Digesting animal feed

They can’t read the labels.
They can’t make a choice.
How do we do it for them?
01> **Food for thought** Animal feed continues to be a priority for the Agency. Frank Chalmers

02> **Feed: the world** What are animals fed, where does the feed come from, and what is the impact? Fleur Strong provides an overview

04> **Safety first** The Agency is undertaking a review of how feed is inspected, sampled and analysed, and how its safety is enforced. Louise Knowles

05> **Ingredients** The FSA receives expert independent advice from the Advisory Committee on Animal Feedingstuffs. Mandy Jumnoodoo

06> **In the mix** Alexander Döring, the head of the European Feed Manufacturers’ Federation, talks to Frank Chalmers about the role of feed businesses

08> **Pressure cooker** Bradley Smythe follows a Food Standards Team at the feed frontline

12> **Processing animal protein**

The European Commission has proposed making a chicken’s pie out of a sow’s ear or, rather, it has suggested allowing processed animal protein from pigs to be fed to poultry and vice versa. David Carruthers

10> **Keeping dioxins off the menu**

Dioxins and dioxin-like PCBs in feed can transfer to the food we eat. Stephanie Cossom

16> **Some sizzling statistics**

Consumers offer their views on whether the ‘feed ban’ should be relaxed. Ely Mirzahosseinkhan
You are what they eat!

Yes, you’ve read the headline correctly. This issue of Bite is focusing on animal feed, rather than on the food you might find on your dinner plate.

Animals can’t, of course, read feed labels or check what’s in their feed, but we can, and we need to, because what they eat can impact on our health.

In 2000, when the Agency was set up with the aim of ensuring the safety of the nation’s food, the issue of ‘feed’ was very much at the heart of its work.

The Agency’s remit included a requirement to review the controls that had been established to tackle bovine spongiform encephalopathy (BSE), then widely referred to as ‘mad cow disease’. The Agency also has full responsibility for feed hygiene.

One of the three main BSE controls was a ban on the feeding of meat-and-bone-meal to ruminants. This was because scientists had established that feeding cattle protein from the carcasses of other cattle was the transmission mechanism for BSE.

It is reassuring, then, that BSE and animal feed are now no longer at the top of consumers’ shopping list of concerns.

According to a recent FSA public attitudes tracker, food prices, salt in food, food waste, fat in food and a range of other topics are now of much greater concern. Animal feed and BSE come 17th and 19th respectively.

The issue of feed safety has not, however, dropped down the Agency’s priority list. Our scientific advisory committee the Advisory Committee on Animal Feedingstuffs has, during the past 12 years, considered feed-safety topics ranging from additives and contaminants in feed to feed hygiene and on-farm feeding practices.

Other feed safety issues have also replaced BSE as a major concern (see the article on dioxins on pages 10 and 11).

An interview with a spokesperson for Europe’s feed manufacturers illustrates the crucial role played by industry in maintaining feed safety. Recently, the European Commission proposed a relaxation of the European feed ban that would again allow the feeding of processed animal protein to other animals (in this instance non-ruminants).

Our consumer research showed that people who recall the trauma of BSE were strongly opposed to the proposal. Younger people, on the other hand, tended to be reassured that if the Government and scientists said that the feeding of pigs to poultry and poultry to pigs was safe, then it was!

A summary of the FSA Board’s debate on the proposal to relax the feed ban can be found later in the issue.

Elsewhere, you will find an overview outlining the massive scale of feed production across the globe and articles on the role played by local authority enforcement officers in maintaining the safety of feed used in the UK.

Feed for thought indeed!
The nutritional value and safety of animal products you might choose to eat – meat, eggs and milk – can be influenced directly by what the animal has been fed. Fleur Strong provides an overview of feed production and supply worldwide.

The pastoral image of grazing cattle or sheep, feeding only on grass, is far removed from the reality of today’s global livestock market. In fact, that image has been out of date for more than 150 years.

Feeding animals the by-products of other industries, such as brewing, can be traced back to the early 19th century, when oilseed cake, a by-product of crushing oilseeds to produce vegetable oils for soap and food, was used as a rich source of protein for animal feed.

Today, there is an extensive range of feed materials, ranging from hay, straw, silage, oils, grain and soya beans to rapeseed, palm kernel, sunflower, groundnut, cottonseed, linseed and maize.

There are also manufactured products that are typically compound mixtures of feed materials, which will usually contain additives. All are used in formulating rations for livestock.

As global livestock production has grown and intensified, farmers have come to depend less on locally available feed and increasingly on feed that is traded domestically and internationally. Today, it is estimated by the UN Food and Agriculture Organisation that crops grown for animal feed take up about one third of the world’s total arable land.

What farmers feed to livestock depends on a range of factors, including the species and the age of animals, the type of food to be produced, the price, availability and nutritional value of various feedstuffs, and the local geographical factors, including the type of soil and climate where the animal is being raised.

The composition of feed is important, because an animal’s nutrition influences directly the texture and nutritional value of the animal food you eat. Cows, sheep, pigs and poultry differ markedly, both in their requirements for specific nutrients and in the way they consume, digest and metabolise feed. Those who supply feed mixes play an important role in blending the feed constituents according to the specifications outlined by nutritionists. If the component parts are not apportioned correctly, it can result in reduced quantities of animal products (milk, meat and eggs) for human consumption.

It is the nutrient composition of the feed – including the energy concentration, the levels and digestibility of amino acids, and the mineral content as well as any negative aspects, such as low palatability – that determines if a feed is ‘fit for purpose’. Sometimes certain feeds can result in an unwelcome side effect. For example, brown-egg laying poultry can’t metabolise sinapine, which can be found in rapeseed meal. If consumed by the birds it results in a strong fish-like odour in their eggs.

Who checks the feed?
Safe animal feed is important for the health of animals, the environment and for the safety of foods of animal origin. There are many examples of the close link between the safety of animal feed and the foods we eat. For instance, the
feeding of mammalian protein to ruminant animals was banned in the EU in 1994, because it was linked to the spread of bovine spongiform encephalopathy (BSE) in cattle, and BSE-infected meat was associated with variant Creutzfeldt-Jakob disease in humans.

Legislation on the labelling, marketing and composition of animal feed is harmonised at European Union level. The legislation applies principally to feed for farmed livestock, but also covers feed for horses, pets, farmed fish, zoo and circus animals, and creatures living freely in the wild (for example, game). Feed businesses are also required to adhere to standards concerning the transport and storage of feed, record-keeping, and the training of personnel. These standards parallel similar requirements for the producers of human food and represent a system of safeguards at the first stage of the human food chain.

The Food Standards Agency is the ‘central competent authority’ for animal feed in the UK, and negotiates on the UK’s behalf on legislative proposals made by the European Commission in Brussels. It is also responsible for overseeing the enforcement of animal feed legislation and drawing up the annual National Control Plan for the enforcement of food and feed law.

In England, enforcement is carried out by the authorities responsible for feed, including county councils, unitary authorities, port health authorities, metropolitan borough councils and London boroughs, while in Scotland and Wales it is carried out by unitary authorities – largely through trading standards personnel. The competent authority for feed controls in Northern Ireland is the Department of Agriculture and Rural Development.

The import of feed into Britain is policed by staff at port health authorities, and by environmental health and trading standard officers employed by local authorities.

The future of feed

The complexity and vulnerability of the global feed market continues to grow. An expanding world population and the new demand for biofuels is increasing the competition for both land and crops that can be used for feed. Another issue is the use of genetically modified material in animal feed. The European Commission is reviewing legislation on GM feed and food.

Feed materials imported into the UK can include some genetically modified (GM) or GM-derived ingredients. According to the European Feed Manufacturers’ Association, at least 85% (about 107 million tonnes) of the EU’s compound feed production is now labelled to indicate that it contains GM or GM-derived material.

Increased consumption of meat in China and South Asia is also changing the nature of feed production, as these areas in particular are buying up more and more of the world’s feed.

This means that, while the Agency’s remit continues to be feed hygiene and the safety of animal feed, it also recognises that in the coming years, the changing nature of the world’s economy and the need for more efficient use of the world’s environment are factors that will increasingly come into play in feed production.

Types of feed

Feed materials: products of vegetable or animal origin, in either their natural or processed states, which may be fed directly or used in the manufacture of compound feeds. Examples are soya beans, rapeseed, sunflower oil or dried grains.

Feed additives: used in animal nutrition to improve the characteristics of feed, for instance to enhance flavour or to make feed materials more readily digestible. They play an important role in modern agriculture.

Compound feed: blends of various feed materials which will usually contain additives and are formulated according to the specific requirements of the target animal. They can be complete feeds that provide all the daily nutrients, concentrates that provide a part of the ration (protein, energy) or supplements that only provide micronutrients, such as minerals, and vitamins.
Feed controls under review

The Food Standards Agency is undertaking a review of how ‘feed official controls’ are carried out in the UK.

At the start of 2011, the Food Standards Agency announced plans to undertake a review of the delivery of food and feed official controls in the UK.

‘Official controls’ is the phrase used to describe the inspections, audits, sampling and analysis carried out to ensure feed and food businesses comply with the requirements set out in EU law. The controls also include enforcement measures ranging from suggested remedial action to the closure of premises.

As the ‘central competent authority’ for feed safety in the UK, the Agency is responsible for how these controls are operated at a local level. The Agency decided to undertake the review to ensure it is meeting its responsibilities with regard to feed safety.

It is particularly timely, as there is also a need to understand the impact of budgetary pressures on the Agency and on the enforcement bodies and organisations that operate official controls. These range from local authority teams to port health authorities.

The review will be examining the effectiveness of the current systems and structures for delivering feed controls in the UK, including feed hygiene, and will include scope for making improvements. Consideration will be given as to how best to secure efficiency, consistency, resilience and sustainability.

It will examine whether the current system meets a number of core principles:
- that a risk-based approach is taken, and that the most effort is spent on making changes that will make the greatest difference to consumer protection
- that controls are applied in a consistent way across the UK
- that controls are as efficient as possible, and that they include value for money considerations and flexibility
- that there is clear accountability and that stakeholders know who is responsible for what

The Agency aims to ensure that any model recommended will conform to the legal requirements for official controls, and that feed businesses continue to take responsibility for safe feed production.

It will also be looking at where feed controls fit into the wider public protection and regulatory landscape. This will ensure recommendations avoid unintended consequences that may, for example, have wider public health implications or put undue pressure on small businesses.

Consideration will be given to how adaptable and flexible the current system is, and whether it has the ability to cope with changes, emergency situations or emerging risks.

The Agency has not set out with any pre-determined ideas of the review’s outcomes, and is determined to ensure the process is open and transparent, evidence-based and objective. The Agency has begun engaging with enforcement officers to identify the evidence needs. The review as a whole is expected to take at least two years to complete.

Further information
To find out more about the review, please email: review.officialcontrols@foodstandards.gsi.gov.uk
The feed chain is the first link in the human food chain, and ranges from businesses that import raw materials, wholesalers and transporters to manufacturers of compound feeds and feed additives, using materials sourced from around the world. Although the rules on the labelling and composition of animal feed are harmonised at a European Union level, the FSA also receives expert independent advice from the Advisory Committee on Animal Feedingstuffs (ACAF) established in June 1999 in light of the concern about the integrity of animal feed, particularly over the implications of bovine spongiform encephalopathy (BSE) and the use of genetically modified (GM) feed ingredients.

During the past 12 years, ACAF has considered a range of issues, including additives and contaminants, the prevention and control of salmonella in feed, feeding practices on farms, GM, and feed hygiene, with input from the feed industry and other Government departments.

It has produced a number of reports and position papers aimed at improving feed safety, and its recommendations have helped inform the UK negotiating position during discussions in Brussels. ACAF has also assisted the Agency and UK ministers by highlighting where their policies may require review or development.

An important area of the committee’s work is horizon-scanning and keeping an eye on new technical developments. One of these recent developments is the use of co-products from the biofuel industry for animal feeds. The committee first considered this issue in 2006, and recently reviewed and updated the paper it published in 2008, to reflect advances in scientific understanding and experience.

Food scares
The vast majority of the feed industry acts responsibly, but recent major food scares in Germany and Ireland, both stemming from feed contaminated with dioxins, show what can go wrong and how quickly and easily consumer confidence can be damaged. In light of this, ACAF is examining potential gaps in the integrity of the feed chain to avoid a similar situation arising in the UK.

The committee consists of independent experts in fields such as consumer affairs, the feed industry, microbiology, enforcement and toxicology. They are appointed by UK ministers, including ministers from Defra and from the devolved countries, and by the Chair of the Food Standards Agency. They are appointed for their expertise and experience, and they do not represent a specific organisation.

ACAF was one of the first of the Food Standards Agency’s committees to hold its meetings in open session, giving stakeholders an opportunity to observe the committee at work and to ask questions. Committee meetings have been attended by a variety of observers, including representatives from UK and international trade bodies, private individuals, government officials and officials from other countries.

Further information
More information on the work of the ACAF can be found on its website: http://food.gov.uk/acaf
Making it work in Europe

Europe’s feed industry is one of the safest and most efficient in the world, says Alexander Döring. Below, he talks to Bite about the key contribution made by feed manufacturers

Alexander Döring
Secretary General of the European Feed Manufacturers’ Federation (FEFAC)

The immense scale of Europe’s animal feed industry becomes clear when you digest some of the statistics mentioned by Alexander Döring, Secretary General of the European Feed Manufacturers’ Federation (FEFAC).

He explains, for example, that almost 500 million tonnes of feed are required to support Europe’s livestock production (milk, meat, fish and eggs) – equivalent to one tonne for each of the EU’s 480 million citizens.

Two thirds of this feed is produced by farmers themselves, and the other third supplied by feed manufacturers. For the past 20 years, FEFAC has seen its role in this as developing and safeguarding the standards of safe feed production across the European Union (EU) in a harmonised way.

The federation’s member associations, whose company members operate about 4,000 feed mills across the EU, have all implemented systems based on good manufacturing practice outlined in FEFAC’s European Compound Feed and Premix Manufacturing Code, the EFMC.

Industrial histories
One might surmise that the different cultures of the 27 EU member states would mean that the feed safety challenges in each country would relate directly to their industrial histories. But the issue is more complex than that, Alexander Döring explains.

If you think in terms of cereals and by-products from the food industry, the majority of feed is sourced locally, he explains. If you are producing cereals in an environment with heavy industry you might, therefore, expect a different kind of contamination pattern than in other places.

‘But industrial pollution isn’t the only hazard that has to be looked out for. You have to look clearly at the production processes at farm and food industry level to see what’s happening with the feed materials,’ he says.

For example, Ireland doesn’t have heavy industry, but it had a major problem of dioxin contamination three years ago because of malfunctioning drying equipment in a food recycling plant, he says.

It means that when you apply the mandatory EU Hazard Analysis Critical Control Point feed hygiene management system, ‘you need to know exactly how feed materials are produced, under what conditions and under what processes’, he adds. ‘It isn’t enough to look at the general environment in which these products are being produced. You have to look at the specific set-up of individual processing plants in the supply chain.’

You also have to understand that ‘the job is never done’, he says. There will always be new emerging challenges in assuring the safety of feed due to changes in food and feed processing or farming practices, not just in the EU but globally, given that many feed materials have to be imported from non-EU countries.
Biofuels are also competing for the same raw materials used in feed. There may be a by-product that is rich in protein and can be used in feed.

One recent challenge FEFAC has had to contemplate is whether the European feed ban should be relaxed to allow the feeding of non-ruminant processed animal protein (PAP) to non-ruminants (see pages 12 to 25 of this issue).

‘The science is clear that these products are safe and that there is no threat to public health. They are already used widely in the feed industries in other parts of the world,’ he says.

Science also recognises that there is no management system available to suppress completely contamination of one feed type with another within feed mills, if you switch production, he adds.

The European Commission wants to impose a ‘single species channelling approach’, he says, meaning that feed mills would have to set up dedicated production lines for each species. This would be combined with a zero tolerance for ‘cannibalism’ to exclude any possibility of intra-species recycling, for example feeding porcine material to pigs. This would run from the slaughterhouse that produces the animal by-products, to the renderer, via the feed mill, to the farmer.

‘We think the zero-tolerance approach is completely unenforceable and unworkable for our multi-species monogastric feed mills; hence FEFAC members believe this should be handled as a control management issue, not a safety issue.’

‘Carry-over’ is also an issue that crops up with GM-based feed. Feed manufacturers may, for example, produce a compound feed that doesn’t contain soya in its formulation. When it is tested, however, traces of GM soya may be found because the production line was previously carrying a feed containing GM soya.

It’s in this area of ‘carry-over’ that the GM labelling rules are problematic, Alexander Döring says. However, he points to a European Commission report issued in 2006 that makes clear that the feed industry is up to standard and is meeting fully the requirements on GM labelling.

Emerging issues

On a more macro scale, one of the key emerging issues facing the European feed industry is competition over supply of feed materials.

Globally, there is strong growth in the demand for animal proteins, mainly due to developments in Asia, South Asia and South America, where consumption of animal products is increasing rapidly.

‘We’re all competing for the same raw materials,’ he points out. ‘China has already overtaken the EU as the number one importer of soya products. It could mean that the EU could lose the capacity to impose its own safety standards on supplies.’

Biofuels are also competing for the same raw materials used in feed. ‘This does have some positive effects. If biofuels turn energy crops into ethanol or seeds into diesel, there may be a by-product that is rich in protein and can be used in feed.’

On the negative side, he points to the development of a bioethanol plant in continental Europe that is burning wheat bran to run the power station. ‘If that’s going to be the trend, it will be an increasing problem for our industry,’ he says.

There are challenges ahead, but Alexander Döring is very positive about the future of feed in Europe and of the role that FEFAC will play.

The main driver is ‘resource efficiency’, and Europe’s feed industry is the most efficient feed industry in the world. ‘We have the processing skills and the knowledge base to move further ahead on the road to improved feed conversion rates,’ he concludes.

2/3 of feed produced by farmers

4,000 feed mills operated across the EU by member companies

500m tonnes of feed a year are required to support Europe’s livestock production
At the feed frontline

Local authority enforcement officers play a crucial role in inspecting businesses that use, process and trade in animal feed. Bradley Smythe spent the day with enforcement officers from East Riding of Yorkshire Council’s Food Standards Team.

**Bradley Smythe**
Communications Manager, FSA

Food Standards Team’s work is to ensure that feed is safe to use. If contaminated feed is eaten by animals being bred for meat and milk, then there are potential implications for the food chain in the UK and abroad.

The team of enforcement officers I spent the day with is based in Burnby Hall in the market town of Pocklington, or ‘Pock’ as it’s known locally, at the foot of the Yorkshire Wolds. Michael Chapman is the senior trading standards officer and lead feed officer for the authority. Dean Lee and Rachel Anderson are two of the six officers in the Food Standards Team qualified and authorised to inspect feed. A proportion of their job involves inspecting animal feed, but the team also carries out the range of other trading standards responsibilities in food standards: age restricted sales, weights and measures, fair trading and product safety.

Today I am being shown how they check the safety of animal feed. Dean says: ‘When we identify premises that are involved in animal feed, we would register them and then visit them to do an inspection. We risk-assess the business and that risk assessment informs how frequently they are visited.’

Much of the team’s feed safety work involves visiting some of the 500 registered farms that use or produce animal feed. Each farm must be registered with the local authority and inspected to ensure it is meeting the safety criteria set out in feed safety legislation. The team is registering farms on a daily basis but a lot still require registration and a subsequent visit, so this figure is increasing all the time.

There are about 60 manufacturers of animal feed, pet food and feed materials as well as food businesses producing by-products that end up as feed. Three premises are approved premises handling feed additives. These are inspected more frequently, as they are considered a potentially higher risk.

**East Riding** is the historic county of East Yorkshire. Its countryside, including the low hills of the Yorkshire Wolds, the high chalk cliffs on the coast, and the peaceful market towns, make it an attractive destination for visiting tourists.

It is, however, farming that is central to the local economy, and with tonnes of animal feed being traded by businesses and consumed by livestock across the county every day, an important part of the local economy.

I accompanied Dean and Rachel on a sampling visit to an agricultural merchant based by the port. Today they are taking samples of linseed, which will be used as an ingredient for feed.

**WHAT WE DO**
I accompanied Dean and Rachel on a sampling visit to an agricultural merchant based by the port. Today they are taking samples of linseed, which will be used as an ingredient for feed.

**STAGE 01**
Choosing which batch to test from in the warehouse

**STAGE 02**
Spreading out the seed before separation
A visit to one of these businesses usually involves an initial meeting with the food business operator to discuss any issues or problems with the feed. The enforcement officer will then check the quality systems. Feed businesses use the Hazard Analysis Critical Control Point (HACCP) system, just like all food businesses.

HACCP focuses on identifying the critical points in a process where feed safety problems could arise and putting steps in place to prevent things going wrong. Keeping records is an important part of HACCP systems, so Dean and Rachel will carefully check the business’s documentation in relation to feed. ‘We then have a look at the premises and take feed samples,’ says Dean, ‘to check the paperwork matches reality.’

After a closing meeting with the food business operator, Dean and Rachel return to the office, put the information on the team’s database and send samples off for testing. A final letter is sent to the business explaining the results of the visit and setting out any action that needs to be taken.

Most farms are considered medium risk, so they are usually only visited once every two years. Feed manufacturers and traders are visited once a year. The aim is to ensure the frequency of inspections is proportionate to the level of risk.

The team also has responsibility for checking feed that comes into the Port of Goole. The Humber Estuary and North Sea mark East Riding’s southern and eastern limits. Historically, the Hull and Humber ports have received cargo-laden ships from around the world.

While not as large as Hull, the Port of Goole is capable of handling nearly three million tonnes of cargo a year. All types of cargo arrive at the inland port, including maize, milling wheats, specialised grain and animal feed, which are stored in silos that hold up to 14,000 tonnes.

Shipping lines
Manifests of the ships coming into the port are emailed to the enforcement officers. They can then check them against the lists of feed products that have been identified nationally as of particular concern. If the feed is being shipped from another European country then the consignment should have already been subject to controls, but consignments from outside Europe will sometimes be subject to closer scrutiny.

I accompanied Dean and Rachel on a sampling visit to an agricultural merchant based by the port. On arrival, Dean and Rachel put on their safety shoes, high-visibility jackets and hard hats before taking their sampling equipment into the company’s main storage building where a forklift truck is shifting packs of seed into neatly stacked rows. Today they are taking samples of linseed, which will be used as an ingredient for feed.

Dean and Rachel meet with the firm’s boss to discuss any issues they might need to be aware of. They are on first name terms and relations seem cordial. I ask whether this is always the case. ‘We have pretty good relations with the businesses we inspect,’ says Dean. ‘Sometimes there are farms where we have problems, but I explain we have an important job to do. Also, I’m from a farming family so I tell them I understand their concerns about the impact on their business if action needs to be taken.’

Dean and Rachel place a plastic sheet on the floor of the warehouse and use shovels to measure out a sample of the linseed. The sample is ‘coned and quartered’, which involves splitting the pile into four even parts. Three piles, each weighing just over 500 grams, are taken as samples. They are sealed and labelled. One is given to the food business operator for their records, one will be kept in the sample store back at ‘Pock’ and the other will be sent to a laboratory for testing.

In this instance they are being tested for mycotoxins in line with the national priorities. The sampling done, the enforcement officers tidy away their equipment and sweep up any remaining feed.

The test results later show that the samples are satisfactory. The firm’s boss is happy, and it’s been another good day at the office for the Food Standards Team.
Keeping dioxins off the menu
(for them and us!)

Meat, eggs, milk and fish are staples of the UK diet, as consumers regard them as healthy and wholesome. Stephanie Cossom explains how the FSA is on the alert to ensure they are also uncontaminated.

Contaminants in animal feed can present a potential danger to animal or human health or to the environment. They can include naturally-occurring and manufactured substances that enter the feed chain from the environment or during processing. From feed, they can carry over into animal products and, therefore, our food.

Two groups of contaminants of particular concern are dioxins and polychlorinated biphenyls (PCBs). They are chemically-related compounds, part of a broader group known as persistent...
Dioxin incidents in the European Union

Dioxins are formed as unwanted by-products in a variety of industrial and combustion processes. PCBs have been used since the early 1930s, mainly in electrical equipment. The manufacture and general use of PCBs stopped in the 1970s and is no longer permitted in the EU. Some PCBs have similar effects to dioxins, and are known as dioxin-like PCBs.

Dioxins and dioxin-like PCBs can lead to a wide range of health problems if they accumulate in our bodies at high levels. They have the potential to cause cancer and they can damage our reproductive and immune systems. This is why the Agency takes cases of contamination in food and feed so seriously.

Animals and fish take up dioxins and PCBs from their feed and from any water, soil or sediment they may ingest during feeding. These substances pass into body fat, where they accumulate.

More than 95% of human exposure is through our diet. Everyone is exposed to low levels of dioxins and PCBs. Foods containing animal fat, such as milk, meat, fish and eggs, are the main dietary sources, but they are found at extremely low levels in all foods.

It is generally agreed that the best method of preventing contamination is to control the release of these chemicals into the environment. Defra and the Environment Agency take the lead in this work.

Unfortunately, there is no way to remove dioxins and PCBs once they are present in food or feed, but recent analysis indicates that human dietary exposure to both dioxins and PCBs fell by about 85% between 1982 and 2001.

The FSA currently provides local authorities with extra funding to analyse additional samples of imported feed for dioxins and PCBs.

Dioxins and PCBs have been the focus of several safety incidents in recent years (see top of page). In 2008, elevated levels of dioxins and PCBs were found in pig feed following contamination of recycled bakery products in the Republic of Ireland. Sampling and analysis of the animal products confirmed excessive levels of contamination, and resulted in the recall of many pork products and some beef and milk.

More recently, in 2010, high levels of dioxins and PCBs were found in Germany in a range of compound feeds, following the incorporation of industrial grade fats. Hundreds of German pig and poultry farms were closed, and some possibly-contaminated liquid egg reached the UK. The Food Standards Agency’s risk assessment of the affected foods showed that there was no risk to consumers, but some supermarkets chose to voluntarily remove the products from sale.

The European Union has set out maximum permitted levels (MPLs) for dioxins and PCBs in feed. Local authorities carry out routine sampling of animal feed and food for dioxins and PCBs to test if feeds meet these MPLs. In addition, the FSA currently provides local authorities with extra funding to analyse additional samples of imported feed for dioxins and PCBs under the National Co-ordinated Food and Feed Sampling Programme. Sampling is based on risk; those feed materials that are known to be at high risk of contamination are sampled most frequently.

Feeds that are found to have levels above the MPLs are considered unacceptable; they must be withdrawn and disposed of outside the feed and food chains. The FSA is notified of such failures and carries out risk assessments on any affected manufactured feed or food, so that the Agency can provide advice on how best to manage and minimise the risk to consumers.

One thing is apparent: animal feed is becoming an ever more important consideration in food safety and the FSA is working hard to ensure that feed consumed by animals in the UK is safe to eat.
Over the next few pages, Bite looks at a controversial proposal that processed animal protein should be fed to non-ruminants. David Carruthers puts the issue into perspective

Processing the issue of animal proteins

David Carruthers
Head of Meat Hygiene, FSA

In 2010, the European Commission published the ‘TSE Roadmap 2’, an updated version of its risk-based review of the controls on TSEs (transmissible spongiform encephalopathies). TSEs include BSE, otherwise known as ‘mad cow disease’, and related diseases.

The intention of the TSE Roadmap 2 (like the original TSE Roadmap produced in 2005) is to consider how the TSE controls might be relaxed while continuing to assure a high level of food safety.

The roadmap regards the decline in risk from BSE (see box) as presenting an opportunity to reconsider priorities in relation to food safety and animal health, and place a greater focus on new threats, such as new variants of avian influenza.

Roadmap 2 envisages (as did its predecessor) a relaxation of the ban on protein derived from non-ruminant animals, to allow this material to be used in feed for non-ruminants while maintaining the ban on intra-species recycling. This would allow the feeding of poultry protein to pigs and fish, and pig protein to poultry and fish. Roadmap 2 also anticipates that in the near future a test will become available that will identify the species from which animal protein in feed was derived.

But what would be the potential benefits of going down this road, if it were established that consumer safety could be assured and that consumers would accept the change in feeding practice?

Roadmap 2 notes that animal protein could provide a source of the high-quality proteins required in feed for non-ruminants, and that its use might enable the EU to decrease its dependence on other sources of proteins.

According to the European Feed Manufacturers’ Federation (FEFAC), the EU is dependent on imports for more than three-quarters of the about 23 million tonnes of...
Diminished risk of BSE

In 1988, a ban was introduced in the UK on feeding protein derived from ruminants (cattle, sheep and goats) to ruminants. The feeding of cattle meat-and-bone-meal to other cattle is accepted as having been the transmission mechanism for BSE. In 2001, to ensure that the ban was fully effective and to minimise any risk that cattle might be fed with contaminated feed, the EU introduced a total ban on the feeding of all processed animal protein to all farmed animals. As a result, with certain limited exceptions (for example, fishmeal may still be fed to pigs, poultry and farmed fish), all protein in animal feed has to be of vegetable origin.

Thanks to the effectiveness of the feed ban, the incidence of BSE in the UK has fallen consistently year on year, from a peak of 37,000 cases in 1992 to its current low level of 11 cases last year.

protein that are fed to EU livestock annually. Nearly two-thirds of this protein is derived from soya bean meal, of which only 2% is produced in the EU. FEFAC estimates that lifting the restriction on pig and poultry protein could make up to 1.2 million tonnes of additional protein available annually for use in feed, thus reducing the EU’s protein deficit (see pages 6 and 7 for FEFAC interview).

Using a locally produced by-product of the food industry, rather than imports, could be more sustainable. Soya beans are currently shipped from the US, Argentina and Brazil, and increasing demand for soya beans for animal feed is widely considered to be one of the main drivers for tropical deforestation.

Fishmeal used in farmed fish diets is produced mostly from fish caught from the wild. Replacing this with pig or poultry protein could contribute to the sustainable development of aquaculture and help reduce pressure on marine resources. As pigs and poultry are omnivores, feeding them animal protein may also provide them with health and welfare benefits.

There are also potential economic benefits to industry. When the feed ban was introduced, instead of animal protein being a source of profit, it had, instead, to be destroyed at a cost, and replacement material had to be imported. The ban has also put EU producers at a potential competitive disadvantage in relation to imports, as the same rules do not apply outside the EU.

However, whether there would be any real benefit is currently uncertain. The market for non-ruminant protein has changed dramatically since the feed ban. Over the years, demand from the petfood industry has increased greatly and the large majority of pig and poultry protein appears currently to be sold for pet food instead of having to be disposed of. The compliance costs to industry, from the controls that would be needed to ensure that non-ruminant protein was fed only to non-ruminants of a different species, would be significant and likely to inhibit uptake. Also, the FSA’s consumer engagement work suggests that consumer acceptance is currently minimal (see pages 16 and 17).

What can be said is that the proposed change would provide an additional outlet for non-ruminant protein that would allow it to be used in feed where it is economic to do so. It could also create new export markets, as EU producers are not permitted to export non-ruminant protein for uses that are prohibited within the EU.

Roadmap 2 also anticipates that in the near future a test will become available that will identify the species from which animal protein in feed was derived.

“"
PAP: the science behind the story

The European Food Safety Authority advises the EU member states on the risks associated with all aspects of food. Irene Hill explains its advice on processed animal protein

Irene Hill
Head of TSE Science Branch, FSA

The European Food Safety Authority (EFSA) has produced two recent opinions on the risk to humans from potential changes in animal feed regulations.

In 2007, when the possibility of relaxing the feed ban was first being considered, EFSA looked at the risk to human health from BSE if pig proteins were used in poultry feed and poultry proteins were used in pig feed (see further information).

This opinion assumed there would be no other changes in the control measures relating to TSEs, and that these measures prevent any cross-contamination.

Based on past feeding practices and the results from experimental work to investigate the susceptibility of pigs and poultry to BSE, EFSA concluded that there would be a negligible risk to humans from BSE as a result of feeding poultry with pig PAP or feeding pigs with poultry PAP.

However, it also recognised that the available data was limited and did not allow conclusions as to the absence of any TSE in poultry or pigs. EFSA cautioned that should a TSE be identified in either pigs or poultry, then this risk assessment was no longer valid.

In January 2011, EFSA published the results of modelling that estimated the risk from a series of cross-contamination events (see further information). First, that some specified risk material is left on a carcass that is used to produce ruminant PAP. Second, that non-ruminant PAP is then contaminated with up to 5% of this ruminant PAP. Finally, ruminant feed is contaminated with up to 2% of this non-ruminant PAP.

Taking into account the possibility that a BSE-infected animal would not be detected and would then be slaughtered for food, EFSA calculated that this would result in less than one additional BSE infected bovine in the EU per year.

The cross-contamination envisaged in this scenario would not, therefore, trigger a new BSE epidemic and represents a negligible risk to consumers.

Further information
Certain aspects related to the feeding of animal proteins to farm animals

Lessons of BSE

There is clear evidence that BSE in UK cattle was spread through feeding cattle with the processed remains of other cattle. Scientists tell us that the risks of intra-species recycling are great and should not be allowed. In order to enforce this key safety measure, it is necessary to be able to establish that feed containing processed animal protein (PAP) only contains material from permitted species. Tests that can do this have been developed in recent years and are currently being validated by the EU Reference Laboratory for Animal Protein in Feedingsuffs. These tools are essential for the successful enforcement of regulations that restrict the inclusion of certain PAPs in feed.
Two of the first four groups contained only young people. The other two contained older members.

**Research methodology**

Twelve focus groups were established to obtain a spread of opinions in both urban and rural areas. All of the groups were moderated by independent facilitators from TNS-BMRB, and representatives from the Food Standards Agency were on hand to answer questions and help clarify any areas of uncertainty. Participants were asked questions to establish their awareness of animal feed and their initial reaction to the concept of relaxing the ban on PAP. They were then provided with more detailed information by way of handouts, slide shows and presentations prepared by the Food Standards Agency, Defra, the National Farmers’ Union and the European Food Safety Authority. Afterwards, the participants were again asked for their views to see if they had changed.

In August 2011, a further eight groups were established in Aberdeen, Banbury, Belfast and Cardiff; again, two per locale with only younger or older members. But these groups held two sessions each, as the Agency felt that using a deliberative method – presenting participants with information in stages and gathering views at specific points – would provide a deeper understanding of consumer attitudes.

In the first session, participants were asked to indicate the strength of their feelings on a relaxation of the ban. They were also asked to write down questions they had about the subject, to think more about it and to talk to relatives and friends before returning for the second session a week later. At the second session they were again asked to indicate the strength of their feelings to see if their position or view had changed after being provided with additional details and information. Carrying out discussions a week apart allowed the researchers to provide answers to the questions asked in the initial session, and to see if the respondents’ position/view had changed.

In fact, for the majority of the participants at either end of the spectrum there was a small or no shift. Those in the middle had not heard anything in the discussion to change their initial view.

For the majority of people surveyed, there was only a small shift (or no shift) in their views on the ban.

In the first four groups were held in Croydon and Huntingdon in June 2011. One group in each locale contained only young (<40) participants, the other only older (>40) members. These groups held one session each.

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For the majority of people surveyed, there was only a small shift (or no shift) in their views on the ban.
The majority of people taking part in research commissioned by the Food Standards Agency were against European Commission proposals to relax a ban on using processed animal protein in livestock feed for chicken and pigs.

A backwards step
Consumers surveyed oppose animal protein in feed

Younger, urban, Aberdeen

I’m happy to go along with it as long as it’s audited on a regular basis. If everything is safe then I’m all for it.

Ely Mirzahosseinkhan
Consumer Engagement Officer, FSA

One of the Food Standards Agency’s core values is to put the consumer first. So when the Agency’s Board was asked to provide advice to ministers on a European Commission proposal to re-introduce processed animal protein (PAP) into the food chain, the Agency realised it was critical to canvas the public’s views. The findings of this research informed the Agency Board’s debate on PAP at its September 2011 open meeting. (See previous page for methodology.)

On the whole, participants were against the idea of relaxing the ban and considered the use of PAP to be ‘unnatural’ and ‘unethical’. There was also a slight divide between younger and older participants.

Surprisingly, it was the younger ones who were more trusting of the Government to protect the consumer. As one young participant from rural Wales explained: ‘They are going about it in the right way and doing all the tests, and asking our opinions this time.’

The younger participants indicated that they were prepared to ignore potential food risks so they could maintain their current eating practices and lifestyles.

This was clear from the comment made by a young participant in Belfast who said: ‘I don’t care what my chicken burger has eaten, as long as it is shown that there is not going to be an adverse effect on your health.’

When more information was presented to them, some of the younger participants who had been strongly against lifting the ban shifted towards a neutral position or began to favour relaxing the ban. Those who did change their opinion often did so because they accepted that the risk was minimal or, it seemed, through apathy.

The older participants tended to continue to respond negatively to relaxing the ban, even when they were provided with additional information. Possibly because they remembered the BSE crisis, the older group members were more cynical. They were also more likely to consider the impact on future generations and to envisage possible future scenarios.

One, from rural Huntingdon said: ‘We didn’t see BSE coming, so how are we going to guarantee we’re going
Six out of eight focus groups in our two-stage research favoured continuation of the ban.

See methodology, page 15

to see the next thing coming?’
Both groups had a strong desire to understand the drivers behind the proposal. They wanted to know why there was a move to relax the ban now, if it would be healthier or more environmentally friendly, and who would actually benefit from the change. They felt that there was no benefit to the consumer in relaxing the ban, and referred specifically to the fact that the meat produced was unlikely to be of better quality or to cost less.

When questioned about why they didn’t want the ban lifted, most said it was due to the possible health risks, regardless of how small. ‘I feel really angry that we are even discussing this,’ explained a younger participant from Wales. ‘We should consider our children’s future... the long-term risk cannot be known.’

The participants, particularly the older ones, understood that there were potential benefits to relaxing the ban. One from Aberdeen explained: ‘It’s a pity to see things wasted when they could be used.’ They also felt that the possible economic and environmental benefits were the most important – there would be less wastage of meat by-products and a reduction in carbon emissions from importing soya, currently used as an alternative to PAP.

However, these reasons were not considered compelling or urgent enough to change a system that was not broken and to introduce a level of risk into the food chain. The overall conclusion of those surveyed was that BSE had been reduced to such low levels as a result of the various feed bans that relaxing them now seemed like a backwards step.
At its September open meeting, the FSA Board discussed a European Union proposal that the ban on processed animal protein being fed to non-ruminants should be relaxed. Below is a summary of the debate

**The Big Debate**

**KEEPING THE STABLE DOOR BOLTED**
Our role here is advisory, but in terms of the way the FSA was set up this is a classical FSA issue.

Tim Smith  
FSA Chief Executive

The absolute priority for us is the health of UK consumers. On that basis, there is unanimity [on] our strong advice to ministers.

Jeff Rooker  
FSA Chair

I would like you to consider the proposal to relax certain provisions of the current feed ban. We’re joined by FSA Director of Food Safety Alison Gleadle, who will present the paper, supported by a return visit of Alick Simmons, the Director and Deputy Chief Veterinary Officer of Defra and formerly of the FSA, and David Carruthers, head of the Meat Hygiene branch in the FSA. Tim, do you want to say something to start?

FSA Chair Jeff Rooker

Our role here is advisory, but in terms of the way the FSA was set up this is pretty much a classical FSA issue. We’re asked to contemplate the science and other evidence and evaluate that to form a risk assessment.

We’re then asked to think about what risk management approaches would be effective and whether we believe that those approaches are actually going to do what’s necessary to convince all of us that this is the right thing to happen. The most difficult part of this is to contemplate our responsibility when it comes to consumers and their protection.

FSA Chief Executive Tim Smith

There are three main areas for you to consider. On the points of safety, you have in the paper – and referenced – risk assessments from the European Food Safety Authority, from the Spongiform Encephalopathy Advisory Committee in the UK and the views of the Advisory Committee on Animal Feedingstuffs. The risk assessments are based on assumptions of the amount of cross-contamination that might occur and the current low levels of BSE in cattle. They indicate that there is a negligible risk of transmitting BSE to pigs or poultry, or of prolonging the BSE epidemic in cattle. As a consequence, they conclude that the additional risk to humans would also be negligible. You’ll want to note the uncertainties that have been highlighted in the paper around those risk assessments and you’ll want to consider the uncertainty over whether a transmissible spongiform encephalopathy may be present undetected in pigs or poultry, because at that point the risk assessments you have before you would not be valid.

Second, you’ll want to consider the compliance and enforcement issues. You’ll be concerned that the controls that are needed to manage those risks are effective and that the risks are negligible.

Third, you’ll be wanting to consider the implications of the proposed changes on consumer confidence in the food supply and how that can be maintained if these changes are to go ahead. You also have in front of you letters from the four chief medical officers, one from Alick Simmons, who is here to answer your questions in detail, and one from Which? (See further information for links to the Board paper and letters.)
The risk assessments are based on assumptions of the amount of cross-contamination that might occur and the current low levels of BSE.

Alison Gleadle
FSA Director of Food Safety

“Economic pressures could lead to cutting corners and sharp practice, and there is human error. I’m not convinced that the existence of a test to pick up non-compliance is the answer to this.”

Nancy Robson
Board member

It is a fairly strenuous read. It’s a comprehensive paper. I think I could summarise the discussion at the Scottish Food Advisory Committee as being very sceptical of these proposals for scientific reasons. It was fairly clear that nobody supported the proposals.

There is one major issue that I am concerned about. It is that there is not a risk assessment associated with the intra-species feeding of PAP. In other words, what is the risk of feeding poultry PAP to poultry, and pigs PAP to pigs? Throughout this paper it does say that it’s important that there is a crossover in the feeding and that you do not have that intra-species feeding. It is unfortunate that there isn’t a risk assessment associated with that. The ability to separate those feeds on farm will be extremely difficult. You cannot have people 24 hours a day watching what’s happening on farm.

The last point I’d make is, if a TSE were identified in pigs or poultry under natural conditions, it would be necessary immediately to reinstate the full feed ban. That’s no comfort at all. The barn door would be well and truly open. The Scottish Food Advisory Committee’s general view wouldn’t be to support these proposals.

As Jim mentioned, closing the barn door after the horse has bolted and the damage has been done, will still have a major impact on lives. I thought that this was why we were set up in the first place – to avoid such situations. Providing a chance for this to happen again goes against our raison d’être.
We were set up… to avoid such situations. Providing a chance for this to happen again goes against our raison d’être.

Michael Parker
Board member

But can I ask, what is the driver for lifting the ban? I can’t understand why we’re seeking to bring about a change when there is negligible benefit and the risks from impact are so high.

→ Board member Henrietta Campbell

At the Northern Ireland Food Advisory Committee we had a very lengthy discussion on this. First, it was felt that it would be impossible to enforce the control measures that would be needed.

Second, there was some uncertainty around the science. Not around BSE entering pigs and poultry but nervousness around atypical scrapie and BSE, and the susceptibility of non-ruminants to TSEs.

EFSA has said that the only TSE agent that is currently demonstrated to be zoonotic is classical BSE, but none of us need reminding about the position that was taken pre-1996 – that no TSEs were zoonotic. So I think we’re very much remembering that the precautionary principle has been central to how we have taken a position since 1996 and I don’t believe we’re ready to move from that yet.

→ Board member Clive Grundy

It struck me after reading this paper several times, that there was something missing from it, which is a pre-paper that would describe why we would be looking at this. I haven’t understood either who is going to benefit from what would appear to be such an early and significant change to what has become now, after 10 years, an accepted way of operating in a much safer environment, and I couldn’t see, on behalf of consumers, how they would benefit from this at this stage.

→ Jeff Rooker

Alick, do you wish to comment or give any answers? Some of the questions may be for you or they may not be appropriate for you – in the sense of what the driver is.
EFSA has said that the only TSE agent that is demonstrated to be zoonotic is classical BSE. The position taken pre-1996 [was] that no TSEs were zoonotic.

Henrietta Campbell
Board member

Alick Simmons

I think it’s important I emphasise that the Government is yet to make up its mind on this. This is part of the process of consultation and of the decision-making process. The advice that will go from officials within Defra will be very much based on the risk and, as you’ve pointed out, provided the systems are efficient, effective, well enforced and properly monitored, it could be done.

But it’s quite important that when we talk about what the drivers are, we, as a department and as a Government, are interested in evidence-based legislation, evidence-based controls. The drivers at the moment appear not to be economic. There is very little demand for the use of this material in livestock food. I don’t think from my perspective, or the department’s perspective, that it is necessarily an argument for not considering it if you have a policy imperative to regulate on the basis of risk.

I think it’s incumbent upon all officials to make sure that they apply the appropriate controls based on risk, depending on the degree of threat.

Board member John Spence

The view that the Food Advisory Committee in Wales came to was perhaps just slightly different from those views that have been expressed so far, but not wholly removed from those views.

The committee in Wales accepted that the evidence presented and the risk assessments presented were quite robust. But it felt there was a very strong need to make sure that at least equal weight was given to consumer views and to recognise that any change risked potential damage to hard won consumer confidence, and potential damage to industry at a time when things are pretty fragile. If that’s the case, then it almost inevitably drives the conclusion that now is not the time to seek to change the current rules.

The use to which the advice is put is probably not sufficiently weighted in favour of the consumer views and taking that line led the Welsh Food Advisory Committee to the view that they would wish that advice to take greater account of consumer views, which would then drive, they believe, ministers to the conclusions that it would be best not to support this particular change at this particular time.

Board member Margaret Gilmore

Over the years I’ve actually met young people who later died of vCJD, which is the human form of BSE and it is one of the slowest and cruellest ways to die; it can take months, it can take years. On top of that there are probably farmers who have lost their livelihoods and even their homes as a result of BSE. It’s not a place we want to go back to and for that reason, on this particular issue, for me the benchmark of the amount of risk we’re prepared to take should be higher than in some other cases where the science says the risk is negligible. The Scottish Chief Medical Officer, for example, says, and I’m going to quote him here: ‘Much weight is placed on the absence of evidence of risk of changing the parameters of the present feed bans. However, that does not mean that risk from such a change is absent.’

We also had a letter from the Which? consumer group and they very eloquently spelt out weaknesses that have been recently raised on the EFSA opinion.

Our job is to protect consumers, putting them first. We should be passing this advice on to ministers. But I think we should be making the point that we can’t support lifting a ban because the risks aren’t totally proven and only remain negligible if other measures remain watertight.

Jeff Rooker

I’m going to call Tim Bennett and then Andrew Wadge.

Board Deputy Chair Tim Bennett

On this, the enforcement is certainly not clear. There is no validated test yet [for contamination]. The procedures for keeping the feed separate seem firm but there’s a ‘but’ in derogations in every sentence. I even pose the question, Alick, whether the separation procedures, as outlined, are any more robust than before the feed ban came in, in 1996.

In reading the views of the stakeholders that were sent in, I thought some of them were really excellent. I thought they were very responsible and very well considered.

FSA Chief Scientist Andrew Wadge

I think if there was one key point that was learnt through the whole BSE epidemic, it was the importance of talking about the uncertainties in the risk assessment.
I haven’t understood who is going to benefit from… such an early and significant change to what has become now, after 10 years, an accepted way of operating in a much safer environment.’

Clive Grundy
Board member

The drivers at the moment appear not to be economic. There is very little demand for the use of this material in livestock food.’

Alick Simmons
Director and Deputy Chief Veterinary Officer, Defra

The committee in Wales felt there was a very strong need… to recognise that any change risked potential damage to hard won consumer confidence and to industry when things are pretty fragile.’

John Spence
Board member
ROUND THE TABLE

The scientific evidence we’ve got doesn’t rule out the possibility that pigs or poultry may be susceptible to TSE.

David Carruthers
FSA Head of Meat Hygiene

Our job is to protect consumers, putting them first. We should be passing this advice on to ministers.’

Margaret Gilmore
Board member

it’s a step too far, too early. And it’s not clear to me that there is any driving force or absolute benefit of introducing this sort of extension at this stage, so I wouldn’t be supportive of it.

Michael Parker

My concern is about cost-benefit analysis. If it’s a negligible risk and of no benefit, why am I increasing the risk?

Jim Wildgoose

Is there likely to be a risk-assessment of the effect of intra-feeding of processed animal protein – in other words, feeding pigs PAP to pigs and poultry PAP to poultry? In looking at how the controls might be compromised, knowing the answer to that does seem important.

Jeff Rooker

Is there an answer to that, David?

David Carruthers

My understanding of that is that that risk is unquantifiable. The scientific evidence we’ve got doesn’t rule out the possibility that pigs or poultry may be susceptible to TSE or that there may be a TSE present, undetected in those species. Where you’ve got an unquantifiable risk it’s not really possible to provide a risk assessment. All we have is advice from all the risk-assessment bodies that intra-species recycling should be avoided.

Bite Issue 7
It’s a step too far, too early. It’s not clear there is any absolute benefit of introducing this sort of extension.’

Professor Sue Atkinson
Board member

David Grundy

A point of order, Chair. I was looking forward to Michael’s second question. It was whether there was a quantifiable benefit relative to the risks we have been going through.

Alick Simmons

It depends on what you want to quantify. At the moment, as I understand it, the amount of processed animal protein that’s derived from pigs and poultry is substantial. Because we kill a lot of both species, both in the UK and other parts of Europe. The vast majority of it goes into fertiliser and pet food. So, at the moment, I understand there is going to be little or no demand for it should this change be made. The feed industry and the agricultural industry in this country are not particularly interested in doing that, but economics may drive them to take more interest in it.

I think, if I may add a personal opinion here, that it is better for Government and the Agency to consider risk without clamour from industry to make this change, so that you’re able to do it in an environment that allows you to do it without thinking about the cold hand of the bankers around your necks.

Jeff Rooker

By way of summing up, I want to reinforce some of the points that have been made. First of all, on behalf of the Board I’d like to congratulate David Carruthers and everybody who has put the paper together.

As a risk manager you can look at uncertainties and say: “Because there are uncertainties we shouldn’t move in that route.” There will always be uncertainties in the science, that’s the nature of science.’

Andrew Wadge
FSA Chief Scientist

I just want to highlight some of the issues to show we’ve taken a view in the round.

For example, there is a reference that there must be dedicated slaughterhouses. Then, of course, we read the subtext: derogations are going to be allowed – therefore we lose control. As Tim has said, we haven’t got a test at the moment for differentiation of the species. We’re being asked to do this on the basis that if there are multi-species plants there will be no test. There is a great chance that feed for cattle can be contaminated. We’re told in paragraph 5.6 that increased risk is negligible but ‘only if…’ There are lots of caveats. Paragraph 5.9 mentions non-TSE risk ‘provided current controls are complied with’, and we know that isn’t always the case. And, worryingly, the changes allow for indirect recycling. And so it’s out of our control in terms of enforcement. Paragraph 6.4, includes more derogation listing for transport, single feed mills. Then paragraph 6.6 implies there is an incentive for deliberate switching. We’re warned there is an economic incentive for deliberate switching of feed.

The contributions from industry are very useful and very positive, but, I have to say, very illuminating. Some industry submissions said there need to be tolerances on cross-contamination. No one has given us the risk element of that. We know what could happen, but we’re being asked to agree by implication that there will be cross-contamination.

In the public consultation, the issue of feeding pigs to poultry, for people who don’t eat pork, is really not met, or for people who eat fish because they don’t want to eat pigs and poultry. This has to be taken seriously into account in terms of the public and the consumer interest.

We’ve got four chief medical officers who speak with one voice. Their view is the total feed ban should be maintained.

The absolute priority for us is the health of UK consumers and citizens. On that basis I think there is unanimity around the table that our strong advice to ministers is they do not support this proposal when they start their negotiations in Brussels. Basically, the view is unanimous.

Bite | Issue 7 | 25
VEGETABLES. BEST SERVED WASHED.

Vegetables can pick up harmful germs. So, you should always:

- wash, peel or cook them before eating
- store and prepare vegetables separately from food that is ready to eat
- use different chopping boards and utensils for raw and ready-to-eat foods or wash thoroughly between use
- finally, remember to wash your hands after handling raw vegetables

That way, you won’t serve up any unpleasant surprises.