likely to be in broiler feed;
   (iii) there will be demand to incorporate pig and poultry meal into feed for farmed fish; and
   (iv) demand for pig meal for use in broiler feed is likely to be transient, as increasing demand for petfood and farmed fish feed will increase the market price of non-ruminant PAP.
Estimates of potential future usage of non-ruminant PAP are, however, subject to uncertainties. For example, price fluctuations in feed ingredients or the reaction of consumers may make it more or less attractive to incorporate this material in feed than predicted.

9.3 In the UK, the vast majority of pig and poultry PAP produced appears currently to be used for petfood or fertiliser rather than disposed of at a cost. The impact in the UK from lifting the ban could therefore be quite modest. Lifting the ban would however provide an additional option that could be used, subject to consumer acceptance, where the price of non-ruminant PAP is competitive with alternative feed stuffs or where its use is seen as having a particular benefit, e.g. for animal nutrition, that justifies any additional cost.

10. DISCUSSION

10.1 The measure that is preventing the spread of BSE infection in cattle is the ban on recycling of ruminant-derived PAP to ruminants. However, in order to make this ban fully effective, a wider feed ban – ultimately encompassing a ban on feeding all PAP (with limited exceptions) to all farmed livestock (the ‘total’ ban) – was imposed.

10.2 The proposal to relax the ban on non-ruminant PAP has been made against the background of two developments since the total ban was put in place:
• the continuing decline in prevalence of BSE in the EU to a very low level (which means that the risk that any animal slaughtered for human consumption will be infected is very low); and
• the development of a test able to determine the species origin of PAP, which improves the ability to monitor and enforce the feed controls.

10.3 The main question that has been considered in relation to the proposal is whether allowing non-ruminant PAP back into feed for non-ruminants might open a possible route by which farmed animals, particularly cattle, could be exposed to the BSE agent. Such a risk could arise if non-ruminant PAP for use in feed for non-ruminants were to be contaminated with material derived from a ruminant animal infected with BSE. If this were to happen, the non-ruminant species fed the contaminated feed could be exposed to the BSE agent. If any contaminated feed for non-ruminants were to cross-contaminate ruminant feed, ruminants, especially cattle, could be similarly exposed.

10.4 Provided the existing ABP rules and the proposed channelling requirements are complied with, the proposed changes would have no impact on the key measures that would continue to underlie the effectiveness of the feed ban in preventing the spread of TSEs, namely:
• the ban on intra-species recycling of terrestrial animal PAP via animal feed;
• safe sourcing - from low risk ABP - of animal material permitted to be used for animal feed; and
• the ban on feeding mammalian protein to ruminants.

10.5 The scientific advice from EFSA and SEAC indicates that, provided effective controls to prevent cross-contamination with ruminant material are maintained, the changes proposed would give rise to a negligible risk of transmitting BSE to pigs or poultry, or of prolonging the BSE epidemic in cattle. Consequently, the current high level of consumer protection from the risk of exposure to BSE would be maintained.

10.6 Any proposal to change one of the main controls on which the overall effectiveness of the BSE control regime depends – the SRM controls and feed ban with monitoring by surveillance – requires careful consideration to ensure that the protective effect of the system as a whole would be maintained. Given the above scientific advice, it is clear that the proposed changes would not affect an aspect of the feed ban that is critical to its continued effectiveness in preventing new BSE infections in cattle. As such, it is considered that the proposals would have little or no impact on the integrity of the BSE control regime as a whole, provided the above key controls continue to be effectively enforced.

10.7 The risk assessments assume that some cross-contamination of feed for non-ruminants, with infective material derived from ruminants, will occur. They do not, however, allow for any widespread, wholesale non-compliance or deliberate malpractice. Effective monitoring and enforcement along the whole chain, from the generation of ABP in approved meat establishments to the use on farms of feed containing non-ruminant PAP, would therefore be imperative.
However, the whole chain is subject to statutory monitoring and enforcement, and the CAs already have experience of applying controls of the type needed. The controls that require the separation of pig and poultry material, both from each other and from other animal material, would build on the existing ABP and feed ban controls. The results of inspections of the feed controls indicate that compliance with the feed ban in UK is currently high. The feed sector operates feed assurance schemes to assure the safety of both feed ingredients and finished feed.

10.8 While there is no evidence that the proposed changes could give rise to a risk of TSE in pigs or poultry, the current evidence does not enable such a risk to be excluded. There are possible options of a partial approach to lifting the ban, e.g. by allowing only the feeding of poultry protein to pigs but not vice versa, or of lifting the ban in stages. The experimental evidence that pigs may be more susceptible to TSE infection than birds might suggest a need for greater caution in relation to lifting the ban on pig PAP. In addition, a staged approach would prevent the indirect recycling referred to in paragraph 5.11, since e.g. poultry PAP could be fed to pigs but there would be no feeding of pig PAP back to poultry. However, based on the known risks, it is considered that the scientific evidence would not justify adoption of a partial or staged approach to implementation.

10.9 It is important, however, to note EFSA’s statement that its risk assessment would no longer be valid if a TSE were identified in pigs or poultry under natural conditions. If such a TSE were identified following adoption of the proposed changes, it would be necessary - immediately - to reinstate the full feed ban until a further risk assessment had been carried out.

10.10 Feedback from consumers so far suggests that consumer acceptance of non-ruminant PAP as a feed material is likely to be low and that consumers consider that the controls should not be relaxed if there is any possibility that doing so would result in an increase in risk, however small.

10.11 If the proposed changes were adopted, it is presently unclear how far the UK industry would take up the option to use non-ruminant PAP in feed for non-ruminants, given the current strength of demand for non-ruminant PAP for non-feed uses and the cost implications of the proposed channelling requirements. However, the proposed change would provide an additional outlet for non-ruminant PAP that would allow it to be used in feed where it is economic to do so. A potential for exporting non-ruminant PAP as a feed material would also be opened up.

11. CONCLUSIONS AND RECOMMENDATIONS

11.1 The decision on whether or not the UK should support the proposed changes to the feed ban is for Ministers in Defra and the rural affairs departments in the devolved administrations to take. The FSA’s role is to advise Ministers on food safety and the other interests of consumers in relation to these proposals.
11.2 The scientific advice is that the proposed changes would give rise to a negligible risk of transmitting BSE to any farmed animals. Consequently any increase in food safety risk to consumers would also be negligible. Making the change could therefore be justified in relation to consumers’ concerns that a high level of protection against the risk of BSE should be maintained.

11.3 However, this position depends on controls being in place that ensure that exposure of animals and humans to BSE risk continues to be minimised. The feed ban was originally extended to non-ruminant material for enforcement reasons, but these will no longer apply once a validated test able to determine the species origin of PAP is available. A well-established control system is in place in relation to the current ABP and feed ban requirements and these should be capable of being extended to include additional requirements for channelling of non-ruminant PAP. However, monitoring and enforcement of the controls would need to be sufficient to assure a high level of compliance with the new requirements.

11.4 If the change were made, it would open the option of using non-ruminant PAP in feed, although the use that would be made of this option is unpredictable. A lack of consumer acceptance, in combination with other market factors, makes it unlikely that there would at present be much if any demand for non-ruminant PAP as a feed material in the UK. Ministers should therefore be aware of the outcome of the FSA’s consumer engagement work on the proposal when they consider their decision.

11.5 On the food safety implications, the Board is recommended to agree to advise Ministers that

- the proposed relaxations of the feed ban would pose a negligible risk to consumers of exposure to BSE, provided that separate channelling of material derived from different species is strictly maintained throughout the feed chain and a suitable, validated DNA-based test to monitor compliance is available before the entry into force of any changes;
- the UK should not support the changes unless effective enforcement of, and a high level of compliance with, the controls to prevent cross-contamination of feed for different species can be assured;
- there is no evidence that the proposed changes could give rise to a new risk from a pig or poultry TSE, although some uncertainty on the susceptibility of non-ruminants to TSEs exists;
- if, following adoption of the proposed changes, a TSE were identified in pigs or poultry under natural conditions, it would be necessary immediately to reinstate the full feed ban until a further risk assessment had been carried out.

11.6 On the views of consumers, the Board is recommended to agree to advise Ministers that

- the consumer engagement work carried out by the FSA, limited though it is, indicates that the majority of consumers we spoke to are averse to the proposed changes, because of the perception that the feeding practices proposed would be unnatural and because they consider that controls
should not be changed if doing so would result in an increase in risk, however small;

- further communication with consumers is recommended to help their understanding of the risks and potential benefits of the changes.

11.7 The Board will be kept informed of developments as discussions on the Commission’s proposal progress.

For further information contact David Carruthers on 020 7276 8305, email david.carruthers@foodstandards.gsi.gov.uk
### THE CURRENT BSE-RELATED FEED CONTROLS

<table>
<thead>
<tr>
<th>Feed product</th>
<th>Ruminants</th>
<th>Non-ruminant farmed animals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permitted animal proteins</strong></td>
<td><strong>Permitted</strong> subject to required sourcing and processing standards under Animal By-Product controls</td>
<td><strong>Permitted</strong> subject to required sourcing and processing standards under Animal By-Product controls</td>
</tr>
<tr>
<td>- milk, milk-based products and colostrum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- eggs &amp; egg products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- gelatine from non-ruminants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- hydrolysed proteins derived from non-ruminants or from ruminant hides and skins</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prohibited processed animal protein</strong></td>
<td><strong>Banned</strong></td>
<td><strong>Banned</strong></td>
</tr>
<tr>
<td>Gelatine from ruminants</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Restricted proteins (i.e. restricted to non-ruminant feed use)</strong></td>
<td><strong>Banned</strong> except that fishmeal is permitted for use in milk replacer powder for unweaned ruminants – subject to authorization to make milk replacer powder containing fishmeal for unweaned ruminants and registration to feed such milk replacer in liquid form to unweaned ruminants</td>
<td><strong>Permitted</strong> subject to authorization to make feed with these products or registration/permission to use it in complete feed on farms where ruminants are present</td>
</tr>
<tr>
<td>- fishmeal (PAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- blood products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- blood meal (PAP) (only to be fed to farmed fish)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- di-calcium phosphate and tri-calcium phosphate (of animal origin only – not mineral)</td>
<td></td>
<td></td>
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</tbody>
</table>
ANNEXE B
(paragraphs 4.3 and 6.4)

PROPOSED CONDITIONS APPLICABLE TO PRODUCTION AND USE OF PAP (OTHER THAN FISHMEAL) DERIVED FROM NON-Ruminants, AND FEEDINGSTUFFS CONTAINING SUCH PAP, IN FEEDING NON-Ruminant FARMED ANIMALS (Version 2 of the draft proposal – subject to change)

a. Sourcing of ABP intended for production of PAP

Non-ruminant Category 3 ABP intended for production of PAP for use in feed for non-ruminants required to be derived from approved slaughterhouses that do not slaughter ruminants.

However, the competent authority (CA) may authorise the slaughter of ruminants in a slaughterhouse producing such non-ruminant ABP provided:

- the slaughter of ruminants is carried out in lines physically separate from slaughter of non-ruminants;
- facilities for collection, storage, transport and packaging of ABP of non-ruminant origin are kept separate from those for ABP of ruminant origin; and
- regular sampling and analysis of non-ruminant ABP is carried out to detect the presence of ruminant proteins.

b. Production of PAP

PAP required to be produced in approved single-species processing plants.

However, the CA may authorise the production of PAP for use in feed for non-ruminants in plants processing ABP from different species, where it is satisfied that effective measures to prevent cross-contamination are in place. These measures must as a minimum include:

- production of PAP derived from each species in a closed system physically separate from production of PAP from other species;
- bulk ABP derived from each species to be stored and transported in facilities physically separate from those for bulk ABP from other species;
- bulk PAP derived from each species to be stored and packaged in facilities physically separate from those for bulk ABP derived from other species;
- ongoing reconciliation between incoming ABP of each species and the PAP produced from each of them;
- regular sampling and analysis of the PAP derived from each species to verify absence of proteins from other animal species produced in the processing plant.

c. Production of feedingstuffs containing non-ruminant PAP

Feedingstuffs containing non-ruminant PAP to be produced in establishments authorised by the CA dedicated to producing feed for a single species.
However, the CA may authorise the production of feedingstuffs containing non-ruminant PAP in establishments that are not dedicated to producing feed for a single species provided, as a minimum:

- bulk and packaged feed destined for each animal species are manufactured in facilities physically separate from facilities for feed for other animal species;
- bulk feed destined for each animal species is kept, during storage transport and packaging, in premises physically separate from those used for other animal species;
- records detailing the purchases and uses of PAP and sales of feed containing such products are kept available to the CA for at least 5 years;
- regular sampling and analysis of feed produced for each animal species to verify absence of unauthorised PAP.

Home compounders producing complete feed from feedingstuffs containing non-ruminant PAP shall not require specific authorization provided:

- they are registered by the CA;
- they keep only animal species different from those from which the PAP contained in the feedingstuffs was derived;
- complete feed produced is only for home use;
- the feedingstuffs containing PAP derived from non-ruminants contain less than 50% protein.

d. **Labelling**

Documentation and labelling for both PAP derived from non-ruminants and feed containing such PAP to indicate species from which PAP derived and species to which it shall not be fed.

e. **Use and storage of feed**

Use and storage of feed containing non-ruminant PAP to be prohibited on farms keeping animal species for which the feed is not intended.

However, the CA may authorise the use and storage of feed containing non-ruminant PAP on farms keeping species to which it must not be fed, provided measures are implemented on-farm to prevent its use for feeding those species.

f. **Transport**

Transport of non-ruminant material (whether ABP moving to a processing plant, PAP intended for use in non-ruminant feed or bulk feed containing non-ruminant PAP) must be in vehicles dedicated exclusively to transporting material derived from a single non-ruminant species.

Vehicles must be thoroughly cleaned by a procedure authorised by the CA before use for transporting material derived from another species.
g. **Imports**

Each consignment of imported non-ruminant material (ABP or PAP) intended for non-ruminant feed, or imported feed containing non-ruminant PAP, to be sampled and analysed to verify absence of ruminant protein before release for free circulation in the EU.

Transport of imported non-ruminant material (ABP or PAP) to be in dedicated vehicles, subject to cleansing as above if used previously for transporting material derived from other non-ruminants or ruminants.
POTENTIAL PATHWAY FOR CONTAMINATION OF FEED IF BAN ON NON-RUMINANT PAP LIFTED

SRM incompletely removed at slaughterhouse/cutting plant

Category 1 ABP including bovine SRM

Processed at rendering plant

Cross-contamination at rendering plant

Processed Category 1 ABP

Disposal / destruction

Current legal pathway (not exhaustive)

Possible future pathway

Contamination pathway

Bovine Category 3 ABP

Processed at rendering plant

Cross-contamination at rendering plant

Processed Category 1 ABP

Ruminant PAP

Pet Food

Non-ruminant Category 3 ABP

Processed at rendering plant

Cross-contamination at rendering plant

Non - ruminant PAP

Feed for non-ruminants

Ruminant Feed

(Annexe C
(paragraph 6.1)
NATIONAL FEED AUDIT IN GB AND NI

1. The National Feed Audit (NFA), which is carried out by Animal Health Veterinary Laboratories Agency (AHVLA) in GB and DARD in NI, monitors compliance with the BSE-related feed controls. The inspection programme was designed using the risk assessment model provided in Commission Recommendation 2005/925/EC, which specifies the types of premises and the respective risk criteria to be considered in drawing up a programme of controls relating to the feed ban.

2. The risk assessment establishes the level of visits needed to audit feed production and handling standards throughout the feed supply chain, including end users on-farm. The NFA includes taking more than 6,000 feed samples per year and testing these for prohibited animal proteins by a range of methods of analysis. The programme also covers investigation of any potential breach of the ban, and appropriate protection and enforcement action.

Controls on use of restricted protein in animal feed

3. The use of restricted protein in animal feed manufacture requires authorization by the Competent Authority. In order to meet authorization standards, manufacture of feedingstuffs containing restricted proteins must either:
   - take place on premises which do not produce feedingstuffs for ruminants;
   - or, if production takes place on premises where feedingstuffs for ruminants are produced,
   - meet separation standards designed to ensure that restricted proteins do not get into ruminant feeds.

   For example, manufacture involving restricted proteins must take place in facilities physically separate from facilities where ruminant feed is produced. By far the most-used restricted protein in the UK is fishmeal.

4. The same requirements for authorization and authorization standards are applied to on-farm mixers using restricted proteins, whether or not ruminants are on the farm. If ruminants are present on the farm, additional standards apply that are intended to ensure that ruminants can have no access to restricted proteins.

5. Farms that keep ruminants and also use and store feedingstuffs containing restricted protein must be registered. The conditions for registration require AHVLA (DARD in NI) to be satisfied that measures are in place on farm to prevent feed containing restricted proteins from being fed to ruminants. Farms requiring registration have been identified through comparing information from feedmills using fishmeal on premises to which feed containing fishmeal has been supplied and database details of farms keeping ruminants.
6. A zero tolerance is applied to microscopic levels of fish tissue found in adult ruminant feed. Likely actions on finding would involve the service of notices requiring either destruction of contaminated feed or re-working into non-ruminant feed.

The GB inspection & sampling programme
7. Inspection is risk-based and includes ports, feedmills, hauliers, mobile mixers, on-farm mixers using fishmeal, livestock farms (including home compounders), stores and intermediaries. The programme is biased towards ruminant feed production, while still covering non-ruminant mills and farms.

8. Ports where bulk feed enters are inspected from once to 3 times per year, based on tonnage and entry of certain higher risk feeds. A maximum of 5 feed materials present on the day of visit are sampled. Higher priority for sampling is given to third country imports.

9. Feedmills producing ruminant feed are inspected more frequently (twice a year) than those producing non-ruminant feed (once a year). More samples (5) are collected at each inspection at ruminant mills than at non-ruminant mills (2). Sampling priority is also biased towards ruminant feed. Additional visits are made to feedmills including bakery waste in finished rations.

10. On-farm mixers using fishmeal where ruminants are kept or ruminant feed is produced are targeted for biennial or annual inspection.

11. Hauliers of bulk restricted protein are inspected annually.

12. A national annual total of around 1320 livestock farms is inspected, broken down by region on the basis of the number of ruminant premises in each. Farms keeping ruminants, particularly cattle on-farm mixers, farms needing authorization or permission to use restricted proteins, users of organic fertiliser and soil improver (which may be produced from Category 2 or 3 animal by-product), hobby farms, farms with other issues e.g. welfare are prioritised for inspection.

Compliance and enforcement
13. AHVLA advise that compliance with the ban by the feed industry over the last 6 years has been very good, with no evidence of larger operators breaching the ban deliberately. The results of inspections and sampling in Great Britain over the past three years are shown in the table below. Incidents have usually involved farmers with many other issues on farm, usually through feeding of petfood containing or contaminated with animal protein. The majority of positive samples in 2008 were accounted for by a single large-scale incident, which involved imported wheatfeed that contained petfood residues.

<table>
<thead>
<tr>
<th>Year</th>
<th>Inspections</th>
<th>Procedural breaches</th>
<th>No. samples</th>
<th>Sampling breaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2322</td>
<td>5</td>
<td>9598</td>
<td>47</td>
</tr>
<tr>
<td>2009</td>
<td>2537</td>
<td>7</td>
<td>7865</td>
<td>2</td>
</tr>
</tbody>
</table>
The equivalent figures for feed inspection and sampling by DARD in NI are:

<table>
<thead>
<tr>
<th>Year</th>
<th>Inspections</th>
<th>Procedural breaches</th>
<th>No. samples</th>
<th>Sampling breaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>687</td>
<td>0</td>
<td>363</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>438</td>
<td>0</td>
<td>376</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>177</td>
<td>0</td>
<td>242</td>
<td>0</td>
</tr>
</tbody>
</table>

14. Enforcement action depends on the seriousness of the breach and can involve verbal guidance, official letters, notices restricting movement of feed and animals, slaughter without compensation, disposal of feed and cleaning of equipment. Enforcement is carried out in liaison with Local Authorities and/or Defra Investigation Services. Whether tracing (of non-compliant feed or of animals that have had access to it) is carried out depends on the seriousness of the breach and mainly occurs when bovine feed is contaminated with protein of bovine origin or bovines have had access to feed contaminated with protein of bovine origin. In a more serious incident, a veterinary risk assessment is completed by the Lead Veterinary Officer for the NFA with recommendations for action on which FSA and Defra are invited to comment.
RESULTS OF STAKEHOLDER ENGAGEMENT CARRIED OUT BY DEFRA AND THE DEVOLVED ADMINISTRATIONS

Defra and the Devolved Administrations have written to stakeholder organisations to seek comments on the Commission’s draft proposal to allow the feeding of PAP derived from non-ruminants (other than fish) to non-ruminants of a different species subject to channelling and testing controls. The organisations were invited to comment on the scope, the practical aspects and the derogations in the proposal and to provide detailed information on the possible costs and benefits associated with any change.

**Defra**

In June 2011, Defra wrote to 70 organisations of which 12 provided comments.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Respondent</th>
<th>Summary of Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bernard Matthews Foods Ltd</td>
<td>We have an interest in what is happening on the re-introduction of this material as a protein source, in single species mills, and avoiding any use of bovine or ovine meat and bone meals. The livestock benefits in terms of improved livability, reduced mortality in rearing, better leg strength, and a more digestible protein are all good reasons for re-introducing this protein source. The current systems for burning, burying and bio-digestion of such poultry waste are all problematic, and use as PAP seems far better. However it will be critical that the DEFRA and FSA press teams outline the many benefits of this and get consumers to buy in long before any use is finally allowed in early 2012. We see the reduction in the volumes of soya from Brazil as a huge consumer benefit, as it reduces imports, uses a good waste stream in a controlled manner, and enhances the living conditions and welfare of poultry.</td>
</tr>
<tr>
<td>2</td>
<td>National Farmers Union (NFU)</td>
<td>The NFU has always supported a scientific and common sense approach to the implementation of EU regulation and therefore supports the revision of the feed ban on PAP for the feeding of pigs and poultry. The proposed amendment to the rules governing the feeding of PAP derived from non-ruminants (would allow non-herbivore monogastrics to be fed a diet containing PAP from another species) is backed by science and could help provide a practical, sustainable solution which would to reduce the reliance of UK poultry producers on imported protein. The NFU believes that the current use of PAP as fertilisers, compost and carbunat for cement works is a waste of a highly valuable resource. It is much more sustainable to use these products for the feeding of non-ruminants animals provided intra-species recycling is prohibited by the use of strict controls which will avoid cross contamination. While the NFU and many of its poultry farming members support the re-introduction of porcine PAP into poultry diets they recognise that consumer confidence is paramount. Regardless of science PAP can and will only be used by British poultry farmers if it is fully accepted by retailers and consumers. British farmers want to maintain the highest levels of confidence in food and feed safety. It must be demonstrated, through the amendment and application of the regulation, that use of animal protein in feed can be achieved safely with full traceability. There must be no risk of intra-species recycling and robust and reliable testing methods to identify the species origin of proteins.</td>
</tr>
</tbody>
</table>
The NFU believe that should UK consumers find the reintroduction of PAP into poultry diets unacceptable there is a value to be gleaned from the processing of pigs and poultry by opening up markets for PAPs. In the UK much of this material has to be either incinerated or disposed of in landfill. The amendment to the regulation will allow the export of PAP which could be utilised by other countries or within aqua-feeds where it could be used as a cost effective and sustainable replacement for fishmeal. Opening up new markets for PAPs would add more value to non-ruminant animal by-products and will in turn increase the value of live poultry and pigs generating new revenue for the sector.

The feed industry which supplies the pig and poultry sectors is highly advanced and has certain facilities dedicated to the respective specific species. In these cases from the point of material input to end use, poultry feed follows dedicated supply routes, and is stored on farm in dedicated bins, usually before automatic dispersal to growing sheds. These dedicated supply and utilisation mechanisms, mean that PAPs could be safely utilised by the appropriate species of livestock with negligible risk or no risk of accidental inappropriate use. The actual amount of porcine PAP of UK origin that would be available currently for use in poultry feed would be limited due to the relatively small scale of the UK pig meat industry and lack of dedicated lines for its processing, however it could be supplied by other Member States operating under the same robust procedures, if there was demand in the UK.

The NFU believe that the proposed amendments should be supported providing strict and robust procedures are in place to avoid cross contamination and that Defra are confident that this will be achieved by the amendments to the regulation. The level of use/utilisation of PAP will then be market driven.

<table>
<thead>
<tr>
<th>3</th>
<th>British Trout Association (BTA)</th>
<th>BTA support moves to allow the feeding of pig and poultry PAP to pigs, poultry or fish of a different species, noting the requirements that will be stipulated for both tight channeling and testing controls. We remain unclear how the ban on intra-species recycling of PAP as required under the EU Animal By-Products Regulation (1069/2009) will assist in providing security with regard to EU TSE rules in relation to feed ingredients derived from fish, and suggest that this point should be raised during scrutiny by SCoFCAH.</th>
</tr>
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<tbody>
<tr>
<td>4</td>
<td>Country Land and Business Association (CLA)</td>
<td>The CLA has always felt that these matters ought to be decided on the basis of sound science and we have followed developments in this field with care. It is our considered opinion that it is important that the TSE Roadmap 2 does not lose momentum, and that provided safety is assured, we must press on with the process. Therefore we feel that the draft rules are another small but useful step along that road.</td>
</tr>
<tr>
<td>5</td>
<td>Agricultural Industries Confederation (AIC)</td>
<td>A key consideration for AIC is to make certain that any modifications to the Regulation 999/2001 continue to maintain feed safety and consumer protection as the highest priority under this legislation. Proposed Channelling Controls The majority of feed mills in the UK produce feed for more than one species of animal. Thus, the strict requirements to avoid any cross-contamination which could result in feed for a given species with PAP derived from the same species being fed will, we expect, prohibit the reintroduction of non-ruminant PAP for non-ruminants. Even if a tolerance level and means of</td>
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</tbody>
</table>
enforcement were available, we consider that consumers in the UK are not prepared to accept the feeding of non-ruminant PAP in non-ruminant feeds at least for the immediate future.

Points of concern for AIC
The two points of concern for AIC which are not addressed by this proposed regulation are (i) the zero-tolerance of fishmeal in feed for adult ruminants; and (ii) the ban on feeding of surplus foods containing ruminant gelatine to farmed animals.

Competition considerations on the re-authorization of non-ruminant PAP as a feed material
A major issue to be addressed by the UK feed and livestock industry and the UK Government is the likely market acceptance of non-ruminant PAP as a feed material. AIC’s current assessment is that the potential market acceptance level is zero. The UK feed industry has very little experience of porcine blood products in piglet diets, because it is subject to a voluntary UK ban imposed by the Assured British Pigs’ Certification Standard. Similarly, the Label Rouge feed standard for Scottish farmed salmon states that feed materials should be of marine origin. As a consequence, legally permitted blood products and blood meal from non-ruminants are not used in fish feed manufactured in the UK. The competitive position of the UK feed and livestock industry is of great concern to AIC if farm livestock assurance schemes and retail specifications continue to ban the use of non-ruminant PAP as a feed material yet livestock products derived from animals fed on diets containing such ingredients are imported into the UK from other Member states. The UK feed and livestock industry is already in competition from imports from third countries where the intra-species ban might not be in place and the use of PAP as a feed material is legal. Were it decided that this position should be changed, a major communication strategy would be needed for the UK as a whole.

Possible costs and benefits associated with the change
If the proposed regulation was to be adopted in its present form it would impose a cost, which we cannot quantify, along the PAP production and supply chain. This is because of the requirement for physical separation. We would expect that when non-ruminant PAP becomes available as a feed material in the EU, it would be priced at a level relative to other protein sources and principally soya.

Conclusion
The Commission should seek to communicate to the general public that the non-ruminant PAP produced and used in accordance with EU legislation is safe if it wishes to see non-ruminant PAP used in non-ruminant feeds in the EU.

Foodchain and Biomass Renewables Association (Fabra) and UK Renderers Association (UKRA) – joint response.
Fabra and UKRA endorse the approach to amend the rules on feeding of non-ruminants with PAP derived from non-ruminants, while respecting the intra-species feed ban. We consider that the overall approach of the draft Commission Regulation is positive and reflects the need to provide safe and sustainable proteins for non-ruminant species. In addition we consider that non-ruminant PAP are more sustainable than many vegetable proteins and are actively involved on research to confirm our preliminary findings. In the overall context of feed ingredient supply, non-ruminant PAP could substitute for and replace up to 10% of the Soya bean imported into the UK every year. We would also like to place on record the fact that we consider that ruminant PAP poses no (TSE) risk to animals farmed for food production. Nonetheless, we understand that ruminant protein requires control for the foreseeable future and we recognise the need to base the main control tools
on the detection of ruminant proteins.

Practicalities
Fabra and UKRA are content that the principle of the channelling approach is appropriate and can confirm that the great majority of poultry PAP produced in the UK is already processed in dedicated facilities. It is not yet viable or common practice to produce porcine PAP in dedicated lines, but it is expected that this will be the case when the incentive from the approval perspective is in place. The major point where channelling appears to have some problems is in the feed mills. We understand that most of the feed mills producing aqua feed are dedicated and that there are some dedicated feed mills producing feed for poultry. However we understand there is little or no dedication for mills producing feed for pigs. It also seems anomalous that “home mixers” are afforded further derogations, when it feels likely to us that home mixers are likely to be operating on mixed species farms. We appreciate that certain derogations regarding segregation and approval will be necessary for the system to work in practice. However, we are concerned that too much of the detail regarding these derogations may be left to Member State level leading to anomalous and differing standards. To guard against this we would expect robust and binding guidance to be provided alongside the regulations.

The draft regulation appears to request ruminant species identification in the “Raw material”. We consider this to be totally impractical and as it has not even been evaluated as a practical, working method, it is unlikely to be available in the near future. We fail to see what added value in terms of additional security would be achieved by applying such a test in any case. This opinion is particularly relevant if PCR testing on derived products is the preferred method of control.

Control Tools
We understand that the preferred test will almost certainly be a PCR based test. For the purposes of Control we propose that two different controls need to be considered:

(i) Ruminant testing: We consider that the limits of detection / threshold/ tolerance level of the chosen method should be in accordance with the same tolerances applied to the Official EU feed microscopy method. It is important to note that the tolerance level is a risk-based level and the limit of detection is a function of the testing method. Any approved detection methods should have a detection limit appropriate to the tolerance level. This would maintain or improve the level of (TSE) risk reduction expected by society in general. We would also expect that an approved PCR method would work together with the Official feed control (microscopy) method in current use, in that samples indicating a possible presence of terrestrial protein by microscopy, would subsequently tested by PCR.

(ii) Intra-species testing: For testing of poultry in porcine PAP and vice versa we consider that different tolerance levels are appropriate. The reason for this is that in our opinion the prevention of intra-species recycling is to enhance the precautionary principles in accordance with a theoretical risk of disease transmission among the same species.

In Summary
Fabra and UKRA welcome the proposal as drafted. However, If the draft regulation is to finally result in a practical regulation then serious consideration has to be given to the adoption of appropriate tolerance levels for ruminant or intra-species (non-ruminant) species respectively and to the establishment of clear Community wide guidance on the application of the
### 7. British Meat Processors Association (BMPA)

The BMPA welcomes the proposal to permit the feeding of processed animal proteins to non-ruminants. The BMPA strongly believes that decisions to ban products or manufacturing methods should be based on scientific evidence and advice, not on concerns about the consumer acceptability of a product – the market will naturally exclude items consumers are concerned about. Similarly, we also believe that scientific evidence should be the basis for decisions about the risk level of cross-contamination and the tolerance levels that are set. We are wary of risk levels being set unnecessarily low and preventing the manufacture of sufficient quantities of PAP feed to supply industry. We are content that at the moment the proposal restricts the introduction of PAP sourced only from non-ruminants and being fed only to non-ruminants and forbids intra-species recycling.

Unfortunately, we cannot give figures on how much of an impact the lifting of the ban would have as feed prices move so much and it is not yet clear how much PAP would be available for use. However, given current feed prices, we can only welcome any move to increase the amount of feed on the market. Another factor in our support for the change in feed restrictions is the potential growth in export trade – the drop in restrictions would permit sale to overseas markets. Again though, it is hard to quantify the impact given the uncertainties mentioned above about prices and quantity.

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### 8. National Pig Association (NPA)

The NPA supports the draft commission regulation in so far as PAP must be given due consideration as a viable alternative protein source with regards to diet formulation and soya inclusion. PAP has the potential to provide a sustainable high-quality source of protein and minerals for pig feed and could relieve some of the considerable pressure on proteins imported from outside the EU. However the NPA also recognises that consumer perception and retailer reaction will ultimately drive and influence the pig industry direction in future. In order to facilitate general acceptance a suitable alternative brand name such as “co-product protein” has been suggested.

Until a European commodity price is established it is difficult to assess its potential for use in pig diets manufactured in the United Kingdom. We are informed by Fabra that poultry PAP is currently sold to the pet food industry at circa £450/tonne. If this level of pricing remained unchanged regardless of continental prices, UK manufactured poultry PAP would probably be too expensive for inclusion in pig feed (at today’s prices), in comparison to other protein sources.

With regards to porcine PAP, Fabra estimates that the UK pig industry might be able to produce 2,000 tonnes/week of category 3 material for rendering. A small rendering plant requires at least 1,000 tonnes/week, therefore we can surmise this is likely to have a negligible impact on UK poultry feed prices and volume would be insignificant.

The NPA also wholly agrees that any review of the TSE rules must be primarily driven by scientific advice and technical issues related to the control and enforcement of any new measures and that the introduction of PAP must be accompanied with science-led safeguards.

Concerns and comments relating to the regulation document are discussed below.

**Physical separation**
The term ‘physical separation’ must be further defined to prevent any confusion and therefore ensure complete compliance with the regulations, for example completely isolated building areas. If in future PAP were to be included in UK pig diets, the operation of segregated feed mills would be extremely difficult as the majority produce both pig and poultry rations. The NPA would recommend that instead a contamination tolerance would need to be adopted to enable practical usage (suggested thresholds detailed below in ‘official controls’ section).

Home compounders
The NPA is particularly concerned with the proposed derogation as it would consider home compounders to pose the most significant contamination risk. With reference to the above TSE rules review principle which is primarily driven by scientific advice, we strongly recommend that contrary to the existing document, home compounders are subject to as stringent restrictions with regards to the production, storage and use of processed animal proteins by following risk based protocols and should be registered and authorised by the competent authority at all times. The NPA however has serious concerns over the resource and ability of the competent authority to adequately audit large numbers of home compounders on a consistent basis. The NPA would therefore suggest a derogation for home compounders should not be permitted. If this protocol cannot be guaranteed the use of PAP should subsequently be restricted to accredited feed mills only.

Derogations
NPA requests further detail and clarity on why a derogation would be granted, specifically what the derogation would entail and the consequent implications for contamination risk management on farm etc. This must be clarified at an EU level. In addition the use and storage of feedingstuffs containing blood products shall be prohibited in farms where ruminants are kept but this can be subject to a derogation. The NPA would strongly recommend no possible derogation particularly on this specific point.

Official controls
With regards to testing and official controls employed; if PAP is reintroduced the NPA would suggest that practical, feasible protocols should be followed similar to the GM protocol for the feed industry (such as 0.1% tolerance for ruminant contamination, 2% tolerance for pig and poultry contamination). However, the NPA does not possess the technical expertise to advise on this issue but would like to recommend that the competent authority considers such thresholds. NPA supports the regular examination of laboratory competence in the carrying out of official controls and highlights the importance for such laboratories to follow thorough processes and protocols which absolutely need to be consistent across all member states.

In Conclusion
If the reintroduction of PAP for use in pig and poultry diets is approved at an EU level, the UK consumer, retailer and primary pig producer will need to decide whether they wish to use the product. If UK assurance schemes permit the use of PAP in UK pig and poultry feeds, producers that choose not to use this feedstock will need to derive a premium from retailers to compensate their opportunity cost – this has always proven difficult to achieve/maintain using the UK’s experience of higher welfare standards. It is also likely that some retailers may seek to ban its use in domestic pig production but will, nevertheless, import pig meat from continental pig farms that do use PAP.

Grain and Feed
Gafta is pleased the Commission is considering different options of
<table>
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<tr>
<th>Trade Association (Gafta)</th>
<th>reviewing the feed ban proposing to allow the feeding of PAP derived from non-ruminant animals and supports the proposal to allow the feeding of pig and poultry PAP to be reauthorized for feeding of non-ruminants which is also backed by the Council and the Parliament. However, the trade is disappointed that the proposal does not go further in lifting the feed ban in its entirely and allowing the feeding of PAP to all ruminants particularly as the EU is protein deficient. Furthermore, the trade is disappointed that the document does not mention the lifting the ban on feeding of fishmeal to all ruminants as there is no justified scientific evidence which illustrates the risk of transmitting BSE. Gafta is awaiting validated testing methods to distinguish between PAP originating from different species and questions how strict channelling will work in practice and the resulting costs for our sector.</th>
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<td>Pet Food Manufacturers Association (PFMA)</td>
<td>The PFMA is concerned that the lifting of the ban to feed PAPs to farm animals other than ruminants could, if not enforced and controlled effectively, be a risk to animal welfare and public health. Whilst segregation and dedicated plants are foreseen in the draft Regulation, exemptions at national level from this are equally foreseen in the draft. With reduced finances available for official controls and enforcement at Member States’ level, the risk of cross-contamination and the unintentional (or fraudulent) feeding of PAPs to farm animal species for which the feed is not intended for could increase in practice. PFMA members are concerned with regards to the use of the term “herbivores” in the proposed amendment as this term is not defined in the TSE regulation. PFMA would need to understand the possible implications with regard to the production of pet food before being able to provide additional comments.</td>
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| Which? | **Significance of Feed Controls**  
We consider that a particularly cautious approach is necessary in relation to animal feed controls to prevent TSEs. Changes to feeding practices are considered to be have been the reason why BSE spread so rapidly. In the early years of the crisis, failure to ensure effective feed controls were implemented and enforced resulted in the continuing spread of the disease and resulting human health consequences. It was for this reason, including problems of cross-contamination between feed for different species, that the total ban was eventually introduced.  

**Scientific advice and uncertainties**  
The European Food Safety Authority (EFSA) opinion on this issue assesses the risk as meaning that less than one additional BSE infected cattle could be expected in the EU cattle population per year with an upper 95 per cent confidence. The Panel does, however, make it clear that this assumes other measures such as Specified Risk Material (SRM) controls and monitoring are carried out effectively. As BSE control measures are closely inter-linked, it is essential that it can be ensured that the scientific assumptions made about the application of one part of the control measures, when assessing the risk of potential changes to others, are valid. There are also two areas where uncertainties are highlighted in the Opinion which we consider need to be adequately addressed before the controls are relaxed – the many uncertainties related to Atypical BSE and the continued development of analytical methods to improve the limit of detection of animal proteins in feed and to take into account the risk of re-emergence of TSE in cattle in case the use of some mammalian PAPs for feeding animals should be reintroduced.  

**Conclusion**  
It is appropriate to review the controls over PAPs, but we are concerned that |
any changes may be premature at this stage and urge Defra and the Food Standards Agency to ensure that the Government’s position is still based on a precautionary approach that puts public health first. EFSA has repeatedly highlighted uncertainties and urged caution in relation to the potential implications of Atypical BSE which is poorly understood and we therefore think that this issue needs to be given greater consideration. The scientific evidence suggests that the additional risk posed by any changes may be very small but this assumes that other TSE control measures are being effectively implemented. It must be ensured that this is the reality. It is also fundamental that full consideration is given as to how cross-contamination can be prevented and effective enforcement of the control measures ensured, particularly given the current difficult economic circumstances.

The APPG on Agroecology welcomes the proposed lifting of the ban on feeding non-ruminant ABP to non ruminants. However, it is concerned that as the new regulations now stand the benefits of lifting the ban may only be realised by large pig or poultry farms and large poultry or pig specific slaughter-houses. It therefore supports those derogations that will allow the participation of small-medium sized mixed farms and abattoirs. It also concerned that the added costs of compliance for both government and such small-medium sized enterprises as are involved will negate any benefits of introducing PAP in to non-ruminant feed. It therefore calls for an in-depth study of the costs and benefits of introducing the relevant derogations. Finally, the APPG on Agroecology feels that unless specific steps are taken to inform consumers and retailers of the background to the initial ban and why it is now seen to be inappropriate, the livestock farming sector will with a few exceptions be unable to make use of the new regulations. The APPG on Agroecology also asks for an early meeting with Defra to discuss a road map to lifting the ban on swill.

Welsh Government
In July 2011, Welsh Government wrote to the Animal Health and Welfare Steering Group in Wales (comprising 17 organisations) of which 3 provided comments.

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| 1   | National Farmers Union Cymru | While NFU Cymru supports the re-introduction of porcine PAP into poultry diets we recognise that consumer confidence is paramount. Regardless of science PAP can and will only be used by Welsh poultry farmers if it is fully accepted by retailers and consumers. Welsh farmers want to maintain the highest levels of confidence in food and feed safety. It must be demonstrated, through the amendment and application of the regulation, that use of animal protein in feed can be achieved safely with full traceability. There must be no risk of intra-species recycling and robust and reliable testing methods to identify the species origin of proteins.

NFU Cymru believe that the proposed amendments should be supported providing strict and robust procedures are in place to avoid cross contamination and the Welsh Government are confident that this will be achieved by the amendments to the regulation. The level of use/utilisation of PAP will then be market driven. |
| 2   | Farmers Union of Wales | The Union’s members believe it would be prudent to delay any possible revision of the feed ban until rigorous and scientific analyses can conclusively prove that such a relaxation would have minimal impact on |
animal and human health. Proposing a relaxation of the feed ban based simply on a decline in the number of reported BSE cases fails to recognise the important contribution played by the various changes in feed policy in achieving this decline.

Members unanimously believed that a zero-tolerance approach should be applied to any potential changes to the feed ban in order to conclusively ascertain that there is no possible risk or contamination. The majority of FUW members believed that, in this context, any relaxation of the feed ban should only be applied when disease has been completely eradicated.

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<tr>
<td>1</td>
<td>Ulster Farmers Union</td>
<td>UFU fully support the proposal. If DNA test to determine the origin of PAP is validated later this year and proposal is implemented it would be a welcome step for industry. If feeding of PAP was permitted it should open the protein feed market to competition from non ruminant PAP resulting in lower feed costs provided that the cost of testing and approving the PAP feed is not prohibitive. All livestock sectors should benefit but particularly the intensive sector given high proportion of production costs attributed to protein. Proposal must be supported by scientific evidence and risk of cross contamination to ruminant diets must be kept to an absolute minimum. Controls must be proportionate to risk so that PAP can be produced at a price economically viable for producers to use.</td>
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<td>2</td>
<td>NI Grain Trade Association (NIGTA)</td>
<td>Key consideration is to ensure that modifications to Regulation 999/2001 continue to maintain feed safety and consumer protection as the highest priority under this legislation. Proposed channelling controls Majority of feed mills in NI produce feed for more than one species. Thus strict requirements to avoid cross contamination which could result in feed for a given species with PAP derived from the same species being fed, will, NIGTA expect, prohibit the reintroduction of non ruminant PAP for non-</td>
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ruminants. (This is because the proposal does not provide for a tolerance level for insignificant amounts of non-authorized non-ruminant animal proteins in feedstuffs caused through adventitious and technically unavoidable contamination.) A validated method of analysis to determine the proportion of non-authorized non-ruminant animal proteins is not yet available. Consider that consumers in the UK are not prepared to accept feeding of non-ruminant PAP in non-ruminant feeds at least for the immediate future.

Competition considerations on reauthorization of non ruminant PAP as feed material

Feed Industry responds to requirements of farmer customers and their customers. Major issue to be addressed by feed and livestock industry and Government is likely market acceptance of non-ruminant PAP as a feed material. NIGTA assessment is that market acceptance level is zero. Also further to lack of consumer acceptance the feed industry has very little experience of plasma protein in piglet diets because it is subject to a ban imposed by the Assured British Pigs Certification Standard. Label Rouge feed standard for Scottish farmed salmon states that feed materials should be marine origin. As consequence legally permitted blood products and bloodmeal from non-ruminants are not used in fish feedstuffs manufactured in the UK.

Competitive position of feed and livestock Industry is of great concern if farm livestock assurance schemes and retail specifications continue to ban use of non-ruminant PAP as a feed material yet livestock products derived from animals fed diets containing such ingredients are imported from other member states. Feed and livestock industry already in competition from imports from third countries where the intra species ban might not be in place and use of PAP as a feed material is legal. Were it decided that this position would be changed a major communication strategy will be needed for the UK as a whole.

If proposed regulation were to be adopted in its present form it would impose a cost, which NIGTA cannot quantify along the PAP production and supply chain because of the requirement for physical separation. NIGTA expect that when non-ruminant PAP becomes available as a feed material in the EU it would be priced at a level relevant to other protein sources and principally soya.

There would be benefits were the controls on fishmeal in ruminant adult feed and ruminant gelatine in surplus foods to be made more proportionate to risk.

Scottish Government

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<tr>
<td>1</td>
<td>National Farmers Union Scotland (NFUS)</td>
<td>NFUS supports this proposal in general. The proposal is a result of science showing there is no longer a risk associated with feeding non-ruminant animal based proteins to non-ruminant species as long as intra-species recycling is avoided. NFUS welcome any steps to increase the availability of feed protein in the pig and poultry industries. Cost and availability of feed protein has significant impact on profitability within those industries.</td>
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However, in practice, the change may have little overall impact on the availability and cost of protein to the pig and poultry industry. The majority of this protein is already used by the pet industry. How much would be available to the pig and poultry feed manufactures should the rules change is questionable.

NFUS supports the need to avoid intra species feeding but has concerns that this may make the use of PAP in the majority of feed mills impractical. Separation of the different proteins could prove impossible for those feed mills making both pig and poultry rations.

The biggest hurdle if the rules are changed will remain the retailers. It is likely that product fed on feed containing PAP will not be acceptable by the buyers.

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<th>Quality Meat Scotland (QMS)</th>
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<td></td>
<td>QMS welcome the proposal since there are potentially big economic and environmental benefits.</td>
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<td></td>
<td>QMS feel that the name ‘Processed Animal Protein’ may be scientifically accurate but it does not sound very appealing. It is not going to help get consumer acceptance of the policy change. Some thought could be given to using an alternative name.</td>
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Extract from the draft minutes of ACAF’s 1 June 2011 meeting – cleared by the ACAF Chairman and by ACAF Members

Agenda Item 3 – Update on the TSE Regulations

1. Mr. Burke explained that processed animal protein (PAP) was rendered animal protein from Category 3 animal by-products. The total feed ban (banning the feeding of PAP to all farmed animals) was introduced in 2001 to control certain transmissible spongiform encephalopathies (TSEs). This control reinforced previous bans and was introduced in response to the detection of new cases of bovine spongiform encephalopathy (BSE) in mainland Europe. However, there were a number of derogations from the total feed ban which allowed the feeding of fishmeal to non-ruminants, non-ruminant blood proteins to non-ruminants, and non-ruminant blood meal to fish. Mr. Burke said that since 2001 the number of BSE cases in the EU had declined. In 2010 the European Commission published its TSE Roadmap 2 – “A strategy paper on Transmissible Spongiform Encephalopathies for 2010-2015”. This document outlined areas where future possible changes to EU TSE-related measures could be made, underlining that any amendments would assure a high level of food safety, be stepwise and be supported by scientific advice.

2. Mr. Burke explained that strategic goals of the TSE Roadmap 2 included reviewing certain measures of the total feed ban when certain conditions were met. It considered the possibility of lifting the ban on the feeding of PAP derived from non-ruminants (e.g. pigs, poultry and fish) to non-ruminants of a different species. This was subject to the availability of validated tests to determine the species of origin of PAP and correct channeling of PAP from different species. However the intra-species recycling ban (in the Animal By-products Regulation) would remain in force. Mr. Burke provided Members with examples of where the partial relaxation of the total feed ban would be applicable. It was noted that a narrow set of new derogations were envisaged.

3. Mr. Burke then considered the latest version of the European Commission’s draft proposal to establish new criteria for feeding non-ruminant PAP (excluding fishmeal) to non-ruminants of a different species. This included channelling and testing controls (see Annex 3 to ACAF/11/07).

4. Risk based testing of feed would be required. The UK currently carried out this type of testing, however new tests would need to be carried out. Currently, microscopy was the statutory test for PAP in feed under Regulation (EC) 152/2009 on laying down the methods of sampling and analysis for the official control of feed but microscopy did not determine the species of origin.

5. Mr. Burke explained that a DNA-based Polymerase Chain Reaction (PCR) test for bovine PAP had been validated via the SAFEED-PAP\(^9\) research project which aimed to develop new tests for animal protein in feed. The European Union

Reference Laboratory for animal protein in feed (EURL-AP) was in the process of developing PCR tests for PAP from other species. This validation was due to be completed before the end of 2011 and Regulation (EC) 152/2009 would be amended once validation has been achieved.

6. The Commission’s proposal drew on advice provided by the European Food Standards Authority (EFSA) in 2007 which advised that the BSE risk of feeding pig PAP to poultry and vice versa was negligible. In addition, the Spongiform Encephalopathy Advisory Committee provided advice in 2008 on relaxation of the ban on feeding non-ruminant PAP to non-ruminants.

7. Mr. Burke outlined the potential impacts of partial relaxation of the total feed ban. In terms of dietary benefits, pig and poultry PAP were valuable protein/mineral sources. The expected reduction in imported protein (e.g. soya) used in feed, and in fishmeal used in aquaculture, would provide environment/sustainable benefits. Economically, there could be a positive impact on feed prices. Other possible benefits included new export markets for PAP and increased ability for EU producers to compete with their counterparts in non-EU countries where the ban did not apply. However, Mr. Burke advised that the specific impact in the UK was uncertain as most PAP produced in the UK was currently used in pet food or in fertiliser.

8. Finally, Mr. Burke said that there would be further discussions on the EU proposals during 2011 in parallel with EURL-AP validation of the PCR test. If the PCR test was validated, a Commission proposal was likely to be voted on in late 2011. If agreed, 3 months scrutiny would apply before entry into force sometime in 2012.

Discussion

9. One Member of the Committee noted that microscopy could detect 0.1% PAP in feed and asked how this related to a safe level of prions. Mr. Burke thought this was difficult to answer. Experiments had shown that very small doses of BSE-infected brain could infect calves. However, in 2011 EFSA had published a scientific opinion on a quantitative risk assessment (QRA) of the BSE risk posed by PAP. This concluded that assuming a 0.1% contamination with non-ruminant PAP the total BSE infectivity that could enter cattle feed each year would result in less than one new BSE infection in the EU each year.

10. Members discussed the validation of the PCR method. One Member of the Committee commented that it was assumed that the method will work, however his understanding was that this method could lead to false positives. Mr. Burke noted that the EURL-AP was aware of this issue and had proposed that PCR would be used with microscopy. In response to a comment from the ACAF Chairman, on the length of time it had taken to develop a validated test for PAP, Mr. Burke said that the Animal Health and Veterinary Laboratories Agency (AHVLA) had offered an

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internally validated PCR test for a number of years. However, patent and technical issues had caused difficulties in transferring the PCR methodology between laboratories.

11. Following a question from a Member of the Committee on enforcement requirements where the wrong feed had been given to animals, Mr. Burke said that this would be covered by the sanctions provisions in Regulation (EC) 882/2004. However, while national TSE legislation provided powers for restricting or killing ruminants which had been exposed to meat and bone meal, it was not clear what Member States would be expected to do to animals following a breach of the intra-species recycling ban in pigs or poultry. Mr. Burke agreed to seek clarification from the European Commission on this issue. The Member considered that a harmonized approach across the EU would be essential.

12. It was noted that most PAP in the UK was used in pet food or in fertiliser. However only 50% of feather meal produced in the EU was used in petfood so there was a possibility for a more sustainable use of the remainder. One Member of the Committee said that feather meal was used as a source of amino acids.

13. The Member also thought that the timing of the proposal for the partial relaxation was not being based on science and asked why it had taken so long. Mr. Burke noted both political considerations and consumer acceptance were factors in the timing of the development of the proposal. Another Member of the Committee responded that consumer confidence was important in accepting the proposal given that previously unacceptable practices were being used and that people were still being diagnosed with variant CJD. Therefore the Member advocated that a cautious and precautionary approach should be taken. Scientific and technical advances may not all be viewed as positive step by consumers. It was also noted that it had taken 15 years to develop the science, however it may take longer to allay consumer fears. It was important to move forward and ensure that there were appropriate scientific risk assessments to support the proposal.

14. One Member of the Committee considered that there were animal health and welfare benefits of feeding PAP to pigs noting that some health issues had arisen in the wake of the total feed ban. Another Member noted that the total feed ban had also had an adverse effect on poultry production and possibly even some poultry products.

15. A Member of the Committee noted that he was content with the proposal but thought ELISA testing was a better indicator of animal protein in feed than PCR testing. Mr. Burke responded that the channeling controls were the key measure to prevent intra-species recycling. The feed test was simply a tool to measure compliance. He noted that AHVLA had moved away from the ELISA test as there were problems with this methodology. For example the proteins could become undetectable as a result of the rendering process. PCR was used to detect DNA as

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a marker for PAP. DNA inside bones was more protected from damage by rendering. Following a question from the ACAF Chairman, Mr. Burke said that tests specifically for prion proteins in feed were not used.

16. The ACAF Secretary asked Mr. Burke what the current UK position was on this issue and whether other Member States shared a similar view. Mr. Burke replied that the UK did not yet have an agreed position on this proposal. The FSA Board would consider its advice on the proposal in July. Some other Member States supported the proposal, some opposed it and most were considering their positions.

17. One Member understood that the PCR test, if validated, would be a qualitative test rather than a quantitative test. Mr. Burke agreed that it would be used to determine the presence or absence of PAP (within the limits of detection). There had been no significant progress in developing a validated test for quantifying the level of PAP in feed.

18. Mr. Burke agreed to provide Members with a further progress report at a future meeting.

Action: Secretariat/ Mr. Burke
Annexe G

A Veterinary Risk Assessment of the non-TSE health risks which might arise as a consequence of feeding non-ruminant processed animal protein derived from terrestrial animals to non-ruminants of a different species

Executive summary

1. A qualitative Veterinary Risk Assessment (VRA) was conducted on the non-TSE risks to public or animal health which might arise as a consequence of feeding non-ruminant processed animal protein (PAP) derived from terrestrial animals to non-ruminants of a different species.

2. To produce PAP of mammalian origin (e.g. porcine) for farmed animal feed (with the exception of blood meal) animal by-products (ABPs) must be subjected to processing method 1 (pressure sterilisation). To produce PAP of non-mammalian origin (e.g. poultry) for farmed animal feed (with the exception of fishmeal) animal by-products must be subjected to processing methods 1-5 or method 7. Processing by methods 1-5 requires heat treatment of the ABP material (after it has been reduced in particle size) at high temperatures (and also under pressure for method 1). The process allows water to be removed and fat to be separated from the proteinaceous material and results in the destruction of most pathogens that may be present in the raw material. Any processing method of ABPs may be authorised by the competent authority as processing method 7 provided the operator has demonstrated that relevant hazards have been identified in the starting material, that the method is capable to reduce those hazards to acceptable levels and that the final product sampled over a period of 30 days complies with certain standards for *Clostridium perfringens*, *Salmonella* and Enterobacteriaceae. Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7. Porcine blood or fractions of blood processed by method 7 to produce blood meal must be heat treated throughout its substance at a temperature of 80 °C.

3. The hazards considered in this VRA were certain exotic notifiable diseases (i.e. Foot and Mouth Disease, Classical Swine Fever, African Swine Fever, Swine Vesicular Disease, Highly Pathogenic Avian Influenza & Newcastle Disease) & other notifiable diseases (i.e. Aujeszky’s disease, Teschen disease & Anthrax) of pigs or poultry, TB, Avian tuberculosis & other Mycobacterial infections, botulism, certain zoonotic pathogens that can affect pigs and poultry (i.e. Campylobacter, Salmonella, Coccidia, Cryptosporidia & E. coli) and OIE listed and other notifiable fish diseases.

4. The risk factors considered included whether the identified hazards cause zoonotic disease, potential for asymptomatic carriage and subclinical infection, pathogen presence in animal by products and products of animal origin, pathogen resistance to heat & other treatment, UK disease prevalence in the species of concern (i.e. pigs, poultry or fish) and pathogen survival and persistence in the environment.

5. The mitigating factors considered included whether the identified hazards cause notifiable disease, whether legislation and other disease control measures and contingency plans are in place, disease presence in the UK, whether the identified hazards affect the species of concern & also any public health impacts, and animal by-products legislation requirements for the processing of animal by-products intended to be used in animal feed.
6. The veterinary consequences considered included infection of pigs, poultry or fish, declaration of an exotic notifiable disease outbreak with subsequent consequences, e.g. on trade, and also human infection (e.g. due to zoonotic pathogens).

7. The uncertainties considered included were with regards to the pathogenic load & also degree of infectivity of pathogens that may be present in category 3 material used for the production of PAP, the degree of cross-contamination and pathogen survival during PAP production & storage, and uncertainty on whether consumption of feed contaminated with HPAI viruses by pigs can lead to infection.

8. For the purposes of this VRA it was assumed that there is a negligible possibility of cross-contamination of material used for the production of PAP with category 1 or 2 material, that PAP may be contaminated during production with bacterial spores (e.g. of B. anthracis), that the requirements of the ABP regulations for imports of PAP and for production of PAP both during and post processing are complied with, that the dilution effect of mixing category 3 material/PAP containing pathogens with pathogen free category 3 material/PAP decreases the risk of infectivity, that category 3 material intended to be used for production of PAP is always sourced from clinically healthy animals, and that there is a negligible possibility of inadequate separation that would result in terrestrial animals having access to PAP derived from the same species.

9. If the following feeding practices are allowed, the non-TSE animal health risks which might arise as a consequence of feeding non-ruminant processed animal protein derived from terrestrial animals to non-ruminants of a different species are:

a) Permission to feed poultry or non-ruminant mammalian (e.g. pig) PAP to farmed fish – a low likelihood of new cases of botulism due to C. botulinum toxin type C in farmed fish fed with poultry PAP if not processed by method 1.

b) Permission to feed poultry PAP to farmed non-ruminant mammals (e.g. pigs)
   i. A very low if not negligible likelihood of new cases of HPAI in pigs. The risk rises if the raw material is processed by method 7 to standards which are inadequate to inactivate HPAI viruses. If HPAI enters the pig population viral recycling may result in the formation of potentially more virulent serotypes, which if the risk event occurred is likely to have a high impact on the human population.
   ii. A very low (if not negligible) likelihood of new cases of anthrax in pigs which have been fed with poultry PAP not processed by method 1.
   iii. A low likelihood of new cases of type C botulism in pigs fed with poultry PAP which has not been processed by method 1.
   iv. A potentially high likelihood of infection due to pathogens such as Campylobacter, Salmonella or Cryptosporidia that may be present in raw material of poultry origin if the raw material is processed by method 7 to standards which are inadequate to inactivate these pathogens. For the majority of these pathogens the risk to pig health is likely to be low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.
v. A low likelihood of new cases of E. coli that may be present in raw material of poultry origin if the raw material is processed by method 7 to standards which are inadequate to inactivate E. coli. The risk to pig health is likely to be very low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.

c) Permission to feed non-ruminant mammalian (e.g. pig) PAP to poultry
   i. A very low if not negligible likelihood of new cases of anthrax in poultry fed with pig blood meal contaminated with spores which was not processed by method 1.
   ii. A potentially high likelihood of infection due to pathogens such as Campylobacter, Salmonella, Cryptosporidia or E. coli that may be present in porcine blood if the porcine blood is processed by method 7 to standards which are inadequate to inactivate these pathogens. For the majority of these pathogens the risk to poultry health is likely to be low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.

10. The veterinary advice is that feeding non-ruminant processed animal protein derived from terrestrial animals to non-ruminants of a different species should not result in an unacceptable risk to animal or public health provided that:
   a) Current ABPR controls are complied with, and
   b) as there are potentially certain risks lying with raw material being treated by method 7 processing, validation by the Competent Authority of processing methods as processing methods 7 is thorough to ensure the operator has identified the risks and addressed them via their approved process as required by ABPR, and
   c) when processing method 7 is used to manufacture PAP, operators ensure that:
      i. relevant hazards have been identified in the starting material in view of the origin of the material and of the potential risks in view of the animal health status in GB,
      ii. exotic notifiable disease viruses have been considered in addition to other relevant hazards such as endemic zoonotic pathogens, and
      iii. the processing method is capable to reduce those hazards to a level which does not pose any significant risk to public or animal health, and,
   d) when C. botulinum or B. anthracis is suspected in the raw material used for the production of PAP, they are identified by the operators as relevant hazards in their HACCP plan and measures are put in place to ensure that they are eliminated or reduced to acceptable levels.
Introduction/Background to the issue

11. EU Animal By-Products (ABP) legislation provides animal health controls on the use of animal proteins in feed. EU transmissible spongiform encephalopathy (TSE) legislation provides additional TSE-specific animal health controls on the use of animal proteins in feed.

ABP legislation (Regulation (EC) No 1069/2009)

12. EU ABP legislation allows most Category 3 material (with certain exceptions, i.e. hides and skins, hooves, feathers, wool, horns, hair and fur from dead animals, fat from slaughtered animals which were considered fit for slaughter following an ante-mortem inspection, and catering waste) to be processed into processed animal protein (PAP) for use as a feed material for farmed animals. It also requires controls on imports of PAP.

13. To produce PAP of mammalian origin (e.g. porcine) for farmed animal feed (with the exception of blood meal) animal by-products must be subjected to processing method 1 (pressure sterilisation). To produce PAP of non-mammalian origin (e.g. poultry) for farmed animal feed (with the exception of fishmeal) animal by-products must be subjected to processing methods 1-5 or method 7. Processing by methods 1-5 requires heat treatment of the ABP material (after it has been reduced in particle size) at high temperatures (and also under pressure for method 1). The process allows water to be removed and fat to be separated from the proteinaceous material and results in the destruction of most pathogens that may be present in the raw material. Any processing method of ABPs may be authorised by the competent authority as processing method 7 provided the operator has demonstrated that relevant hazards have been identified in the starting material, that the method is capable to reduce those hazards to acceptable levels and that the final product sampled over a period of 30 days complies with certain standards for Clostridium perfringens, Salmonella and Enterobacteriaceae. Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7. Porcine blood or fractions of blood processed by method 7 to produce blood meal must be heat treated throughout its substance at a temperature of 80 °C.

14. EU ABP legislation bans intra-species recycling of PAP, i.e. bans the feeding of terrestrial animals with PAP derived from animals of the same species, and bans the feeding of farmed fish with PAP derived from farmed fish of the same species. It also bans the feeding of farmed animals with catering waste or feed material containing or derived from catering waste.

TSE Legislation (Regulation (EC) No 999/2001)

15. EU TSE legislation bans the feeding of PAP, ruminant gelatine, blood products, hydrolysed protein, animal-derived dicalcium phosphate (DCP) and animal-derived tricalcium phosphate (TCP) to farmed animals with the exception of carnivorous fur-producing animals. It also bans the feeding of animal protein and feedingstuffs containing such protein to ruminants.
16. However, farmed animals may be fed with milk, milk-based products and colostrums, eggs and egg products, non-ruminant gelatine and hydrolysed proteins derived from parts of non-ruminants and from ruminant hides and skins.

17. Additionally and subject to the conditions in the Regulation:
   - Non-ruminant farmed animals may be fed with fishmeal, DCP, TCP or blood products.
   - Fish may be fed with blood meal (a PAP).
   - Unweaned ruminants may be fed with liquid milk replacer containing fishmeal.
   - Feed materials of plant origin containing insignificant amounts of bone spicules may be permitted.

18. FSA is preparing to seek the views of its Board in September 2011 on the food safety implications of a European Commission proposal to amend the EU TSE legislation to allow the feeding of non-ruminant PAP derived from terrestrial animals to non-ruminants of a different species. No changes are proposed to the existing controls on PAP in EU ABP legislation.

19. This Veterinary Risk Assessment (VRA) provides advice on the non-TSE health risks (e.g. bacterial/viral) which might arise as a consequence of making the changes above and how these risks would be addressed by the ABP controls.

Statement of the risk question

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20. What are the non-TSE risks to public or animal health which might arise as a consequence of feeding non-ruminant processed animal protein derived from terrestrial animals to non-ruminants of a different species:

   a) Permission to feed poultry PAP to farmed non-ruminant mammals (e.g. pigs) or to farmed fish.
   b) Permission to feed non-ruminant mammalian (e.g. pig) PAP to farmed poultry or to farmed fish.
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### Hazards and risk factors

**EXOTIC NOTIFIABLE DISEASE VIRUSES**

#### 21a. Foot and Mouth Disease (FMD) virus

i) FMD has the potential for rapid and extensive spread within and between countries.

ii) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.

iii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.

iv) The virus may be present in porcine blood, meat, meat products and pig bristles.

v) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

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### Hazards and mitigating factors

**EXOTIC NOTIFIABLE DISEASE VIRUSES**

#### 21b. Foot and Mouth Disease (FMD) virus

i) Poultry and fish are not affected.

ii) FMD is not present in the UK. The last outbreak of FMD in the UK occurred in 2007.

iii) National legislation requires licensing of movements of susceptible stock between holdings and a 'standstill' preventing movement of susceptible stock off holdings within a certain time period of any being introduced, together with good biosecurity on holdings.

iv) Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).

v) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) which requires ABP material to have a particle size of not greater than 50 millimetres prior to processing and to be heated to a core temperature of more than 133 °C for at least 20 minutes without interruption at a pressure (absolute) of at least 3 bars (ABPR controls).

vi) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7. Porcine blood or fractions of blood processed by method 7 to produce blood meal must be heat treated throughout its substance at a temperature of 80 °C (ABPR controls).

vii) Heating animal products to a minimum core temperature of 70°C for at least 30 minutes inactivates the FMD virus; hence when processing methods 1-5 are used, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate FMD virus. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

viii) Historically good compliance with the strict
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<td>i) Carcases, parts and blood of animals which have passed an ante-mortem inspection and were rejected as unfit for human consumption but did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>i) Poultry and fish are not affected</td>
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<td>ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>ii) CSF is not present in the UK. The last outbreak in GB occurred in 2000 and in Northern Ireland in 1958.</td>
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<td>iii) The virus may be present in blood, meat, meat products, products of animal origin, pig bristles and skins.</td>
<td>iii) Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).</td>
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<tr>
<td>iv) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.</td>
<td>iv) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.</td>
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<td>v) In strains of lower pathogenicity there is a potential for silent spread within the pig population and signs of disease being very similar to other porcine diseases, such as Porcine Dermatitis &amp; Nephropathy Syndrome (PDNS) and Post-Weaning Multisystemic Wasting Syndrome (PWMS).</td>
<td>v) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).</td>
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<td>vi) Heating meat to 65.5°C for 30 minutes or 71°C for one minute inactivates the CSF virus; hence when processing methods 1-5 are used, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate CSF virus. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.</td>
<td>vi) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.</td>
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ix) Clinical signs of FMD are more obvious in pigs than in certain other FMD susceptible species, such as sheep.

23a. African Swine Fever (ASF) virus

i) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.

ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.

23b. African Swine Fever (ASF) virus

i) This is a disease of pigs and wild boar. No other species are known to be affected.

ii) The disease has never occurred in GB.

iii) Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for
may be used for the production of PAP.

iii) The virus may be present in blood, meat, meat products, products of animal origin and in pig bristles.

iv) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).

iv) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

v) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).

vi) The ASF virus is heat inactivated by 56°C/70 minutes or 60°C/20 minutes; hence when processing methods 1-5 are used, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate ASF virus. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

vii) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.

24a. Swine Vesicular Disease (SVD) virus

i) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.

ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.

iii) The virus may be present in meat, meat products, products of animal origin, blood meal, defatted bones, hooves and claws, and pig bristles.

iv) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

24b. Swine Vesicular Disease (SVD) virus

i) Pigs are the only natural host for SVD virus. Poultry and fish are not known to be affected.

ii) The disease in not present in the UK. The last time it occurred in GB was in 1982.

iii) Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).

iv) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

v) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to
any of the processing methods 1 to 5 or processing method 7 (ABPR controls).
vi) The SVD virus is heat inactivated by 56°C/1 hour; hence when processing methods 1-5 are used, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate SVD virus. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.
vii) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.
viii) Disease significance is that symptoms mimic those of FMD virus, so notification of disease is treated as for FMD virus, until disease confirmation.

### 25a. Highly Pathogenic Avian Influenza (HPAI) virus

1. HPAI viruses do not readily infect mammals but pigs may be more susceptible to HPAI than many other mammals. Sporadic infections have been reported and experimental infections have been established in pigs.
2. Zoonotic agent
3. Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.
4. Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.
5. The virus may be present in blood, meat, meat products, feather, eggs and egg products.

### 25b. Highly Pathogenic Avian Influenza (HPAI) virus

1. HPAI is not currently present in the UK. It last occurred in poultry in UK in 2008.
2. The potential for silent spread in domestic poultry is low (in fully susceptible birds infection should be reported within a few days due to high mortality).
3. Farmed fish are not known to be affected by the HPAI viruses.
4. Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).
5. PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.
6. Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).
7. Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing
viii) The Avian Influenza virus (AIV) is inactivated at 60°C for 188 seconds in whole eggs and 507 seconds in poultry meat. AIV is also inactivated in meat by cooking when reaching a core temperature of 70°C for 3.5 seconds. Hence when method 1 is used to process PAP of porcine origin (other than blood) & methods 1-5 are used to process porcine blood or PAP of poultry origin, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate AIV. In method 7 processing of porcine blood or PAP of poultry origin hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

ix) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.

x) HPAI is not known to be transmitted to people by food. It is unlikely that H5N1 virus could be passed on to people by raw meat or eggs, and cooking food properly would inactivate the virus and eliminate this potential risk.

xi) Avian influenza viruses do not readily infect people, but can do so when people have close contact with infected birds.

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<tr>
<th>26a. Newcastle Disease (ND) virus</th>
<th>26b. Newcastle Disease (ND) virus</th>
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<tr>
<td>i) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>i) The disease is not present currently in GB. The last occurrence in game birds was in 2006 and in chickens and turkeys in 1997.</td>
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<td>ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>ii) Disease of poultry. Pigs and farmed fish are not known to be affected.</td>
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<td>iii) The virus may be present in blood, meat, meat products, feather, eggs and egg products.</td>
<td>iii) Only certain category 3 material can be used for the production of PAP. Catering waste, adipose tissue from animals slaughtered in a slaughterhouse and which were considered fit for slaughter following an ante-mortem inspection only, and hides and skins, hooves, feathers, wool, horns, hair and fur originating from dead animals that did not show any signs of disease communicable through that product to humans or animals cannot be used for the production of PAP (ABPR controls).</td>
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<td>iv) Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing method 7 (ABPR controls).</td>
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<td>v) ND virus is inactivated by 56°C/3 hours or</td>
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### OTHER NOTIFIABLE DISEASES

**27a. Aujeszky’s Disease (AD)**

- i) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.
- ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.
- iii) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

- vi) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.

**27b. Aujeszky’s Disease (AD)**

- i) Pigs are the only natural host for the Aujeszky's virus. Poultry and fish are not affected.
- ii) GB officially free of AD since 1991.
- iii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.
- iv) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).
- v) The virus is inactivated in high temperatures (≥37°C). So, when processing methods 1-5 are used, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate the virus. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.
- vi) The virus is unlikely to be present in fresh meat, meat products and products of animal origin of pigs not containing offal.
- vii) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.

### OTHER NOTIFIABLE DISEASES

**28a. Teschen Disease**

- i) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.
- ii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.
- iii) The virus may be present in meat, meat products, products of animal origin, blood meal, defatted bones, hooves and claws, and pig bristles.

**28b. Teschen Disease**

- i) Only pigs are affected.
- ii) The disease has never been reported in GB.
- iii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.
- iv) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).
- v) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.
iv) Porcine teschovirus is resistant to heat.

v) The virus may be present in porcine animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

**29a. Anthrax**

i) Zoonotic agent.

ii) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.

iii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.

iv) Anthrax can occur in all mammalian species (including humans). In pigs infection could go undetected.

v) Under suitable conditions Bacillus anthracis may form spores which can survive in the environment for many decades.

vi) Spores may be present in pig carcases, pig bristles, etc.

vii) Feed contaminated with bone or other meal from infected animals can serve as a source of infection for livestock.

viii) The OIE recommends processing method 1 for the inactivation of *B. anthracis* spores which may be present during the production of bone-meal or meat-and-bone meal from pigs.

**29b. Anthrax**

i) A disease mainly of herbivores, it can affect pigs but has never been reported from poultry. However chickens and ducks have been shown to be susceptible to anthrax. Fish are not known to be affected.

ii) Infection in pigs is usually confined to the point of entry and the draining lymph node; generally the infection does not develop into septicaemia. High proportions of cases in pigs are not fatal and infection is usually cleared with very small number of *B. anthracis* organisms recovered from the tissues of infected animals. In pigs dying as a result of anthrax infection there are far fewer bacteria present in the terminal bacteraemia. Acute septicaemia in pigs is characterised by sudden death. In the mild chronic form pigs show systemic signs of illness and gradually recover with treatment.

iii) The presence of *B. anthracis* in the closed carcase may be lost following 24-48 hours at 25-30°C and after 72 hours at 10°C. Because of the rapid pH change following death and decomposition, vegetative cells in an unopened carcase quickly die without sporulating.

iv) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

v) Both the vegetative form of bacteria and spores are inactivated by processing method 1.

vi) Porcine blood or fractions of porcine blood for the production of bloodmeal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).

vii) Sporadic cases occur in the UK as a result of animals becoming exposed to spores of *Bacillus anthracis* present in soil at certain areas.

viii) The incidence of anthrax in GB is very low (in England and Wales no anthrax incidents reported in sheep & species other than cattle in the last 10 years. It was last reported in Scotland in
ix) Anthrax is not transmitted before onset of clinical signs and does not spread easily; control measures are effective and implemented.

x) Historically good compliance with the strict separation requirements for fishmeal by the feed and agriculture industries in the last 9 years.

xi) Human exposure to anthrax likely to be minimal as carcases of infected animals are incinerated. Human infection associated with infected pigs is an extremely rare occurrence and has not been documented in the past 25 years in the UK.

xii) There are strict ABP controls in place that prohibit animals that die unexpectantly from entering the food chain.

xiii) Rarely, ingestion of infected food can cause intestinal anthrax.

xiv) Strict disease control measures are in place under the Anthrax Order 1993 (i.e. re- on farm disease detection, prevention of environmental contamination & reduction of onwards transmission of infection to other farms or the human food chain).

**MYCOBACTERIUM**

30a. Mycobacterium bovis

i) TB (in cattle) is endemic in the UK.

ii) Pigs may be affected by M. bovis.

iii) Zoonotic agent.

iv) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for production of PAP.

v) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for production of PAP.

30b. Mycobacterium bovis

i) Pigs are susceptible but they are spill over hosts. Poultry and farmed fish not known to be affected.

ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

iii) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).

iv) The organism is destroyed by pasteurisation; hence when processing method 1 is used to manufacture PAP of pig origin and processing methods 1-5 are used to manufacture blood meal of porcine origin, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate M. bovis. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

v) TB lesions can be usually identified at post mortem examination.

**MYCOBACTERIUM**

31a. Mycobacterium avium var avium (Avian

31b. Mycobacterium avium var avium (Avian
### 32a. Mycobacterial infections other than tuberculosis

<table>
<thead>
<tr>
<th>i)</th>
<th>Pigs can be affected.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii)</td>
<td><em>M. avium</em> is very resistant; it can survive in soil for up to 4 yr, in 3% hydrochloric acid for ≥2 hr, and in 4% sodium hydroxide for ≥30 min.</td>
</tr>
<tr>
<td>iii)</td>
<td>Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
</tr>
<tr>
<td>iv)</td>
<td>Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
</tr>
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</table>

### 32b. Mycobacterial infections other than tuberculosis

| ii) | *M. scrofulaceum*: isolated from lymphnode lesions in pigs. |
| iii) | *M. xenopi*: isolated from pigs. |
| iv) | Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP. |
| v) | Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP. |

### TOXINS

#### 33a. Type C toxin of Clostridium botulinum

*cause of botulism, i.e. an intoxication when the exotoxin is ingested or a toxico-infection when the toxin produced in the alimentary tract is absorbed*

| i) | *C. botulinum* is commonly found in the gut of poultry and can be recovered from normal chickens on farms. |
| ii) | Toxin is elaborated in dead carcases after postmortem release of the organism from the gut. |
| iii) | Pigs can be affected by type C toxin. |
| iv) | Poultry carcases can be contaminated with *C. botulinum* spores (e.g. from poultry manure). |
| v) | Zoonotic agent. |
| vi) | Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP. |

#### 33b. Type C toxin of Clostridium botulinum

*cause of botulism, i.e. an intoxication when the exotoxin is ingested or a toxico-infection when the toxin produced in the alimentary tract is absorbed*

| i) | Acute disease. Most animals with botulism die within 24 to 48 hours. |
| ii) | Pigs are relatively resistant to botulism. |
| iii) | The disease in the UK is nearly always caused by animals coming into contact with the litter of broiler chickens especially if it contains any carcase material. |
| iv) | The toxin does not survive exposure to 70°C for 2 minutes. |
| v) | Dead animals are considered to be category 2 ABP and cannot be used in the production of PAP. |
| vi) | The zoonotic potential of type C botulism is minimal. Only 4 poorly documented type C botulism intoxications have been reported in...
vii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.  
viii) The spores are heat resistant.  
ix) Fish can be affected by C. botulinum with some species showing clinical disease.  
x) Toxin type C causes illness in fish.

<table>
<thead>
<tr>
<th>COMMON PIG/POULTRY PATHOGENS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>34a. Campylobacter</strong></td>
</tr>
<tr>
<td>i) The prevalence of Campylobacter in poultry is believed to be high.</td>
</tr>
<tr>
<td>ii) High is also the prevalence in intestines of pigs.</td>
</tr>
<tr>
<td>iii) Animals and birds can carry different Campylobacter species in their intestines. In many cases the bacteria may be regarded as a normal part of the gut flora. Animals, especially poultry, are usually silent carriers of Campylobacter. The bacterium may therefore be present in birds or animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.</td>
</tr>
<tr>
<td>iv) Poultry digestive tract content is category 3 material.</td>
</tr>
<tr>
<td>v) Zoonotic agent. Campylobacteriosis is the most common cause of acute bacterial enteritis in the UK and European Union. Contamination of food derived from poultry products is estimated to be the source of infection in 20-40% of cases. Human infection commonly derives from contaminated poultry products; such contamination tends to occur during processing.</td>
</tr>
<tr>
<td>vi) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
</tr>
<tr>
<td>vii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
</tr>
<tr>
<td>viii) There is no domestic legislation specifically concerned with Campylobacter in animals or man.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMON PIG/POULTRY PATHOGENS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>34b. Campylobacter</strong></td>
</tr>
<tr>
<td>i) The bacteria are generally destroyed by pasteurisation (70 °C/1h).</td>
</tr>
<tr>
<td>ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.</td>
</tr>
<tr>
<td>iii) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).</td>
</tr>
<tr>
<td>iv) Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing method 7 (ABPR controls).</td>
</tr>
<tr>
<td>v) When processing methods 1 is used to produce PAP of pig origin and processing methods 1-5 are used to produce PAP of poultry origin or pig blood meal, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate Campylobacter. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.</td>
</tr>
<tr>
<td>vi) Fish are not known to be infected by Campylobacter.</td>
</tr>
<tr>
<td>vii) There is EU and domestic legislation that seeks to protect human health by ensuring the hygienic production of meat.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>35a. Salmonella</th>
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</thead>
<tbody>
<tr>
<td>i) Poultry digestive tract content is category 3 material.</td>
</tr>
<tr>
<td>ii) Zoonotic agent. Salmonellosis is a major foodborne and contact zoonosis worldwide. In the UK it is one of the most commonly reported people.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>35b. Salmonella</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) The bacteria are generally destroyed by pasteurisation (70 °C/1h).</td>
</tr>
<tr>
<td>ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1</td>
</tr>
</tbody>
</table>
gastrointestinal infections in humans. The level of human exposure to Salmonella (mostly via contaminated eggs & poultry meat & less via contaminated pig meat) is high.  
i) Pigs and poultry can become infected. Infected livestock may be asymptomatic. The bacterium may therefore be present in birds or animals which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.  
ii) Salmonella is considered to be widespread in livestock in GB.  
iii) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing method 7 (ABPR controls).  
iv) Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing method 7 (ABPR controls).  
v) When processing method 1 is used to produce PAP of pig origin (with the exception of blood meal) and processing methods 1-5 are used to produce PAP of poultry origin or pig blood meal, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate Salmonella. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.  
vi) Requirement for absence of Salmonella in samples of the final product of PAP taken from storage (for ABP material processed by method 7).  
vii) Statutory national programmes are in place for the control of Salmonella in pigs and some poultry species (i.e. chickens and turkeys) in the UK (as in all other EU MSs). Other domestic legislation (Zoonoses Order & Animal Health Act) provides for statutory reporting of Salmonella infections in domestic animals and powers to control the disease where appropriate.  
viii) Fresh fish are considered free of natural Salmonella infection.

<table>
<thead>
<tr>
<th>36a. Coccidia</th>
<th>36b. Coccidia</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Coccidia are widely distributed in poultry &amp; they also affect pigs.</td>
<td>i) Eggs and oocysts are generally destroyed by pasteurisation (70 °C /1h).</td>
</tr>
<tr>
<td>ii) Poultry digestive tract content is category 3 material.</td>
<td>ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.</td>
</tr>
<tr>
<td>iii) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>iii) Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing method 7 (ABPR controls).</td>
</tr>
<tr>
<td>iv) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.</td>
<td>iv) When processing method 1 is used to produce pig PAP (except blood meal) and processing methods 1-5 or 7 are used to produce pig blood meal or PAP of poultry origin, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate coccidia. In method 7 (pressure sterilisation) under ABPR controls.</td>
</tr>
</tbody>
</table>
processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

v) Although Eimeria species can infect many species of mammals and birds, each host has its own Eimeria and cross infection is not thought to occur.

vi) Eimeria is a host specific parasite, so the species that infect animals do not infect humans.

vii) The species of eimeriid coccidia affecting fish are different from the Eimeria species affecting poultry and pigs.

### 37a. Cryptosporidia

i) Cryptosporidia are commonly found in poultry and are parasitic in the intestines of pigs. In pigs the majority of infections are asymptomatic.

ii) Poultry digestive tract content is category 3 material.

iii) Zoonotic agent. Infections in domestic animals may be a reservoir for infection of susceptible humans. Cryptosporidium is considered a relatively common cause of self-limiting diarrhoea in immunocompetent persons, particularly children. Direct infection from animals and waterborne infection from contamination of surface water and drinking water by domestic or wild animal faeces can be important in the epidemiology of human cryptosporidiosis.

iv) Carcasses, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for production of PAP.

v) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for production of PAP.

### 37b. Cryptosporidia

i) Eggs and oocysts are generally destroyed by pasteurisation (70°C /1h).

ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

iii) Non-mammalian processed animal protein, with the exception of fishmeal, must be submitted to any of processing methods 1 to 5 or processing method 7 (ABPR controls).

iv) When processing method 1 is used to produce pig PAP (except blood meal) and methods 1-5 are used to produce pig blood meal or PAP of poultry origin, it is likely that sufficient temperatures will be reached for a sufficient time to inactivate Cryptosporidia. In method 7 processing hazards have to be assessed and risks minimised to levels acceptable for public and animal health.

v) C. parvum is not host specific.

vi) C. parvum is not transmissible to fish.

### 38a. E. COLI

i) E. coli is usually a natural inhabitant of the intestinal tract of mammals and birds.

ii) VTEC O157 is present in pigs. Sporadic infections occur in poultry.

iii) Animals do not present with clinical signs when infected with VTEC O157. The bacterium may therefore be present in pigs which have passed ante-mortem inspection and did not show signs of disease communicable to man or animals.

### 38b. E. COLI

i) The bacteria are generally destroyed by pasteurisation (70°C /1h).

ii) PAP of pig origin (with the exception of porcine blood for the production of blood meal) must be submitted to processing method 1 (pressure sterilisation) under ABPR controls.

iii) Porcine blood or fractions of porcine blood for the production of blood meal may be submitted to any of the processing methods 1 to 5 or processing methods 1-5 are used to produce pig blood meal or PAP of poultry origin.
iv) Poultry digestive tract content is category 3 material.

v) Zoonotic agent. Significant human impact, with serious disease most frequently seen in very young children or the elderly. Humans can become infected from contaminated meat and direct contact with farm animals or their environment. Human infection can be asymptomatic or result in a wide range of human illness including bloody diarrhoea, haemolytic uraemic syndrome (HUS) and death.

vi) Carcases, parts and blood of animals which have passed an ante-mortem inspection but were rejected as unfit for human consumption and did not show signs of disease communicable to animals or humans may be used for the production of PAP.

vii) Blood from live animals that did not show signs of disease communicable to animals or humans may be used for the production of PAP.

viii) Due to the subclinical nature of the disease in livestock, it is difficult to accurately estimate the prevalence of the disease in GB farms.

\[39a. \text{OIE LISTED FISH DISEASES}\]

- Epizootic haematopoietic necrosis
- Epizootic ulcerative syndrome
- Gyrodactylosis (Gyrodactylus salaris)
- Infectious haematopoietic necrosis
- Infectious salmon anaemia
- Koi herpesvirus disease
- Red sea bream iridoviral disease
- Spring viraemia of carp
- Viral haemorrhagic septicemia

\[39b. \text{OIE LISTED FISH DISEASES}\]

- Epizootic haematopoietic necrosis
- Epizootic ulcerative syndrome
- Gyrodactylosis (Gyrodactylus salaris)
- Infectious haematopoietic necrosis
- Infectious salmon anaemia
- Koi herpesvirus disease
- Red sea bream iridoviral disease
- Spring viraemia of carp
- Viral haemorrhagic septicemia

\[40a. \text{OTHER FISH NOTIFIABLE DISEASES}\]

- e.g. Bacterial kidney disease

\[40b. \text{OTHER FISH NOTIFIABLE DISEASES}\]

- e.g. Bacterial kidney disease

*Fish diseases were not considered further as they are not known to affect pigs or poultry.

41. ADDITIONAL GENERAL MITIGATING FACTORS:

a) **ABPR approval** – Reg. (EC) No 1069/2009 requires establishments or plants producing PAP destined for use in animal feeding to be approved by the competent authority.

b) **Protection of PAP from cross contamination** - Reg. (EU) No 142/2011 requires appropriate controls for the protection of PAP from cross contamination, i.e.

i. PAP should be packed and stored in new or sterilised bags or stored in properly constructed bulk bins or in storage sheds;

ii. condensation inside bins, conveyors or elevators should be minimised;

iii. products in conveyors, elevators and bins should be protected from casual contamination;
iv. equipment for handling PAP must be maintained in a clean and dry condition;

v. storage facilities should be emptied and cleaned regularly to the extent necessary to prevent contamination;

vi. PAP should be kept dry;

vii. leakages and condensation in the storage area should be prevented.

c) Microbiological standards for PAP – Reg. (EU) No 142/2011 requires that PAP sampled during or on withdrawal from storage complies with certain microbiological standards, i.e.

i. absence of *Salmonella* in 1 g, and

ii. up to 300 Enterobacteriaceae counts in 1 g.


i. only certain types of cat3 material may be used as raw materials;

ii. cat3 material must be processed to certain standards;

iii. PAP must comply with the microbiological standards that apply for domestically produced PAP before it is released for free circulation within the EU;

iv. imported PAP must comply with certain import and transit conditions;

v. imported PAP must come from listed (in Reg. (EU) No 206/2010) third countries;

vi. imported PAP must be accompanied during transportation and presented to the point of entry to the EU where the veterinary checks take place by a health certificate.

Summary of veterinary consequences

These are the veterinary consequences of the risk event occurring. The risk events considered in this VRA are risks to animal or public health which might arise as a consequence of feeding pig PAP to poultry or farmed fish, or poultry PAP to pigs or farmed fish. ABPR provisions have been considered as appropriate as risk or mitigating factors, i.e. as factors contributing to an increase or decrease respectively of the likelihood of the risk event occurring.

42. Fish health:
   
   a) FMD – None
   b) CSF – None
   c) ASF – None
   d) SVD – None
   e) HPAI – None
   f) ND – None
   g) AD – None
   h) Teschen disease – None
   i) Anthrax – None
   j) Mycobacteria – None
   k) Botulism – Infection of fish through consumption of pig/poultry PAP contaminated
with C. botulinum toxin type C or spores.
l) Campylobacter – None
m) Salmonella – None
n) Coccidia – None
o) Cryptosporidia – None
p) E. coli - None

43. Pig health:
a) HPAI – Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed. Suspect/declaration of an exotic notifiable disease outbreak. Potential recycling of HPAI virus into a new serotype more virulent to man.
b) ND – None
c) Anthrax – Infection of pigs through consumption of inadequately processed poultry PAP contaminated with B. anthracis spores. Suspect/declaration of a notifiable disease outbreak.
d) M. avium avium – Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed.
e) Botulism – Infection of pigs through consumption of inadequately processed poultry PAP contaminated with C. botulinum toxin type C or spores.
f) Campylobacter – Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed. Pigs can be a reservoir for human infection.
g) Salmonella - Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed. Pigs can be a reservoir for human infection.
h) Coccidia – None.
i) Cryptosporidia - Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed. Pigs can be a reservoir for human infection.
j) E. coli - Infection of pigs through consumption of contaminated poultry PAP which had been inadequately processed. Pigs can be a reservoir for human infection.

44. Poultry health:
a) FMD – None
b) CSF – None
c) ASF – None
d) SVD – None
e) HPAI - Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed. Suspect/declaration of an exotic notifiable disease outbreak. Potential recycling of HPAI virus into a new serotype more virulent to man.
f) AD – None
g) Teschen disease – None
h) Anthrax – Infection of poultry through consumption of pig blood meal contaminated with B. anthracis spores which had been inadequately processed; Suspect/declaration of a notifiable disease outbreak.
i) M. avium avium – Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed.
j) Other Mycobacteria – None
k) Botulism – Infection of poultry through consumption of pig blood meal contaminated with C. botulinum toxin type C or spores which had been inadequately processed.
l) Campylobacter – Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed. Poultry can be a reservoir for human infection.

m) Salmonella – Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed. Poultry can be a reservoir for human infection.

n) Coccidia - None

o) Cryptosporidia – Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed. Poultry can be a reservoir for human infection.

p) E. coli – Infection of poultry through consumption of contaminated pig blood meal which had been inadequately processed. Poultry can be a reservoir for human infection.

Public health:

a) HPAI – Human infection through contact with infected animals (poultry or pigs) or infective material. Unlikely for human infection to result from consumption of contaminated food of poultry or porcine origin.

b) Anthrax – Human infection through contact with infected animals (pigs or poultry) or infective material, or through ingestion of contaminated food of porcine or poultry origin.

c) Botulism – Human infection through consumption of food of fish, pig or poultry origin which had been contaminated with C. botulinum toxin type C or spores.

d) Campylobacter – Human infection through consumption of food of poultry or pig origin which had been contaminated with Campylobacter.

e) Salmonella - Human infection through consumption of food of poultry or pig origin which had been contaminated with Salmonella or through contact with infected poultry or pigs.

f) Cryptosporidium - Human infection through consumption of food of poultry or pig origin which had been contaminated with Cryptosporidium or through contact with infected poultry or pigs.

g) E. coli – Human infection through consumption of food of poultry or pig origin which had been contaminated with E. coli or through contact with infected poultry or pigs.

Summary of likelihood

This is the likelihood of the risk event occurring, i.e. the likelihood of risks to animal or public health arising as a consequence of feeding pig PAP to poultry or to farmed fish, or feeding poultry PAP to pigs or to farmed fish.

46. Fish health (botulism) – the likelihood of infection through consumption of pig PAP is considered to be negligible. The likelihood of infection through consumption of poultry PAP is considered to be low.

47. Pig health (HPAI) – the likelihood of infection with HPAI is considered to be very low if not negligible.

48. Pig health (anthrax) – the likelihood of infection with B. anthracis is considered to be very low if not negligible.

49. Pig health (M. avium avium) – the likelihood of infection with M. avium avium is considered to be negligible.
50. **Pig health (botulism)** - The likelihood of infection through consumption of poultry PAP is considered to be very low.

51. **Pig health (Campylobacter)** – The likelihood of infection through consumption of poultry PAP produced by methods 1-5 is considered to be negligible but the likelihood could be high if processing method 7 has been used and sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

52. **Pig health (Salmonella)** - The likelihood of infection through consumption of poultry PAP produced by methods 1-5 is considered to be negligible but the likelihood could be high if processing method 7 has been used and sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

53. **Pig health (Coccidia)** - The likelihood of infection through consumption of poultry PAP is considered to be negligible.

54. **Pig health (Cryptosporidia)** - The likelihood of infection through consumption of poultry PAP produced by methods 1-5 is considered to be negligible but the likelihood could be high if processing method 7 has been used and sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

55. **Pig health (E. coli VTEC O157)** - The likelihood of infection through consumption of poultry PAP is considered to be low.

56. **Poultry health (HPAI)** - the likelihood of infection with HPAI is considered to be negligible.

57. **Poultry health (anthrax)** - The likelihood of infection with B. anthracis is considered to be very low if not negligible.

58. **Poultry health (M. avium avium)** – The likelihood of infection with M. avium avium is considered to be negligible.

59. **Poultry health (Botulism)** – The likelihood of infection through consumption of contaminated pig PAP (including blood meal) is considered to be negligible.

60. **Poultry health (Campylobacter)** – The likelihood of infection through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

61. **Poultry health (Salmonella)** – The likelihood of infection through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

62. **Poultry health (Coccidia)** - The likelihood of infection through consumption of pig PAP is considered to be negligible.

63. **Poultry health (Cryptosporidia)** - The likelihood of infection through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

64. **Poultry health (E. coli VTEC O157)** - The likelihood of infection through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction.

65. **Public health (HPAI)** – The likelihood of human infection with HPAI through consumption of contaminated food of pig or poultry origin or through contact with infected animals or infective material is likely to be very low if not negligible.
66. **Public health (Anthrax)** – The likelihood of human infection through contact with infected animals (pigs or poultry), infected pig material or through ingestion of contaminated food of porcine or poultry origin is considered to be negligible.

67. **Public health (Botulism)** – The likelihood of human infection through consumption of contaminated food of poultry or pig origin is considered to be negligible, whereas the likelihood of human infection through consumption of food of fish origin is considered to be very low.

68. **Public health (Campylobacter, Salmonella, Cryptosporidium, E. coli)** – The likelihood of human infection through consumption of food that has originated from infected pigs or poultry or through contact with infected animals could be high in certain circumstances.

**Summary of uncertainties**

69. **FMD** – Uncertainty over the relative frequency of different mechanisms of local spread.

70. **HPAI** – Sporadic infections have been reported in pigs and experimental infections have been established but unknown if consumption of contaminated feed can lead to infection. It is not usually possible to confirm the route of human infection, but assumed to take place when droplets of moisture containing virus enter through the conjunctiva or by inhalation.

71. **Anthrax** – The location of areas of land in which Bacillus anthracis spores are present are not all known.

72. The degree of cross-contamination of category 3 material used for production of PAP with infectious agent from faeces of infected animals or other environmental contamination can vary.

73. The pathogenic load in category 3 material used for the production of PAP depends on various factors, such as the stage of infection, the degree of subclinical carriage by animals, faecal shedding by animals (which may be intermittent), degree of cross contamination (e.g. faecal), hygiene practices at the slaughterhouse, etc.

74. The degree of infectivity of pathogens present in PAP may vary. The infectious dose can vary depending on the pathogen and the individual. Exact effects on high-risk populations, such as compromised humans (e.g. children, elderly, immunosuppressed, concurrently ill) are unknown.

75. The degree of pathogen shedding by infected animals fed contaminated PAP may vary.

76. Ability of infectious agent to survive heat treatment may depend on pathogenic load in category 3 material, water content, and/or other factors.

77. Storage conditions may affect survival of infectious agent in PAP.

78. Environmental factors.

79. Inadequate processing may reduce the effectiveness of ABP controls.

80. Potential relevant hazards may not be identified by a processor using method 7 processing and hence their risks may not be satisfactorily mitigated.

**Summary of assumptions**

81. For the purposes of this VRA it has been assumed that:

   a. there is a negligible possibility of cross-contamination of category 3 material used for the production of PAP with material of a higher category, i.e. category 1 or category 2 material;
b. the possibility of cross contamination of category 3 material with bacterial spores, e.g. of B. anthracis, during the production of PAP is not negligible;

c. the requirements of the ABP regulations for the production of PAP both during and post processing are complied with, e.g. adequate processing temperatures are reached for satisfactory time periods and there is adequate protection from cross-contamination post processing;

d. the requirement of the ABP regulations for absence of Salmonella in 1 g of the final product does not necessarily guarantee that the PAP is Salmonella free;

e. the controls for imports of PAP are complied with;

f. the eimeriid coccidia affecting poultry and pigs do not affect fish;

g. the mixing of category 3 material containing pathogens with other category 3 material at the processing plant and the mixing of contaminated PAP with pathogen free PAP following processing decreases the risk of infectivity;

h. category 3 material intended to be used for production of PAP (including blood meal) is always sourced from clinically healthy animals;

i. there is a negligible possibility of inadequate separation that would result in terrestrial animals having access to PAP derived from the same species (i.e. pig having access to PAP of porcine origin, and poultry having access to PAP of poultry origin).

82. There are numerous pathogens that can affect pig, poultry and fish. This VRA focused on pathogens which are causes of major (and OIE listed) exotic notifiable diseases of pigs, poultry and fish, other important notifiable (and OIE listed) diseases of pigs, poultry and fish, and also on common pathogens that can affect pigs and poultry, some of which are zoonotic. The vast majority of selected pig and poultry pathogens are not known to affect fish, therefore they were not considered further in this VRA.

83. This VRA has not considered the additional safeguards for feed safety provided by EU food safety & feed hygiene legislation (i.e. Reg. (EC) No. 178/2002 & Reg. (EC) No 183/2005).

Discussion

84. Even though the likelihood of fish becoming infected with botulism through consumption of contaminated pig PAP is considered to be negligible (botulism in pigs is not common and pigs show resistance to infection) and through contaminated poultry PAP is considered to be low, the impact of a disease outbreak caused by this route for fish health and welfare could be high. C. botulinum spores are heat resistant and if they are present in raw material used for production of poultry PAP, they will most likely survive processing methods other than method 1. If the raw material used for production of PAP contains the toxin, it is unlikely that the toxin will survive processing methods 1-5, but it may survive processing method 7 if sufficient temperatures are not reached.

85. Even though the likelihood of pigs becoming infected with HPAI is considered to be very low if not negligible, the impact of the risk event occurring could be very high as HPAI is an exotic notifiable disease, the disease free status would be lost and pigs are a known recycler of influenza viruses and source of new possibly more virulent serotypes for the human population. HPAI is not present in the UK currently, the potential for silent spread in poultry is low, and pigs are not natural hosts of the disease. However, the possibility of infection cannot be excluded if the virus enters UK and pigs are fed with contaminated
poultry PAP produced by inadequate processing, either through plant protocol failure or a failure to adequately identify relevant hazards in method 7 processes.

86. The likelihood of infection of pigs with anthrax is considered to be very low if not negligible as even though poultry have been shown to be susceptible, anthrax has never been reported from poultry. However, the possibility of infection cannot be ruled out if pigs are fed with poultry PAP contaminated with spores which was processed by a processing method other than method 1. The impact for animal health and welfare is not likely to be high as pigs show in general resistance to infection.

The likelihood of infection of pigs with M. avium avium is considered to be negligible as avian tuberculosis is a chronic disease and is very unlikely to occur in commercial poultry. The impact of pig infection is likely to be low.

88. The likelihood of infection of pigs with botulism is considered to be very low and the impact for pig health and welfare is not considered to be high as pigs are generally resistant to infection. C. botulinum spores are heat resistant and if they are present in raw material used for production of poultry PAP, they will most likely survive processing methods other than method 1. If the raw material used for production of PAP contains the toxin, it is unlikely that the toxin will survive processing methods 1-5, but it may survive processing method 7 if sufficient temperatures are not reached.

89. The likelihood of infection of pigs with Campylobacter, Salmonella or Cryptosporidium through consumption of poultry PAP processed by methods 1-5 is considered to be negligible but the likelihood could be high if processing method 7 has been used and sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction. The impact for pig health and welfare is not likely to be high as infections in pigs can be asymptomatic.

The likelihood of infection of pigs with Coccidia through consumption of poultry PAP is considered to be negligible as Eimeria is a host specific parasite. If infection was to occur, the impact for pig health and welfare would likely be low as Cryptosporidia are usually parasitic in the intestines of pigs.

90. The likelihood of infection of pigs with E. coli O157 through consumption of poultry PAP is likely to be low. If methods 1-5 have been used to produce poultry PAP, it is likely that sufficient temperatures will be reached for a sufficient time to ensure pathogen destruction, hence the likelihood is considered to be negligible. However, if PAP is consumed which has been produced by inadequate processing, either through plant protocol failure or a failure to adequately highlight potential risks in method 7 processes then risk of infection is likely to be increased. The impact of disease incidence is likely to be low as infection in pigs is usually asymptomatic.

91. The likelihood of infection of poultry with HPAI through consumption of pig PAP is considered to be negligible. HPAI is not present in the UK currently and pigs are not natural hosts of the disease. However, the possibility of infection cannot be excluded if the virus enters UK, pigs get infected and poultry are fed with contaminated pig PAP produced by inadequate processing, either through plant protocol failure or a failure to adequately identify relevant hazards in method 7 processing of pig blood meal. The impact of the risk event occurring could be very high as HPAI is an exotic notifiable disease and the disease free status would be lost.

92. The likelihood of infection of poultry with anthrax through consumption of pig PAP is likely to be very low if not negligible. Even though some poultry have been shown to be susceptible, disease has never been reported from poultry. However it cannot be ruled out if poultry are fed with pig blood meal contaminated with spores which was processed by
a processing method other than method 1. The impact in case of infection is likely to be low.

94. The likelihood of infection of poultry with *M. avium avium* through consumption of pig PAP is likely to be negligible as poultry and not pigs are the natural host. The impact in case of infection is likely to be low.

95. The likelihood of infection of poultry with botulism through consumption of pig PAP is likely to be negligible. Even if spores survive processing, it is considered unlikely that the raw material used for the production of blood meal will be contaminated with spores. The disease in pigs in rare. Pigs show resistance to infection. The impact for poultry health and welfare in case of infection is likely to be high.

96. The likelihood of infection of poultry with Campylobacter, Salmonella or Cryptosporidium through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction. The impact for poultry health and welfare is not likely to be high as infections in poultry can be asymptomatic.

97. The likelihood of infection of poultry with *Coccidia* through consumption of pig PAP is considered to be negligible as *Eimeria* is a host specific parasite.

98. The likelihood of infection of poultry with *E. coli O157* through consumption of pig PAP (except blood meal) is considered to be negligible but the likelihood of infection through consumption of pig blood meal processed by method 7 could be high if sufficient temperatures have not been reached for a sufficient time to ensure pathogen destruction. The impact for poultry health and welfare is not likely to be high as infections in poultry can be asymptomatic. The impact of disease incidence is likely to be low as infection in poultry is asymptomatic.

99. The likelihood of human infection with HPAI is likely to be very low if not negligible. The disease is not present currently in the UK, pigs are not natural hosts of the disease and HPAI is not known to be transmitted to people by food. Impact on public health could potentially be very high.

100. The likelihood of human infection with anthrax is considered to be negligible. There do not seem to be historical human cases attributable to infected pigs/infected pig material, the disease has never been reported from poultry, there are strict disease control measures in place to ensure safe disposal of carcasses of animals that die unexpectedly. Rarely ingestion of infected food can cause intestinal anthrax. The impact of the disease event occurring could potentially be very high as anthrax in humans can cause death.

101. The likelihood of human infection with botulism through consumption of contaminated food of pig, poultry or fish origin is considered to be negligible as pigs are resistant to infection, the likelihood of poultry becoming infected with botulism through consumption of pig PAP is likely to be negligible, and fish that become ill because of toxin type C are unlikely to enter the food chain. The zoonotic potential of infection is likely to be minimal, however the impact of human infection could potentially be high.

102. The likelihood of human infection with Campylobacter, Salmonella, Cryptosporidium or *E. coli* through consumption of food that has originated from infected pigs or poultry or through contact with infected animals could be high in certain circumstances, e.g. if the food has not been handled hygienically to prevent cross-contamination, if it has not been cooked properly to ensure destruction of any pathogens that may be present, if poor hygiene practies have not been followed during/after contact with the infected animals or their environment, etc. The likelihood of infection may be higher for certain groups of
people, e.g. young children, pregnant women, the elderly and immunocompromised individuals.

Conclusions (and statement of the veterinary advice)

Conclusions:

103. If the following feeding practices are allowed, the non-TSE animal health risks which might arise as a consequence of feeding non-ruminant processed animal protein derived from terrestrial animals to non-ruminants of a different species are:

a) Permission to feed poultry or non-ruminant mammalian (e.g. pig) PAP to farmed fish – a low likelihood of new cases of botulism due to C. botulinum toxin type C in farmed fish fed with poultry PAP. Clostridium botulinum spores are heat resistant and if they are present in the raw material used for production of poultry PAP, they are likely to survive if a method other than processing method 1 is used.

b) Permission to feed poultry PAP to farmed non-ruminant mammals (e.g. pigs)
   i. A very low if not negligible likelihood of new cases of HPAI in pigs. The risk rises if raw material is processed by method 7 to standards which are inadequate to inactivate HPAI viruses. If HPAI enters the pig population viral recycling may result in the formation of potentially more virulent serotypes, which if the risk event occurred is likely to have a high impact on the human population.
   ii. A very low (if not negligible) likelihood of new cases of anthrax in pigs which have been fed with poultry PAP not processed by method 1.
   iii. A low likelihood of new cases of type C botulism in pigs fed with poultry PAP which has not been processed by method 1.
   iv. A potentially high likelihood of pig infection due to pathogens such as Campylobacter, Salmonella or Cryptosporidia, that may be present in raw material of poultry origin, if raw material is processed by method 7 to standards which are inadequate to inactivate these pathogens. For the majority of these pathogens the risk to pig health is likely to be low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.
   v. A low likelihood of new cases of E. coli that may be present in raw material of poultry origin, if raw material is processed by method 7 to standards which are inadequate to inactivate E. coli. The risk to pig health is likely to be very low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.

c) Permission to feed non-ruminant mammal (e.g. pig) PAP to poultry
i. A very low if not negligible likelihood of new cases of anthrax in poultry fed with pig blood meal contaminated with spores which was processed by a processing method other than method 1.

ii. A potentially high likelihood of infection due to pathogens such as Campylobacter, Salmonella, Cryptosporidia or E. coli, that may be present in porcine blood, if the porcine blood is processed by method 7 to standards which are inadequate to inactivate these pathogens. For the majority of these pathogens the risk to poultry health is likely to be low as infection is usually asymptomatic. However, the likelihood of new human cases arising could be high in certain circumstances (e.g. following consumption of inadequately cooked contaminated food, or contact with infected animals) and the impact for human health could be high for certain groups of people, e.g. the very young, the elderly or immunocompromised individuals.

104. The majority of the non-TSE risks discussed above (i.e. HPAI, Salmonella, Campylobacter, E. coli, Cryptosporidia) are addressed by the current requirements of the ABP Regulations. Even though processing method 7 does not require specific temperature/time combinations the operator still needs to demonstrate the following:

   a) The identification of relevant hazards in the starting material, in view of the origin of the material, and of the potential risks in view of the animal health status of GB;
   b) The capacity of the processing method to reduce those hazards to a level which does not significantly pose any risk to public and animal health;
   c) The sampling of the final product complies with certain microbiological standards.

105. **Statement of the veterinary advice:**

   a) As there are potentially certain risks lying with raw material being treated by method 7 processing, validation by the Competent Authority of processing methods as processing methods 7 needs to be thorough and care is required to ensure the operator has identified the risks and addressed them via their approved process.

   b) Operators should therefore demonstrate when assessing relevant hazards that they have considered exotic notifiable disease viruses in addition to other relevant hazards, such as endemic zoonotic pathogens (e.g. Salmonella, Campylobacter, Cryptosporidia, E. coli, etc). This is due to the potential for exotic notifiable disease viruses to enter GB and not be immediately diagnosed. Ante-mortem and post-mortem inspection is likely to reduce the risk of blood or other blood products from infected non-ruminant animals being sent for processing for use in farm animal feed, but virus can enter the bloodstream in infected animals before signs of disease are visible. The operator should be able to demonstrate that the method is capable to reduce the identified hazards to a level which does not pose any significant risk to public or animal health. When method 7 is used for processing of porcine blood or fractions of porcine blood for the production of blood meal, the temperature of 80 °C should be reached and maintained for a sufficient time to ensure that HPAI viruses are inactivated.

   c) In addition, current ABPR controls require operators processing animal by-products to have in place, implement and maintain a permanent written procedure or procedures based on the hazard analysis and critical control points (HACCP)
principles. When C. botulinum or B. anthracis are suspected in the raw material used for the production of PAP, they should be identified by the operators as relevant hazards in their HACCP plan and measures should be put in place to ensure that they are eliminated or reduced to acceptable levels.

References


DEFRA (2009) Full profile for Avian Influenza (Highly Pathogenic).  


DEFRA (2010) Full profile for: Anthrax (Bacillus anthracis).  


DEFRA (2010) Full profile for: FMD (Foot and Mouth Disease).  

MERCK VETERINARY MANUAL (2011) Cryptosporidiosis. 
MERCK VETERINARY MANUAL (2011) Mycobacterial Infections other than Tuberculosis. 
OIE (2009) Classical swine fever (Hog cholera) technical disease card  
OIE (2009) Foot and mouth disease technical disease card.  


REGULATION (EC) NO 999/2001
REGULATION (EC) NO. 1069/2009
REGULATION (EU) NO 142/2011


ANNEX 1

ABP definitions (Reference: Regulation (EC) No 142/2011 Annex I)

1. ‘Meat-and-bone meal’ means animal protein derived from the processing of Category 1 or Category 2 materials in accordance with one of the processing methods set out in Chapter III of Annex IV.

2. ‘Processed animal protein’ (PAP) means animal protein derived entirely from Category 3 material, which have been treated in accordance with Section 1 of Chapter II of Annex X (including blood meal and fishmeal) so as to render them suitable for direct use as feed material or for any other use in feedingstuffs, including petfood, or for use in organic fertilisers or soil improvers; however, it does not include blood products, milk, milk-based products, milk-derived products, colostrum, colostrum products, centrifuge or separator sludge, gelatine, hydrolysed proteins and dicalcium phosphate, eggs and egg-products, including eggshells, tricalcium phosphate and collagen.

3. ‘Blood meal’ means processed animal protein derived from the heat treatment of blood or fractions of blood in accordance with Section 1 of Chapter II of Annex X.

4. ‘Feed material’ means those feed materials, as defined in Article 3(2)(g) of Regulation (EC) No 767/2009, that are of animal origin, including processed animal proteins, blood products, rendered fats, egg products, fish oil, fat derivatives, collagen, gelatine and hydrolysed proteins, dicalcium phosphate, tricalcium phosphate, milk, milk-based products, milk-derived products, colostrum, colostrum products and centrifuge or separator sludge.
ANNEX 2

EFSA classification of likelihood

- **Negligible**: So rare that does not merit to be considered
- **Very low**: Very rare but cannot be excluded
- **Low**: Rare but does occur
- **Medium**: Occurs regularly
- **High**: Occurs very often
- **Very high**: Events occur almost certainly