

ASSURING FOOD SAFETY IN NORTHERN IRELAND



Report and Recommendations of the Industry Feed Assurance Group

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Foreword

The Northern Ireland agri-food sector is an important indigenous industry and will play its part in the economic recovery. We are fully aware that food is a global business and we are in a global competition. The Northern Ireland team has to be match fit and there can be no room for passengers if we are to maximise the contribution that we will make.

The future for the agri-food sector is bright and we are well positioned in the UK to grow our output. It is encouraging that many young people are entering the industry, seeing it as sustainable and a good career option.

Sub standard operators cannot be allowed to impede our growth. There is too much at stake to settle for the lowest common denominator and all sectors have to strive for continuous improvement if we are to be recognised as players in the top league of food production.

Output from Northern Ireland has to be synonymous with excellence as we aim to move from price takers to price makers.

Working with the regulators to a shared objective of ensuring enhanced consumer protection and greater consumer confidence is the way forward.

We have to avoid repeating the mistakes of others and learn the lessons from other people's misfortunes, be they disease outbreaks or product recalls. Supermarket chains and other business customers have to be confident that by sourcing product in Northern Ireland, their brands and reputations are safer than by sourcing it from our competitors.

We are embarking on a journey to safeguard businesses in the agri-food industry and we expect to make progress in all sectors over the coming 12 months.

We will differentiate ourselves by our high standards and, if we do, we will all be winners.

David Rutledge
Chairman
Industry Feed Assurance Group

Introduction

Assuring food safety in Northern Ireland is first and foremost a public health imperative. However, it is also an intrinsic aspect of food production and is crucial for the commercial viability of the agri-food sector. Reputations and brands that take generations to develop can be irreparably damaged overnight by being associated with food scares.

The dioxin crisis in Ireland in 2008 clearly demonstrated that the food chain is only as secure as its weakest link, and highlighted the consequences for the entire chain if something untoward happens with animal feed. While primarily a problem for the Republic of Ireland it had serious repercussions in Northern Ireland and it behoves us to learn the lessons from this incident, review the contributing factors and identify what policies and practices might be put in place to prevent similar incidents from occurring in the future.

Primary responsibility for producing safe products rests with the feed and food business operators, and the regulators' role is simply to verify that appropriate controls are in place. Therefore the onus is on the industry to ensure that all that can be done is being done to protect the various sectors. The legal requirements are the bare minimum and additional measures over and above these, compatible with commercial viability, are considered best practice to reduce business risk and enhance consumer confidence.

To identify additional controls that could be implemented and make suggestions for improvements on the status quo, the Livestock and Meat Commission for Northern Ireland convened a group composed of representatives from:

- The Livestock and Meat Commission for Northern Ireland (LMC);
- Ulster Farmers' Union (UFU);
- Northern Ireland Agricultural Producers' Association (NIAPA);
- National Beef Association Northern Ireland Branch (NBA-NI);
- Northern Ireland Grain Trade Association (NIGTA);
- Northern Ireland Meat Exporters' Association (NIMEA);
- Northern Ireland Poultry Federation (NIPF);
- Dairy Council Northern Ireland (DCNI);
- Agricultural Industries Confederation;
- University College Dublin;
- Ulster Pork and Bacon Forum (UPBF);
- Vion Food Group Ltd (VION)

The objective of this initiative was to propose recommendations to enhance and benchmark the position of best practice for the Northern Ireland livestock and animal feedstuffs industries and assist them in reducing risks associated with potential contamination of inputs to the sector, whether through accidental, negligent and/or unscrupulous activities, whilst allowing continued innovation in the feeding of animals, and in the production of animal inputs on farm.

This report is for all the players in the agri-food industry – feed manufacturers and suppliers, producers and processors. Its intention is to alert them to the commercial risks to the entire livestock and agri-food industry that arise from feeding contaminated feedstuffs, and to assist them to achieve due diligence through best practice, which will reduce the potential risk of future food scares.

Whilst Food and Feed Business Operators should rightly employ all reasonable and practical steps to reduce the risk of any potential contaminants entering the food chain, all operators need to be fully aware of the consequences of not managing risks effectively. In the event of a product recall the recovery of the costs of this process (which can be substantial) may pass its way back up the supply chain, and operators should therefore consider the level of product liability insurance cover which they have in place relative to their management of risks. Participation in a recognised Assurance Chain is considered a key factor in effective risk management and will be one of the main themes running through this report.

This report is also to highlight to the regulators of the agri-food industry the importance of working more collaboratively with industry to minimise its risk profile and to operate regulatory regimes that are proportionate to the identified risks. Furthermore more collaborative working will lead to better management of incidents if and when they occur. Consumer protection must be paramount but incident management options that minimise potential brand and reputational damage, without compromising consumer protection, need to be given due consideration.

Background factors relevant to contamination incidents

1. Agri-Food Industry in Northern Ireland: Economic Context

The total gross turnover of the Northern Ireland Food and Drinks Processing Sector estimated to be £3.2 billion in 2009, with an estimated 19,200 full-time employees generating £550m of value added to the economy.¹

The Food and Drinks Processing Sector also the largest contributor to the Sales, External Sales and Employment of the Northern Ireland Manufacturing Sector, accounting for almost 20% of total manufacturing sales, 17% of manufacturing external sales and 25% of manufacturing employment in 2008. Most importantly external sales inject a higher quality of income (being new income injected into the economy of Northern Ireland), making the economy more robust than those industries that simply circulate existing income (Construction/ Retail for example).

Approximately 75% of the gross turnover of this sector is generated through the further processing of the primary products of the Red Meat, Dairy, Poultry Meat, Pigmeat and Egg sectors of Northern Ireland as set out in Table 1.

Table 1: Gross turnover, by processing sub-sector.

Source: Provisional estimates for 2009 extracted from DARD analysis.

	Gross turnover	
	£ million	%
Beef and Sheepmeat	817.0	25
Milk and Milk Products	775.0	24
Poultry Meat	511.0	16
Pigmeat	218.1	7
Eggs	70.3	2
Animal By-Products	18.0	1
	2409.4	75
Other:		
Drinks	320.1	10
Bakeries	248.5	8
Fruit and Vegetables	179.4	6
Fish	70.2	2
Total Sector	3,227.6	25

In 2009, the Northern Ireland agricultural production industry generated £304m of value added and employed 30,000 people.²

¹ Source: Size and Performance of the Northern Ireland Food and Drinks Processing Sector, Subsector Statistics 2008 with provisional estimates for 2009 (DARD)

² Source: Northern Ireland Agri-Food Sector Key Statistics June 2010 (DARD)

In summary therefore the agri-processing sector accounts for £850m of Value Added to the NI economy and represents a directly employed workforce of approximately 49,200 people. In addition the indirect and induced jobs arising from the agri-food industry, and therefore dependent upon it, is estimated to be another 43,000 people. This gives a total of 92,200 people dependent upon agriculture for employment.³

2. Contributing factors to the 2008 dioxin incident

All of the evidence available suggests that the dioxin incident occurred as a result of contaminated fuel being used in an oil-fired burner (direct flame drying system) that generated heat to dry feed at a mill that was recycling waste bread and confectionery products into animal rations, failure by the Feed Business Operator and the authorities to recognise the risks associated with this drier, and a failure by the oil supplier to supply oil fit for purpose.

Root cause analysis of the systems failure points to the inadequacy of the Feed Safety Management System formulated by the feed business operator who was not a trade assurance scheme participant. Furthermore the regulatory agency charged with verifying that appropriate controls were in place failed to properly verify that they were. That the feed business operator received contaminated oil that subsequently undermined the entire business demonstrates that a company is only as secure as the standards of its weakest supplier, and emphasises the need for robust procurement policies and supplier assurance at all levels of the food chain.

Despite concern in the international regulatory community regarding direct flame driers and the potential to generate dioxins if inappropriate fuel is used neither the Feed Business Operator nor the Irish Department of Agriculture Fisheries and Food recognised the real and present hazard associated with the recycled mineral oil used as a fuel in this instance. Thus the consequences of the inadequacy of the operator's Feed Safety Management System were not recognised until contaminated pork products had been on the market for almost three months. That contaminated oil reached the feed business operator in the first instance also suggests that there were deficiencies in the oversight and control of oil and waste oil, importation, distribution and sale.

Although only ten pig farms received the contaminated ration, an inability to rapidly identify the destination of the output from these farms through primary and secondary processors led to a total recall and destruction of all pork products from pigs slaughtered in the Republic of Ireland between 1 September and 6 December 2008.

Although the existing traceability systems were compliant with EU requirements, co-mingling of product meant that distinguishing uncontaminated product from contaminated product proved difficult, making a precise recall impossible and perfectly safe product was caught up in the recall and destroyed. Northern Ireland did not escape the consequences of this incident; the initial announcements requiring the total recall of all Irish pork products led to product from Northern Ireland being removed from supermarket shelves and out of the chill chain before it was

³ Source: Value of Food and Drink Industry NI October 2010 (Goldblatt McGuigan and NIFDA)

established that it was completely unconnected with the implicated farms. Furthermore a small number of beef farms on both sides of the border, that had received contaminated feed, were restricted and the cattle had to be destroyed.

In the EU the legal limit for dioxins in pork fat is 1 picogram per gram (one part per trillion) and attempting to communicate the risks associated with this level of contamination to the public, plus the concepts of bio-accumulation and body burden and the need for continued exposure to result in adverse health effects, proved extremely challenging.

3. Inter-dependency of all the players in the food chain

The Dioxin incident demonstrates the inter-dependency of all stages of the food chain, which is increasingly becoming more complex with global sourcing of ingredients for both animal and human food. With the increasing length of the food chain there are more opportunities for things to go wrong and with the increasing number of people involved there is an increasing chance that some of the players may be engaging in sub-standard practices, using sub-standard supplies/imports, or in illegal activity.

Zero risk is not achievable but the objective is to reduce the risk to a minimum level by sequential incremental reduction at all stages along the food chain with everyone doing what is reasonable and practical in their sector.

The Dioxin incident precipitated this review but the food chain is at risk from a range of contaminants and the controls should address all of these which include both microbial and chemical contaminants.

Food safety scares undermine consumer confidence in the output of the agri-food sector. Increasingly the sector has to defend the nutritional profile of its products as, although milk and meat are included in the national nutritional guidelines, they often come under challenge. Diet related disease has to be addressed but responsibility for contributing to it more often rests with the wide range of obesogenic products outside the basic primary output from the agri-food sector. However, contamination incidents put entire sectors in a bad light and influence consumers' risk perception and consumption patterns.

Wholesome food is fundamental for human health and those in the feed and food business need to pay attention to hygiene and process controls to prevent both microbial and chemical contamination as they are in the health business because failures on their part can result in consumers falling ill.

Contamination incidents early in the food chain can have a huge impact on a range of products and have catastrophic consequences in terms of consumer confidence, public health and also financial implications.

4. Chemical contamination

The increasing sensitivity of the analytical chemistry means that incidents associated with chemical contamination can be easily detected and we may see more of such events. Often there may be no consequences for animal, or public health, from a single exposure. However, if the legal limit is exceeded there are huge consequences for consumer confidence and also financial implications for the agri-food sector.

Assessing the consequences of exposure to chemicals in the food chain is particularly problematic as it must take account, not only of the probable immediate effects on the consumer, but also the possible long term cumulative toxic effects, and the effect of teratogenic compounds on subsequent generations, in addition to the particular sensitivities of vulnerable consumer groups.

The European Food Safety Authority (EFSA) assesses the risks associated with chemical contamination of feed and food on behalf of the EU providing independent scientific advice on setting permitted levels and tolerances. The UK Food Standards Agency works closely with the EFSA.

Chemical contamination falls into six main categories:

1. **Agro chemicals** used to increase yields of crops or to combat pests or diseases in plants or animals. These include fertilisers, pesticides and herbicides and veterinary drugs as well as banned substances such as growth promoters.
2. **Environmental Hazards** such as heavy metals (cadmium, lead, mercury) and arsenic and organic compounds notably dioxins, polyaromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).
3. **Natural toxins** such as mycotoxins produced by fungi contaminating cereals.
4. Chemicals that leach from **packaging material** into feed, or food, such as antimony, lead, perfluoro-octanic acid (PFOA), plasticisers or tin.
5. **Process contaminants** include substances gaining access to the product in the process environment, including disinfectants and detergents, rat poison, chemicals to control insects and fungi in grain, or to prevent germination, or chemicals deposited by the process equipment (e.g. aluminium, copper, detergents, lubricants, PFOA), carry over between different feed batches in mills (antibiotics and minerals e.g. Selenium) and contaminants created by reactions between food constituents themselves during processing (e.g. acrylamide).
6. **Criminal contamination:** deliberate contamination and adulteration e.g. the addition of melamine to low quality milk to increase the apparent protein content as occurred in China in 2008.

5. Traceability

Traceability, while a component of every food safety management system, is not a guarantee of safety. For example the recycler at the centre of the 2008 Dioxin incident had a traceability system which identified his suppliers of raw ingredients and also his customers. It is important, in addition to identifying the source of all raw ingredients, to ensure that they are fully compliant with the relevant feed and food safety standards.

The EU General Food Law (EC) 178/2002 outlines in:-

Article 17:

Food and feed business operators at all stages of production and processing and distribution within the businesses under their control shall ensure that food or feeds satisfy the requirements of food law which are relevant to their activities and shall verify that such requirements are met.

Article 18:

The traceability of food, feed and food producing animals and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.

Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food producing animal, or any substance intended to be, or expected to be incorporated into a food or feed.

Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. This information shall be made available to the competent authorities on demand.

In addition to traceability of raw ingredients and ensuring procurement policies include a requirement for high standards, feed and food business must be able to trace their products forward to their customers. The detail and specificity of the traceability systems will vary with the products but the onus is on industry to develop traceability systems that are proportionate to the risk associated with their products and processes so that recalls, if they are necessary, can be managed effectively.

Furthermore the EC Feed Hygiene Regulation 1831/2003 requires most feed businesses involved in making, marketing or using feeds, including livestock farms and arable farms growing crops for feed use, to be registered or approved. Feed businesses will have to comply with standards in respect of facilities, storage, personnel and record-keeping. This Regulation applies throughout the feed chain, including food manufacturers selling by-products of food production into the feed chain.

The concept of farm to fork traceability is mentioned several times in EU food legislation however the food chain is more like a maze than a straight line (Figures 1 and 2).

Inputs to farms whether they are agrochemicals, therapeutic agents, vitamins, minerals and feed are often sourced on the global stage exposing farms to global risks.

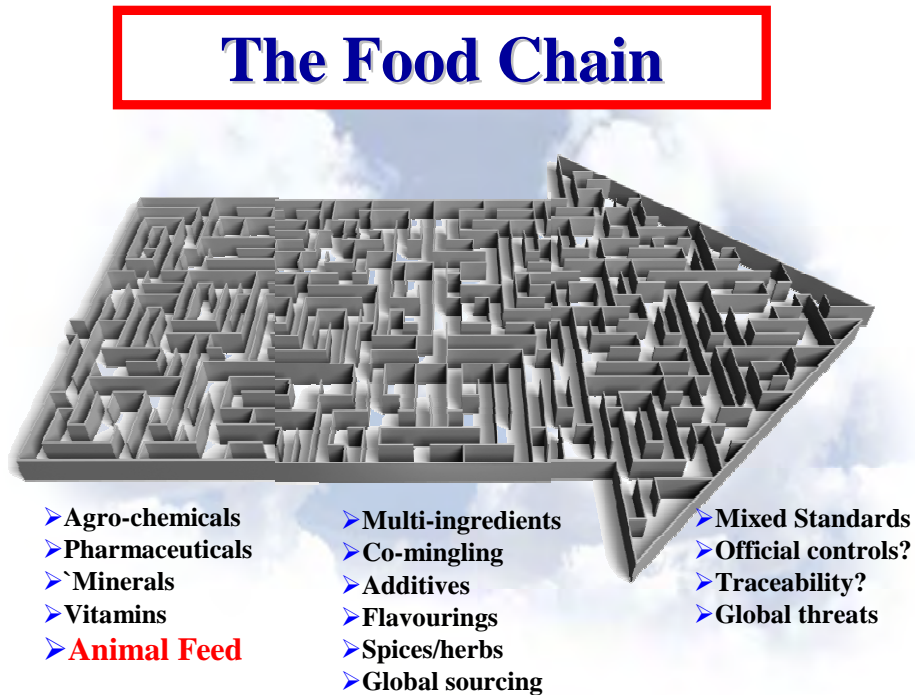
Often processed food and beverages contain multiple ingredients from a range of processors, countries and even continents. Different processors can have different standards and the finished product is only as safe as the standards of the weakest ingredient supplier. Furthermore different countries have different controls systems and capabilities for enforcement.

The complexity of this modern food chain makes timely recalls difficult and emphasises the need for everyone to play their part to ensure that these are not necessary.

Figure 1



Figure 2



The Animal Feedstuffs & Livestock Industries Supply Chain

1. Feed Materials Sector

1. Introduction

- 1.1. The Feed sector, led by the Northern Ireland Grain Trade Association, wishes to work with its supply chain partners, the farmer and the Beef/Sheep Meat, Poultry, Pig and Dairy processors, towards the common goal of assuring supply chain integrity and further, in partnership with the Irish Grain Trade Association, to adopt an all island approach to assuring feed integrity.
- 1.2. To this end it is proposed to adopt an industry-wide approach to the management of risk in the feed chain. Building upon existing quality assurance schemes a risk based approach to the testing of feed materials on an industry-wide, and indeed Ireland-wide basis, is to be developed, creating a Fortress Ireland approach to feed and hence food safety. The feed industry wishes to play its part in assuring quality from Port to Fork. Assuring quality from Port to Farm through a supply chain focused on delivering high quality, safe, nutritious feed to the Beef/Sheep, Dairy, Pig and Poultry sectors of our industry.
- 1.3. Building upon existing quality assurance schemes will ensure we avoid unnecessary cost, duplication and red tape with outputs characterised by the development of industry wide HACCP sampling plans for the feed industry. A plan will be rolled out by module, and by industry sector, as and when the testing plans come ready. We have broken our work down into the different business types and also by market type. Practically some of the sectors and some of the raw materials could be subject to enhanced quality assurance processes ahead of others and thus rather than delay a roll out until the last component is ready, we will seek to roll out modules when ready, so that we fast track what we can. The modules are set out in Table 2 below.

Table 2: Modular approach to risk based sampling

Market Types	Business Types			
	Importer	Feed Processor	Premix Company	Fats, Oils & Liquids
Poultry/Pig	x	x	x	x
Ruminant	x	x	x	x

- 1.4. To be successful, and to ensure we do not develop a two tier Quality Assured supply chain, all feed business operators servicing the Northern Ireland Feed Market will need to subscribe to a new set of standards. **This will only be effectively achieved if processor procurement policies exclusively specify a requirement for producers, including the livestock farmer, to source through Feed Quality Assurance Schemes that adhere to an industry wide agreed risk management and sampling plan.** Only by creating the demand for this 'new' quality assured product will individual companies within the animal feed trade make the necessary investment in time and money to move to supplying product to this specification.

- 1.5.** In order to instil the necessary confidence in companies to make the investments it is envisaged that implementation of the control plan will be rolled out in parallel with suitably amended procurement contracts by the processors and of Assurance Standards by the Standard Setters/Scheme Owners.
- 1.6.** There are certain elements of the feed supply chain (most notably direct to farm supply of surplus human food, along with further on farm processing by home mixers) that introduce risks which bypass the checks and balances of the processed animal feed sector of the industry. The ideal situation is that processors would address the Quality Assurance requirements of these components of the feed supply sector within their procurement policies and audit schemes so as to ensure all parts of the feed supply chain being fed to animals are effectively managing risk to a common standard.

2. Feed Chain Quality Assurance.

- 2.1.** The existing feed chain assurance is predominately delivered within the concept of “one up, one down assurance” i.e. each company is responsible for its own HACCP plan (Hazard Analysis and Critical Control Point) and relies on its upstream supplier to have managed the upstream risk, leaving HACCP to focus on process controls within that business unit. Compliance of the supplier in implementing an appropriate HACCP plan is provided by an overarching quality assurance scheme, where members agree to work to common standards and trade only with other members of the scheme or members of other schemes that have a reciprocal recognition agreement and are subject to regular audits by the auditors of the scheme.
- 2.2.** In the UK and Ireland, the governing scheme is known as the Universal Feed Assurance Scheme (UFAS) which was developed over 10 years ago by the Agricultural Industries Confederation (AIC) predecessor UKASTA. Within UFAS there are two schemes, one for compound feed and the other for merchants supplying both compound feed and feed materials to farm. Source assurance for feed materials is delivered by the Feed Material Assurance Scheme (FEMAS), which is also managed by AIC. Recognised source-assured combinable crops schemes are: Red Tractor Farm Assurance Crops; Scottish Quality Cereals Scheme; Northern Ireland Farm Quality Assured Cereals Scheme; Irish Grain Assurance Scheme; Genesis Cereals Assurance Scheme; GlobalGap (UK grain only), or a proven equivalent UK combinable crops assurance scheme recognised as such by AIC. Assurance that UK grown combinable crops have been treated responsibly during their post-farm gate transport, storage and delivery to first processor is provided by the Trade Assurance Scheme for Combinable Crops (TASCC).
- 2.3.** UFAS is the leading scheme for GB and NI and is the Scheme specified by British supermarkets and the feed industry, and is required by the NI Beef & Lamb Farm Quality Assurance Scheme, the Red Tractor Schemes and other recognised equivalent schemes across the UK. UFAS also recognises other feed assurance schemes that meet strict feed safety criteria including COCERAL GTP, which is particularly important for the import trade for Northern Ireland. The scheme has mutual recognition with other countries in Europe, notably Germany, Netherlands, Belgium, and at a higher level, the

Coceral Scheme which operates in 20 countries in Europe and with FAMI-QS, the European Feed Additives and Premixtures Representative Body.

2.4. A summary of the relevant quality assured supply chains can be found in Appendix 1.

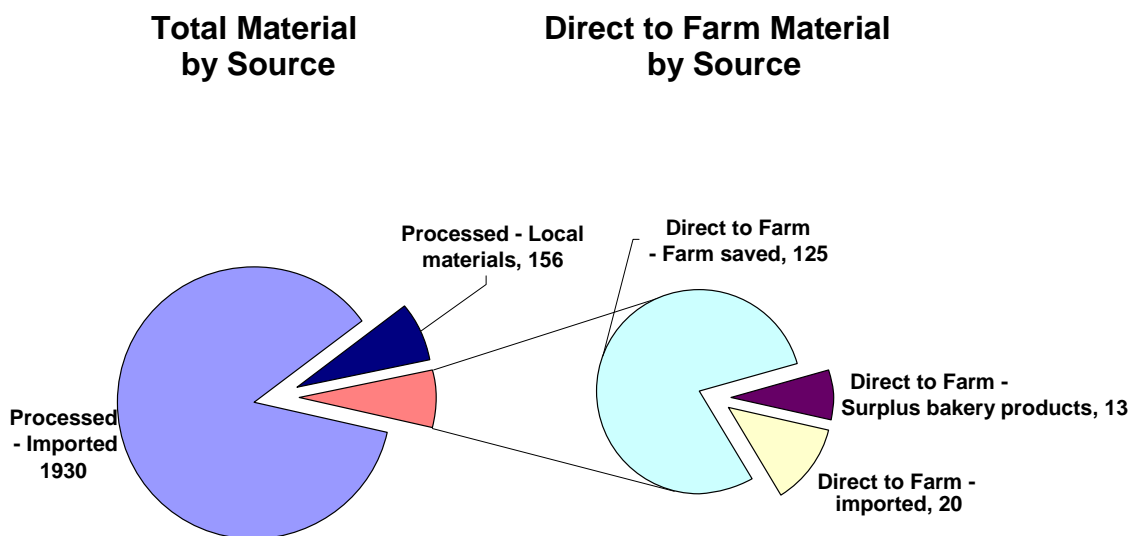
2.5. The challenge in the foregoing is that whilst overall risk is reduced by membership of such schemes, risk still remains. The size of that residual risk in turn is dependant on the quality of the HACCP plans of the other scheme members, their level of sophistication, whether they are adequate or up to date and the ever growing threat of fraud that exists. In short the chain is only as strong as its weakest link.

3. Feed Materials

3.1. Figure 3 shows the two major sources of feed materials used on farm which pass through two different quality assurance systems:

- 1 that which is supplied via Feed Processors (Processed);
- 2 that which is supplied Direct to Farm

Figure 3. Northern Ireland Feed Materials by Source ('000 tonnes)
(Information sourced from DARD & NIGTA)



3.2. Feed supplied through the processed channel, operated by Feed Importers and Processors is characterised by sophisticated HACCP plans through the chain with material at each point in the chain being subjected to the appropriate tests to assure its quality. Given much of the material is imported through supply chains with many links, it is subject to many points when product is tested and screened to assure quality.

- 3.3.** Direct to farm supplies on the other hand, by their nature tend to be much shorter supply chains, from source to farm and often do not therefore run the gauntlet of the checks and balances that imported materials face, although feed assurance schemes such as UFAS Merchants are in operation for the supply of some such feed materials to farm.
- 3.4.** It should be noted for example that although surplus bakery products represent only one half of one percent of feed materials to farm, it had, through a dioxin contamination, the potential to collapse the beef and pig industries overnight.
- 3.5.** It is therefore clear that the greatest threat to the industry does not arise from the raw materials of the greatest volume, but rather the materials with the greatest inherent risks; risks arising from:
- a)** their nature;
 - b)** the processes they have been through or derived from;
 - c)** the channel by which product arrives on farm (and whether that channel is fully quality assured).
- 3.6.** Point c) above is of particular concern as, by the nature of the distribution channel for some niche products, (including human surplus food products), they can find their way to farm via small operators, without being subject to the stringent risk management systems feed processors normally apply. Such sourcing not only adds risk to the supply chain but undermines feed businesses operating to accredited schemes, who question the value of what they do if the end user is prepared to accept a less assured product into the feed supply chain.
- 3.7.** It is therefore essential that there is a requirement by meat and dairy processors, in their procurement contracts for farmers, to require feed materials be sourced only from recognised Quality Assured sources and, for that requirement to be capable of being verified through existing scheme audits.
- 3.8.** Turning attention to the components of materials that pass through the Registered Business Operators operating in the areas of importation and milling, a description of the raw materials used is set out in Figure 4 overleaf.
- 3.9.** Whilst each material will have its own risk profile, in reviewing the information it should be borne in mind that the materials can also be categorised into four main Groups of Commodities each of which are covered by an appropriate feed assurance scheme, and each of which attract different types of risk

Those Groups are:

- Cereals
- By-Products from other processes
- Fats and oils
- Premixes of minerals, vitamins etc

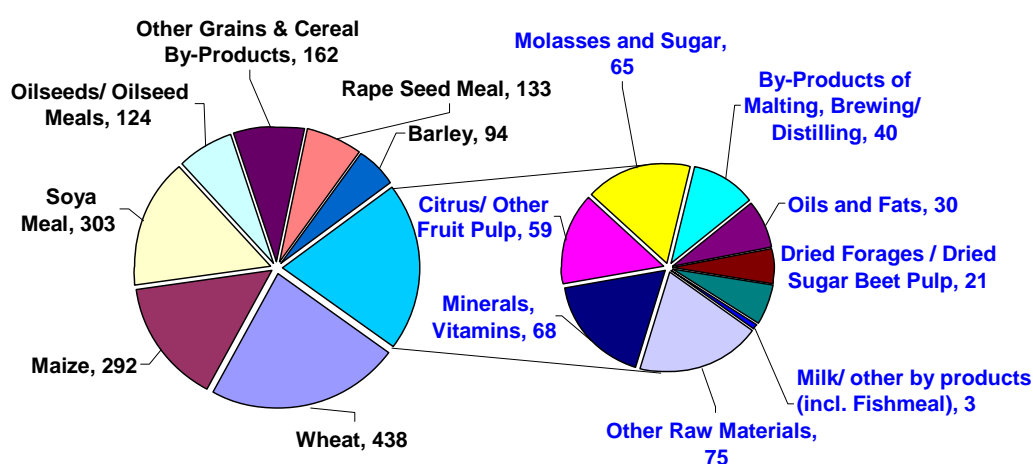
Figure 4. Raw Material Usage in the Production of Animal Feeds in NI ('000 tonnes)

Usage of raw materials in the production of Animal Feed 2009

Source DARD Animal Feed Statistics (000'sTonnes)

Major Raw Materials

Other Raw Materials



3.10. Looking more closely at the sectors/factors which have presented higher risks in turn:

3.10.1. Premixes

In 2009 the EU Rapid Alerts system (RASFF) indicated 4 alerts due to “premixes” including dioxins in feed premix from Brazil and selenium levels in a UK premix. Whilst it should be noted RASFF alerts are a requirement whether the event be a single site, single country or multi country issue, their frequency indicates that whilst we are dealing with different risks, they are occurring on an annual basis within Europe and further afield. In the US for example, in 2008 an incident related to contaminated zinc oxide and premixes containing zinc oxide occurred. In this case, the zinc oxide was contaminated with dioxins. The premix was destined for use in livestock, aquaculture, and poultry feed and feed products. The recalled products had been distributed to feed manufacturers and suppliers in eleven states of the US and in Canada.

3.10.2. Oils and fats

Oils and fats are routinely used in the animal feed process as a source of energy for the animal feed. These ingredients are at risk from contaminants such as dioxins/PCBs, which are lipophilic substances, meaning that they are extremely soluble in oils and fats. Contamination of the feed/food chain with these suspect cancer causing agents can bring an industry to its knees as in the case of the Irish Dioxin crisis of 2008. Another concern is the authenticity of oils as there have been cases around the world where pure oils have been adulterated with cheap alternatives including transformer oils (which can contain dioxins/PCBs) or mineral oils.

3.10.3. Geographic risks

A geographic risk is a risk related to the country of origin rather than the nature of the product itself, in that a country or region may not fully adhere to the standards necessary to assure feed and food safety. China is highlighted by the EU as a key area of concern at present.

In the 2008 melamine scandal in China, an industrial product (melamine) was added to milk, to give the appearance in tests of higher protein levels. This resulted in the poisoning of some 300,000 children of which 50,000 were hospitalised and six died. The scandal was made worse when a company involved in the product recall was later found to have repackaged 170 tonnes of tainted milk product and resold it. Despite new regulations aimed at cracking down on such activities, a further report in December 2009 revealed that another company was found to be putting melamine into milk products, though in this incident no illnesses were reported.

It should be noted that in recent years many global nutrient companies have set up operations and joint ventures in China and China now produces a significant proportion of the world's additives that go into premixes. Whilst they are reputable companies with a strong emphasis on quality, the various food scares in recent years demonstrate that geography and compliance culture can be important risks to be aware of.

3.11. Gaps in Feed Assurance

3.11.1. Main Risk Areas

Having looked at the nature of the materials and country of origin risks, it is important to recognise that risk can also be divided into 3 major headings:

- Raw material risk;
- Transport and storage risk;
- Processing risk.

In noting the above it is important to recall Figure 3 (Para 2.1) which illustrates the fact that not all feed comes through the Quality Assured Processed Feed channel. As a result there are some gaps in the supply of feed under formally recognised quality assurance schemes that need to be understood and managed through procurement contract requirements. Those main areas of risk are:

- **Surplus human food:** further processing risk, storage and transport risk;
- **Home mixing:** further processing risk, admix risk, risk from combining with other locally sourced materials, and transport and storage risk.

3.11.2. Surplus human food

During the manufacture of food, out-of-specification product can be produced, which means that it is no longer suitable for human consumption but it is perfectly acceptable for use as an ingredient in animal feed (provided it does not contain any meat or meat derivatives or any other products excluded by the animal by products Regulations 1774/2002) and therefore retains a commercial worth. Other product that has past its “best before date”, or “sell by date”, can still be safe but would be of inferior quality and unacceptable to consumers yet still nutritious for animals.

Recycling provides a sustainable means of handling such products which, along with other by-products like brewers grains, can form a useful component of animal rations. The alternative of sending these products to landfill, or for incineration, is not only wasteful but the associated expense can threaten the commercial viability of low margin sectors.

The term “waste food” is a misnomer to describe these by-products of the food industry as “waste” is something that has been discarded out of the food chain. These by-products are surplus to human food manufacture but have been retained within the feed and food chain, and this is a must if they are to be incorporated into animal rations. Human food which has been dumped as waste cannot be brought back into the animal feed supply chain. It has to be fully compliant with Article 15 of EC 178/2002 which states:

Article 15

“Feed shall not be placed on the market or fed to any food producing animal, if it is unsafe.”

“Feed shall be deemed to be unsafe for its intended use if it is considered to:-

- *have an adverse effect on human or animal health;*
- *make the food derived from food producing animals unsafe for human consumption.”*

A key part of the Feed Hygiene Regulations EC 183/2005 which lays down the rules for the feed sector is the extension of the requirement for HACCP to feed operations from 1 January 2008. This requirement also applied to manufacturers of human food who supply by-products for animal rations. They must take responsibility for extending their HACCP systems to cover the channel they use to divert product to animal rations from the point at which it becomes a by-product in their production area to the point where it departs their site in a designated container. **Product cannot be dumped as waste and then re-enter the feed chain.**

Companies engaged in the transport distribution and / or further processing of these by-products have to be registered / approved as feed businesses.

By their nature, such products are often supplied “Direct to Farm” and so may, for smaller business operators, be outside of the normal quality assurance controls developed through application of HACCP by businesses in the processed feed materials supply chain. The nature of these products both in terms of the material content, and the further processing they may become subject to, carry some unique risks. In addition the material is often supplied by small business operators who do not have the resources to construct a robust HACCP plan for the products (and their related risks) that they are supplying. Indeed it is in this segment of the feed market that the Dioxin issue arose in Ireland.

As in every other sector compliance with the law is the bare minimum and to provide a greater margin of safety compliance with the additional standards of a quality assurance scheme is recommended. In this case the relevant scheme is the Feed Material Assurance Scheme (FEMAS). Food manufacturers that supply to the animal feed sector but do not wish to adopt the responsibilities of operating under FEMAS may send their product to an intermediary feed business operator who will need to hold FEMAS accreditation if supplying onward to a Universal Feed Assurance Scheme (UFAS) compounder or merchant.

A food manufacturer supplying direct to a farm will be classified as a feed business operator in accordance with the General Food Law Regulation EC 178/2002 for those parts of the business directly involved in the supply of animal feed and it will be their responsibility to comply with the relevant legislation.

Given this is a “Direct to Farm” supply rather than “Processed” to farm supply, the product will have avoided the numerous control point inspections that exist in the processed feed supply chain and therefore would carry a higher risk profile. Special quality assurance systems do however exist and are applied to these products by reputable businesses to assure the quality of such products.

Where a business operator dealing in such products is not part of UFAS (or its equivalent) he is able to make use of other schemes designed to manage the risk in this route to farm, such as the FEMAS scheme.

Once again the onus is on the procurement contracts to specify that where supplies of such materials direct to farm are not supplied by a UFAS (or equivalent scheme) accredited supplier, that they should be supplied under an approved Quality Assurance Scheme, such as FEMAS (or another scheme of equivalent standard).

Failure to address this gap in the material supply chains to farm will add significant risk to the end processors. Indeed it is worth noting that it was in this area of Government Regulation of Feed Business Operators that the European Auditors, the Food and Veterinary Office, was most critical in its audit of the UK, identifying the lack of priority in regulating this area of feed supply by local councils. It is also in this area of risk that DARD Inspectors

have the greatest concern, because of the combination of a lack of HACCP controls that Food Processors apply to the disposal of surplus food material, combined with the distribution to farms often by small operators with little or no knowledge or application of HACCP.

3.11.3. Home mixing

Whilst the supply of the majority of the raw materials comes through importers who apply HACCP controls to the material they handle (managing raw material risk) there still remains the contamination risks of transport and processing. Such risks are currently managed in the processed feed sector through application of UFAS (for feed compounding) and TASC (for Transport) and it is foreseen that these schemes will be further enhanced in the near future as part of an overall initiative by the Feed Sector to enhance quality assurance.

However the feed manufacturers' Feed Assurance Scheme does not apply to a home mixing farm unit. From this point on, the on-farm mixing, blending with other locally sourced materials and onward distribution to other farms is subject to the "Industry Code of Practice for On-Farm Feeding" which is incorporated into the farm assurance schemes. It is therefore necessary for processors to assess the risk associated with these further feed processing activities and to determine how best to continue the assurance right through to the feeding of livestock with their outputs. In the Irish dioxin event of 2008 the assurance that arrived at the farm gates in the form of warranty declarations could not be substantiated.

The challenge will be to ensure that this segment of the market applies the same rigorous application of HACCP as the feed sector, works to a common quality standard and is subject to independent audit to verify compliance to that standard. Anything less than this is to accept a two tier supply chain with significant gaps in the management of risk, the consequences of which could undermine an entire industry.

4. Regulatory Framework

4.1. Food Business Operators

There are 2 EU regulations that place the primary responsibility for Food and Feed Safety onto Food Business Operators:

- EU regulation 178/2002
- EU regulation 1831/2003

4.2. Food Safety

EU regulation 178/2002 lays down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

Para 30 states:

“A food business operator is best placed to devise a safe system for supplying Food and ensuring that the food it supplies is safe: thus, it should have primary legal responsibility for ensuring food safety....”

Para 31 goes on to state:

“...that similar requirements should apply to feed and feed business operators.”

4.3. Feed Hygiene

Feed assurance requirements are set out in EU Regulation 1831/2003 which lays down requirements for Feed Hygiene.

Para 6 reinforces Para 30 of EU regulation 178/2002 when it states: *“the primary responsibility for Feed Safety rests with the Business Operator.”*

4.3.1. It also goes on to state:

“The principle of the new hygiene rules set out in this regulation is to ensure a high level of consumer protection with regard to food and feed safety, taking particular account of some of the following principles:

- a) The need to ensure feed safety throughout the food chain, starting with primary production of feed, up to and including, the feeding of food – producing animals*
- b) The general implementation of procedures based on the principles of hazard analysis and critical control points (HACCP).”*

4.3.2. Para 8 states:

“An integrated approach is necessary to ensure feed safety from, and including, primary production of feed up to, and including, its placing on the market or export. The primary production of feed includes products which only undergo simple physical treatment such as cleaning, packaging, storage, natural drying or ensiling”.

4.3.3. Para 10 goes on to state:

“Feed hazards present at the level of primary production of feed should be identified and adequately controlled, to ensure that the objectives of this regulation are met. The fundamental principles of the Regulation should therefore apply to farms which manufacture feed solely for the requirements of their own production, as well as to farms which place feed on the market”.

4.3.4. It is clear from the above paragraphs that the expectation is that the whole supply chain is managed jointly, with every Business Operator, large and small, playing a part in managing the responsibility for Feed Safety.

5. New Initiative - Risk Management Assurance System

- 5.1.** Building upon the current quality assurance system will be the desire to implement an industry wide risk management assurance system, in partnership with the Irish Grain Trade Association. The aim will be to develop a “Fortress Ireland” concept, where possible contaminant events “crash” up against the quality systems that exist at both port and in downstream processes throughout the supply chain. Underpinning this system will be a new UFAS module within the existing standard, a risk management module, using risk assessments and statistics to determine a sampling and testing plan for the industry as a whole. This will provide a structured approach to testing materials throughout the year at a level of coverage sufficient to ensure a significant reduction in the risk of an event occurring, and increase the probability of early detection should an event occur, thus reducing the endemic impact an undiscovered event could generate if left undetected.
- 5.2.** UFAS has been selected as the platform on which to build the Risk Management Assurance System, in recognition of the fact that it is already a well accepted standard in both Northern and Southern Ireland and so will not provide a barrier to implementing the approach on an all island basis. Nor should it add significantly to the existing red tape or compliance costs of a business.
- 5.3.** The Risk Management Assurance System is envisaged to have the following characteristics breaking down the feed chain into four areas, each area representing a specific set of products and risks. These areas are:
1. Importation
 2. Premixes
 3. Fats, Oils and Liquids
 4. Milling/blending
- 5.4.** For each area the following work will be performed, at an industry, rather than a company level:
1. A risk assessment will be prepared for each product, looking at, for each risk, the likelihood of occurrence, severity of impact and mitigating controls already in place.
 2. Based on the risk assessment, a confidence level is determined for each product that provides adequate assurance that if an event occurs it will have a high probability of early detection.
 3. The level and frequency of sampling and testing is therefore set for the industry and carried out by companies within the industry in accordance with a new Risk Management Module in the revised UFAS Scheme (as amended for the island of Ireland).
 4. Each company will, as part of its annual audit by UFAS, have its sampling plan audited for compliance.

- 5.5** The results of the sampling plan will be consolidated at an industry level and reviewed regularly in order to allow for adjustment of the sampling plan in response to emerging threats.

6. Time lines and implementation

- 6.1 Design stage:** The aim is to have a cost effective industry level risk assessment and sampling plan completed within six to nine months.

- 6.2 Implementation:** It is intended that the implementation of the arrangements will be phased in two ways:

- by Species;
- by Commodity Group (i.e. Imports; premixes; fats, oils, liquids; and milling/blending).

6.2.1. By Species:

It is anticipated that the Poultry and Pig sectors will be rolled out first as there are fewer raw materials, with lower inherent risk in those sectors, thus allowing a more rapid development of the system for this segment of the market. The ruminant sector will pick up some additional protection in parallel for shared raw materials.

6.2.2 By Commodity Group

It is also anticipated that some Commodity Groups will be able to complete and implement their actions ahead of other Commodity Groups, by the nature of the fewer risks inherent in their products. Implementing these components of the system as they become ready allows a better managed and quicker roll out than would otherwise be achieved.

7. Final Roll out.

- 7.1** It is anticipated that the supply chain will incur significant increases in costs in delivering feed assurance against these new standards (despite the fact that the overall cost per tonne impact on almost 2 million tonnes of materials will still only be measured in pence, rather than in pounds). It is therefore imperative that a conscientious business does not carry this cost as a competitive disadvantage through the existence of competitors who do not participate in the scheme, avoid the costs and therefore are able to undercut the market. It is therefore essential that meat, milk and egg processors amend their buying specifications to require that farmers supplying them only feed feedstuffs sourced from feed manufacturers approved to the revised UFAS Scheme (as amended for the island of Ireland) or from manufacturers/feed material suppliers in an agreed equivalent scheme (sourcing farm assured product will usually achieve this as it is a requirement of most farm assurance schemes). This commitment has to be underpinned by effective auditing of the farmer suppliers (this is done in farm assurance schemes) to ensure compliance. To this end the Risk Management Assurance System will give consideration to a process

of issuing statements of “certified feed” to customers, in order to aid the auditors in their work.

- 7.2** Recognising that “the customer is king”, it is well within the abilities of the Beef, Dairy, Poultry and Pig sectors to amend their own purchasing terms and quality assurance schemes to make effective the requirement to source only from companies in the revised UFAS Scheme (as amended for the island of Ireland) or a recognised scheme of equivalent standing. Indeed it will not be possible to get the Feed Business Operators in the feed trade to move to this new standard if it is not a compulsory requirement of all end-processor supply chain agreements. Businesses should not be commercially disadvantaged by incurring the expense in reducing a risk, however if a competitor does not, this may occur. The competitor is in effect creating a hole in the quality assurance scheme through which a risk may well crystallise to the expense of all stakeholders, in which case the additional investment and running costs of the industry would have been wasted.
- 7.3** It is therefore envisaged that final implementation of the scheme will happen in parallel to the implementation of any revisions needed in farm assurance standards and in procurement agreements between end-processors and farmers, at which point these systems will have created the “demand” in the market for these risk assured feeds, which feed businesses will respond to, or else see their customer base disappear overnight.

2. Poultry Sector (Meat and Table Eggs)

1. Make-up of Northern Ireland Poultry Sector

The makeup of the poultry sector is outlined in Table 3 below. It can be seen that the industry is concentrated in a small number of controlling companies, especially in the case of the poultry meat sector.

Table 3. Sector and company make-up of Northern Ireland Poultry Sector

Sector	Company	% Compound feed*	% N. Ireland output
Broilers	Moy Park Ltd.	100	97.5
	Maine Valley Poultry	100	2.0
	Rockvale Poultry	100	0.5
Turkeys	North Antrim Turkeys (Moy Park Ltd.)	100	80
	Dreen Farms Ltd	100	15
	Turkey Farm Fresh (Christmas)	100	5
Eggs	Skea Eggs Ltd.	100	40
	Ballygarvey Eggs	100	14
	Erne Eggs	100	14
	Farmlay (E. Thompsons)	100	14
	Clarke, Keady	0	8
	Brysons, Maghera	NA	7
	Others	Approx. 50	3

*i.e. large scale Compound Feed manufacturer

In the case of the poultry meat sector, the industry is highly integrated with the controlling company taking responsibility for sourcing feed, production of breeding stock and chicks and managing the farm based production. Even in the smaller producers there is almost universal use of feed supplies from large scale compound mills.

The situation with the laying bird sector is less integrated but again in the majority of cases feed is sourced from large scale feed mills. Where this is not the case feed is produced in farm scale plants – in some cases these are UFAS accredited.

The recent outbreak of human illness associated with eggs in the USA, which was a consequence of a feed contaminated with Salmonella being fed to laying hens resulting in over 1,500 people falling ill and the implementation of a recall of half a billion eggs, demonstrates the need to pay attention to feed safety.

2. Quality Assurance

- In the poultry meat sector there is almost complete coverage of the production chain under the auspices of various quality assurance schemes principally the “Assured Chicken Production Scheme” (ACP). In addition producers frequently comply with additional retailer schemes.
- In the egg sector there is less universal adoption of such schemes although the majority of production produces to either the UK “Lion Brand” scheme or Irish “Bord Bia” standards.

3. Traceability

- Within the poultry meat sector production of whole carcasses and primary cuts is readily traceable to individual farm level. Indeed this information is frequently printed on the retail pack.
- Within the egg sector traceability is generally robust in the case of larger packers, the individual egg normally being identified with a producer code.

4. Process controls and checks

- The details of individual controls and Critical Control Points are specific to each producer. The larger producers carry out in house checks for contaminants and residues, especially at end product stage. In addition the poultry meat sector has been subject to random sampling by DARD at a rate of 1 sample /200 tonnes of final product. This sampling covers risks from contaminants such as heavy metals, pesticides, chemicals and veterinary residues.

5. Risk Assessment

- It would be impossible to carry out a risk assessment for the whole sector as part of this project; however the opportunity was taken to “re-walk” the production chain. The general conclusion was that the major risk of introduction of a chemical contaminant (as opposed to a microbiological one) was via the feed supply. It is therefore this area which is the focus of the majority of initiatives being proposed. The other key recommendation is the adoption of a relevant quality assurance scheme by the small remaining volume of producers not already participating.

6. New Initiatives

6.1 Feed Ingredient Screening

- a. As described above the key recommendation is the early adoption of a Risk Management Assurance System. The mechanics of this scheme are discussed elsewhere in this document. Due to the very limited number of

importers of feed raw materials it is possible to achieve a high degree of protection for the industry with such a system.

- b. The industry feels that in addition to screening for known contaminant risks that the scheme should also have a “horizon scanning” function to identify and notify emerging risks.
- c. On a practical level the suggestion is made that all results from monitoring are made available to purchasers of raw materials in an open and transparent way.

6.2. Feed Manufacturing

- d. For the system described above to be robust **all** raw materials used whether in a large scale mill or smaller home mixer, must derive from screened sources.
- e. It is also essential that all feed production comes from manufacturing plants operating to UFAS standards irrespective of size of the plant.

6.3. Positive Release of Imported Vegetable Oils

- f. The poultry sector has recognised that the supply chain of vegetable oils for feed manufacturing carries particular risks due to the various manufacturing processes involved and the lipophilic nature of some contaminants such as dioxins. On the positive side almost all the products of this nature used in Northern Ireland are imported through a single facility. In cooperation with the importer the sector has initiated a scheme where the various imported oils are sampled for dioxins at loading and screened while in transit to Northern Ireland. Via this mechanism a positive release system for this critical raw ingredient has been achieved. This is felt to be a huge step in improving contaminant safety and is a good example of effectively managing risks associated with the need to import many raw materials.
- g. This principle should be extended to other raw materials as outlined in point 6.1 above.

6.4. Quality Assurance Schemes

- h. Numerically the huge majority of the poultry meat sector businesses already participate in one or more external quality assurance schemes. It is suggested that all commercial producers are encouraged to adopt one of the available schemes such as ACP or Bord Bia.
- i. Within the whole poultry meat sector the entire feed supply already derives from UFAS approved suppliers and would further benefit from adoption of the proposed raw material screening system. This is a key advantage for the sector.

- j. In the egg sector the adoption of assurance schemes is not so complete although the majority of production is covered by such schemes. Again wider adoption of such schemes should be encouraged.
- k. Within the egg sector there is greater use of farm scale feed mills. For protection these mills should adopt UFAS standards and use raw materials originating from the proposed scheme.

3. Pig Sector

1. Pig Sector – Framework

The **traceability** system in pork products, whilst fully compliant with the legal requirements, is not as comprehensive as many believe it to be, especially once pigmeat enters the major processing sectors and becomes sausages, processed meats, liquid fat and even some hams, etc. Traceability to the processor, and the day of production, is possible but not all the way back to the individual farm.

The **legal requirement** is very basic but it is possible to have much more elaborate traceability systems. However, it is particularly challenging where there is co-mingling and blending of products in secondary processing from many sources and countries. Comprehensive traceability systems exist in other sectors but to track all ingredients would require a major review of how meat is currently processed and there would be associated cost.

2. New Initiatives

2.1. *Central Risk Data-Base*

- All supplying pig farms into NI abattoirs will be included on a slaughter industry database. This database will be used to monitor and constantly risk assess the input supply chain and the control function will initiate required corrective action programme. The database will be held, and operated by, the Ulster Pork and Bacon Forum.
- This will operate as a communication portal with the supply base highlighting risk factors.
- This control system will either be audited externally or a direct appointment will be made to carry out compliance assessments and risk assessments.

2.2. *Procurement Contract:*

- A template of a procurement contract will be drawn up in consultation with UFU, Ulster Pork & Bacon Forum and pig producers.
- While price and other specific elements may be handled by individual operators, the Industry Standard Procurement Terms of the contract will include a requirement for producers to feed pigs on feeds exclusively supplied from feed Industry operators that are in compliance with the proposed UFAS/FEMAS schemes or an agreed equivalent scheme.
- In addition to attention to the feeds fed, the contract will require full compliance with a quality assured pig scheme (e.g. AFS' Assured British Pigs, Bord Bia's Pigmeat Quality Assurance Scheme), including adherence to the rules on medication and additive administration.

- The procurement contract will outline the consequences to the farmer for breaches in compliance.
- The procurement contract will require the provision of information on Salmonella status of pig herds.
- The procurement contract will reinforce the legal requirement to provide Food Chain Information prior to slaughter.

4. Dairy Sector

1. Dairy Sector – Framework

1.1. Dairy Farming in Northern Ireland

In 2009, Northern Ireland accounted for approximately 14% of total milk production in UK, around 1.5% of total milk production in the EU. Between 2003 and 2008, annual milk production in Northern Ireland increased from 1.78 billion to 1.9 billion litres. In financial terms, the NI dairy industry has an annual total turnover in excess of £700m.

The number of dairy farm businesses in Northern Ireland has fallen over the last 20 years, with DARD's 2009 census showing 3,800 dairy farm businesses. The DARD June 2009 census also showed that the average dairy herd size in Northern Ireland was 75 compared with an average herd size of 54 in 2000. Dairy cow yields in Northern Ireland have been increasing during the past decade. Average milk yield per cow in 2000 was 5,721 litres, compared with 6,350 litres in 2009. Although Northern Ireland's average herd size is well above the EU 15 average (42), it is below that of the rest of the UK (113). In 2000, there were 284,400 dairy cows, compared with 284,700 in 2009.

1.2. Dairy Processing in Northern Ireland

The NI processing sector has evolved from a mix of plc and co-operative ownerships, to predominantly a co-operative based ownership structure. This is in common with the structure in ROI, Denmark, and New Zealand. In GB, there has also been growth in co-operative ownership in the processing sector, although not to the same extent as in NI. The largest dairy company in NI processes approximately 500 million litres of milk per year. The 11 main dairy companies purchase and process approximately 88% of the milk produced in NI, with the balance being exported to ROI for processing. The product mix of dairy processing in NI is very different from that in GB, but not dissimilar to that in ROI. This is driven by a small local market of just 1.7 million consumers and, therefore, a necessity to export.

2. New Initiatives

2.1. Procurement contract

Buyers of raw, ex-farm milk in Northern Ireland have a contract with each of their suppliers that covers a wide range of conditions of supply and purchase. This Report recognises the supremacy of these contracts, and is intended to offer suggestions on how they might be augmented to minimise the risks which the Report identifies.

2.2. Milk Quality Standards

It is suggested that contracts should reflect the following:

“All feed stuffs used for milk production, including concentrates, straights, recycled human food and supplements, must be sourced from the enhanced UFAS scheme or an agreed independently registered and audited equivalent source. All feed must be fully traceable and stored safely in a manner so as to prevent contamination”.

Buyers of ex-farm milk should ensure that their respective schemes provide for verification of compliance with quality assurance standards.

2.3 Traceability

Buyers of raw, ex-farm milk in Northern Ireland should ensure they have the necessary traceability measures in place to allow them to identify suspect milk supplies from individual farms, in the event of product contamination.

The dairy sector is vulnerable to feed related contaminants because of the difficulties of confining a recall, should it be necessary, to the output from a single farm, making it imperative that attention to detail is adhered to by all farmers. There is no margin for error when the stakes are so high.

5. Beef and Lamb Processing Sector

1. Beef & Lamb Sector - Framework

1.1. *Food Chain Information (FCI)*

All beef processors have been obliged by law (since 1 January 2010) to collect and retain FCI on each bovine they process. This information is supplied by farmers presenting the animals.

1.2. *Procurement Contracts*

- Procurement in the red meat processing sector is extremely diverse. It ranges from procurement on the one hand with no contract, to quite formal and detailed contracts on the other hand.
- Formal contracts of supply are difficult given the large number of small producers and the various routes to market that are available.
- Formal contracts can be found to be in place with some larger suppliers, particularly for specific and specialist types of cattle for delivery at specific times. In such contracts feeds to be used would be considered to be guidelines rather than specific requirements.

1.3. *Quality Assured Feed*

- One shoddy operator can bring a processor or the entire sector down, so the importance of primary producers being aware of their responsibility is key. The long term objective of the meat processing sector is to source only quality assured stock.
- The sector is mindful of the potential for reputational damage caused either by bad practice at plant level or in its supply chain. Given the customer profile, level of individual investment and extent of regulation and policing of individual factories, it would be impossible for the legitimate businesses to operate at a level below satisfactory. The permanent presence of inspectors in primary slaughter facilities is related to historical practices rather than based on existing risks. Initiatives are underway to move to more proportionate, and cost effective oversight and to this end the sector is keen to work closely with the regulators to ensure that consumer protection is optimum within the processors own food safety management systems.
- There is always a possibility of an underground trade in pet food or recovery of fallen stock that has the potential to cause reputational damage.
- The potential for damage to reputation from other links in the supply chain is of concern whether it is from farmers unwittingly or otherwise feeding disallowed materials or using illegal therapeutic substances.

- Meat is not a sterile product and needs to be handled appropriately through the distribution channels and in commercial and domestic kitchens. Bad practice can cause product damage and consequently reputational damage to the industry.

1.4. Own Checks

- As the FBO is responsible for the safe operation of their business, a comprehensive ante-mortem picture for each bovine animal is produced on arrival at the abattoir.
- In addition customer demands drive standards, with British Retail Consortium (BRC) audits a feature of all Northern Ireland red meat processors.
- HACCP analysis is monitored frequently by processors, wholesalers and manufacturers.
- All individual cattle identifications are recorded by each processor in batches and if batch recalls happen, the plant can use the batch records to trace back to the individual farms who supplied the cattle for each batch. Batch size is a commercial decision.

1.5. Traceability of primal cuts good, but after that how good is it?

- Moving beyond primary cuts red meat operates batch traceability only. This has been demonstrated as effective during the dioxin crisis and previously when a local business was required to initiate a recall. Traceability for the meat ingredients in ready meals and other processed products exists but is not simple therefore the emphasis needs to be placed on the prevention of the need for recalls.

2. New Initiatives

2.1. Move to Quality Assured stock only

- The red meat sector is the Northern Ireland industry leader in the development of farm assurance (Northern Ireland Beef & Lamb Farm Quality Assurance Scheme – NIBL FQAS – since 1991) with 95% of the domestic prime cattle kill now coming through the scheme (FQAS published data for the six months from April to September 2010). The scheme requires the use of assured feed, assured transport, assured markets for stock sold to abattoirs via that route, and assured abattoirs and packing plants. To achieve 100% assured stock would require an industry wide initiative involving all farmers. However, an additional consideration is that there remains a significant spot market for beef that is not farm assured.
- While not committing to moving immediately to all stock being assured (it would double the costs of the scheme to bring in the 50% of finishing farms who are not assured to convert the 5% non-assured product to

assured). This is a subject that should be revisited if the wider industry arrives at a point where everything else is quality assured and the small extra percentage of assured beef cattle would close the loop.

- In the meantime it will operate a policy of encouragement through financial incentives.

2.2 Reforming processor inspection regimen

- There is a permanent presence of regulatory inspectors in the red meat processing sector and both the sector and the regulators acknowledge that this is neither risk based nor cost effective. However, there appears to be reluctance by the regulators to move from the status quo fearing consumer protection may be compromised. Therefore it behoves the industry to clearly demonstrate that it is moving from the legal minimum, the pass paper, to the honours exam in terms of the food safety standards it is implementing to provide reassurance to both regulators and consumers.
- In addition to compliance with legal requirements, all red meat processors are subject to BRC audits to meet customer requirements. This is a standard considerably above and beyond minimum legal requirements.

3. Recommendations

It is recommended that:

- 3.1.** The Red Meat Processing Sector will keep under review the possibility of moving to full FQAS in its procurement policies. Without a more complete integration of all primary producers and intermediary routes to market this will undoubtedly remain a long term objective. However, the commercial environment may dictate the pace of change with contractual arrangements evolving.
- 3.2.** Processors will regularly review the financial incentives paid for FQAS stock.
- 3.3.** All raw materials used for feeds that are sourced for manufacturing purposes should come from a supplier operating under the proposed new UFAS code of practice or equivalent with full risk management, tracing and auditing procedures.
- 3.4.** A statement regarding the assurance status of externally sourced feedstuffs fed to animals presented for slaughter, whilst on the consignor's holding, will be incorporated into the Food Chain Information Form (see example FCI model document in Appendix 2). Where the FCI Form reveals circumstances in which non assured feedstuffs have been fed, processors will decide on the basis of risk whether such animals will be separately streamed and their products batched separately.

- 3.5.** Trading Standards, the Environmental Agency and Assurance Inspectors should be checking authorisation documents for raw materials and other potential contaminants and for safe handling of hazardous materials from original sources right through the chain. Non-conformances must be applied strictly.

- 3.6.** A beef or sheep farmer who is not farm assured should be subject to more official inspections by the authorities.

6. Managing On-Farm Risks from Animal Feedstuffs

1. Introduction

Whilst farm businesses have always been a cornerstone of the human food supply chain it was only when new EU Food and Feed Hygiene Legislation came into effect in 2006 that primary producers were classified for the first time as Food Business Operators. The purpose of this legislation is to ensure that everyone involved in food production takes all appropriate steps to control potential food hazards, at every stage of the supply chain from farm-to-fork. Farmers who are approved participants in farm quality assurance schemes, and whose produce passes through an assured supply chain, are able to give assurances to customers that products and ingredients carrying scheme logos are independently verified as maintaining high standards of food safety and hygiene, animal welfare and environmental protection.

The UK Food Standards Agency (FSA) has recognised the contribution that farm assurance scheme participation makes to primary production's compliance with the legislation and readily endorses a lower inspection frequency for farms participating in these schemes. In Northern Ireland the livestock, poultry and milk sector scheme owners are: LMC in the case of the NI Beef and Lamb Farm Quality Assurance Scheme and Assured Food Standards in the case of Assured Chicken Production, Assured Dairy Farms, Assured British Pigs and Quality British Turkey. In Northern Ireland, the cereals sector scheme owners are the Ulster Farmers' Union and the Northern Ireland Grain Trade Association. Each of these schemes is continually striving to evolve reasonable and practical standards for animal feedstuffs grown on farm or sourced externally that, first of all recognises and develops codes to reduce potential contamination risks based on the profile of differing feedstuffs, and secondly, demonstrates that participants have exercised due diligence in reducing their on farm exposure to risk of producing or acquiring potentially contaminated feedstuffs. The contents of the sections below represent the next essential evolution in this process.

2. Recommendations

The general principle is that all feeds fed to animals should be quality assured.

2.1. *Home-grown farm feeds*

- The forage feeds produced on a farm (e.g. silage, forage maize, whole crop) are deemed to be quality assured if they have been produced on a quality assured farm.
- If other crops are grown on a farm (e.g. root crops, vegetables from which there may be vegetable waste) there should be participation in the assurance scheme appropriate to the crop (e.g. Assured Combinable Crops Scheme (ACC), Assured Produce (AP) or a Scheme which has an equivalent Standard) and they are deemed to be quality assured if they have been produced on such a quality assured farm. For cereals, as an alternative to ACC, participation in the NI Farm Quality Assured Cereals Scheme is acceptable.

2.2 Externally sourced feedstuffs

- All externally sourced manufactured feedstuffs must be sourced from an assured manufacturer and/or merchant, the manufacturer/merchant must be certified under an AIC Feed Assurance Scheme (UFAS Compounders or Merchants Scheme) or a scheme that has an agreed equivalent standard.
- All externally sourced feed materials/ingredients/co products/straights must be sourced from an assured source, e.g. a UFAS Merchant Scheme member, an AIC Feed Materials Assurance Scheme (FEMAS) member, an AIC Trade Assurance Scheme for Combinable Crops (TASCC) member, another assured farm, or a scheme that has an agreed equivalent standard.
- Minerals, blocks, vitamin supplements, liquid feeds and milk replacers may be purchased from small hardware stores or agricultural pharmacists who are not certified UFAS Merchants, as long as the feedstuff is from an assured source.
- Externally sourced feed grain must be sourced from an assured cereals farm (e.g. Assured Combinable Crops Scheme, Northern Ireland Farm Quality Assured Cereals scheme or a Scheme which has an agreed equivalent standard).
- Externally sourced crop products (e.g. root crops) and by-products (e.g. vegetable waste) must be sourced from a farm that participates in the Assured Produce Scheme or another assured farm.
- Externally sourced forage (silage, forage maize, whole crop, feed straw) should be sourced from an assured farm but, if not, must be covered by a 'warranty declaration' (See Appendix 3 for an example warranty declaration).
- Written or documentary records of all feedstuffs including forage sourced externally must be maintained, kept up to date and retained for three years, including the assurance scheme membership number when sourced from other assured farms. A signed declaration that the feed record book represents the totality of all externally sourced feed stuffs must be provided.

2.3 Home mixing

- All home mixers of feeding stuffs must be registered / approved with the relevant authority as required by legislation.
- All home mixing of feedstuffs, must be conducted in accordance with the **Industry Code of Practice for On-Farm Feeding** or a Code of Practice which has an agreed equivalent standard, a copy of which must be available to all relevant parties.

- Machinery used for home mixing, mechanised feeding equipment and lorries/trailers/feed boxes used for transporting feed must be suitable for purpose, be in good working order and maintained in a clean and serviceable condition.
- Home mixers must retain a sample of all raw materials used and of the mixed feed every time there is a significant change in formulation. These samples must be retained for four weeks after last use.
- When mobile mixers are used, operatives must be members of the National Association of Agricultural Contractors (NAAC) Assured Land Based Contractor Scheme (Mobile Feed Mixing and Processing).

2.4 All feedstuffs

- All feed must be easily identifiable, stored and handled in accordance with good practice with all receptacles, bins and trailers cleaned regularly.
- All feed must be stored and handled to prevent contamination and a pest control policy must be implemented.

7. Regulators

1. Introduction

The regulators' role is to verify that appropriate controls are in place so that the feed and food business operators are in compliance with the law. In addition to inspections and audits undertaken to exercise this responsibility, the regulators carry out surveillance activities to monitor for microbial and chemical contamination in the food chain.

2. Risk categorisation for inspection

Equal risks along the food chain are not treated with the same amount of attention from the national inspectorate and the inspection frequency and intensity varies across the food chain, ranging from some businesses having a permanent presence of inspectors to others being inspected annually or even less frequently. Some of this discrepancy results from legal requirements; however it behoves us to look at how we deploy the national inspectorate to deliver the most benefit in terms of consumer protection and protection of our industry. There should be an onus on regulators to consider risk when deploying inspectors to businesses, with businesses being categorised on the basis of:

- a) Hazards associated with their raw ingredients
- b) Hazards associated with the process
- c) Hazard associated with their finished products
- d) Food Safety Controls and management capabilities
- e) Consequences of a major non compliance

There is a move by the competent authorities from inspecting premises to auditing food safety management systems. The latter satisfies the authorities that the food business has procedures in place to produce safe food on an ongoing basis whereas the former just gives a snapshot of how things are on the day of the visit. This move needs to be accelerated to ensure the activities of the national inspectorate are adding maximum value. One good systems audit can be much more effective than numerous inspections. The regulators should work with industry to minimise risk.

3. Industry role

Industry can work with the regulators to enhance consumer protection by:

1. Sharing their risk assessments.
2. Collaborating with the Regulators to avoid duplication of sampling and to provide more comprehensive monitoring.
3. Collaborating with Regulators to gain recognition for those businesses with enhanced controls so that inspectors can be redeployed to areas of greater risk.
4. Participating on the Food and Feed Advisory Panel which is to be set up on the recommendation of the MacKenzie review of the Dioxin incident in Northern Ireland.

5. The proposed Food and Feed Advisory Panel should work closely with the regulators to assess both existing and emerging risks, devise optimum risk management and monitoring strategies, and introduce preventive initiatives to ensure consumer health is protected, consumer confidence is maintained, and business risk is reduced in the most cost effective manner.

Overall Recommendations

Recommendations & points for action from each of the respective sectors are:

1. All processors in each sector will aspire to source livestock and livestock products only from Quality Assured farms.
2. All externally sourced feed on farms should be from a Quality Assured source.
3. Farmers' feed records should include a signed declaration that the totality of externally sourced feedstuffs is included in the records.
4. The Food Chain Information Form, submitted by the farmer to the processor when stock are presented for slaughter, should be enhanced to include a signed declaration in relation to the assurance status of externally sourced feedstuffs fed to animals whilst on the consignor's holding.
5. All major feed suppliers should be in a UFAS Scheme as amended to take account of Risk Management, or a recognised scheme of equivalent standing.
6. Any feedstuffs merchanted by small stores and agricultural pharmacists should be from a Quality Assured source.
7. The feed sector, including the importers, should combine their resources and move to Strategic Risk based sampling.
8. Recycled human food and by-products should be in the FEMAS scheme.
9. The industry and the Regulators should collaborate to share their risk assessments at both farm and processing levels.
10. The industry and the Regulators should endeavour to share information regarding risk assessments, sampling and inspections in order to maximise the effectiveness of controls.
11. The industry and the Regulators should collaborate to gain recognition for those farm and processing businesses with enhanced controls, so that inspectors can be redeployed to areas of greater risk.
12. The industry and the Regulators should collaborate in horizon scanning to identify new threats and emerging risks.
13. The industry should participate on the Food and Feed Advisory Panel which is to be set up on the recommendation of the MacKenzie review.
14. The proposed Food and Feed Advisory Panel should work closely with the regulators to assess both existing and emerging risks, devise optimum risk management and monitoring strategies, and introduce preventive initiatives to ensure consumer health is protected, consumer confidence is maintained, and business risk is reduced in the most cost effective manner.

Conclusions

High standards and attention to detail are key ingredients for the success of all of the Northern Ireland agri-food sectors. There is interdependency amongst the stakeholders as one shoddy operator can destroy an entire sector. Therefore it behoves every player to adopt the appropriate measures to reduce the risk of adverse events in their business as if they fail to do so, they may not only destroy their own business but could damage Northern Ireland's reputation as a centre of excellence for agricultural output.

There can be no tolerance for substandard practices, or illegal activity, as we strive for a culture of high standards. Those who put our industry's good name at risk, and consumers' health in jeopardy, have no place on the Northern Ireland Agri-Food team.

When insurance companies are determining premiums for liability cover of operators in feed and food processing they should take into consideration the risk mitigation steps which have been implemented by those businesses.

The regulators and the industry stakeholders share a common goal to protect consumer health, maintain consumer confidence and ensure that "produced in Northern Ireland" stands for high standards and safe nutritious output.

If we can follow our own recommendations the agri-food sector will be in the vanguard of the economic recovery in Northern Ireland.

Appendix 1: Summary of Existing Supply Chain Quality Assurance & Traceability Process Flow

Supply Chain:

Trade Assurance:

Assured Chain:

Producer



Farms

Crusher



Production run

Shipper



Vessel

Importer



Stores

Storage



Lorry

Feed Compounder



Mill production batch

Merchants



Bag of feed

N
I
G
T
A

M
E
M
B
E
R
S

Appendix 2: IFAG Model of FCI Document

FOOD CHAIN INFORMATION FOR SLAUGHTER STOCK

To be completed by Livestock Producers presenting Cattle*, Sheep [†] , Pigs or Poultry for slaughter; either directly or through a Livestock Market.	
Holding Number	
Keeper's Name	
Address of Holding	
Telephone number	
E-mail address (optional)	
ATTACH: *MC2 / [†]MS2 / Pig List / Poultry? (as appropriate)	
<p>DECLARATION</p> <p><u>CATTLE ONLY</u> (delete either (i) or (ii) below: (i) The holding is not under movement restriction for Bovine Tuberculosis (TB) or Brucellosis (BR) OR (ii) The holding is under movement restriction for Bovine Tuberculosis (TB) or Brucellosis (BR)</p> <p><u>CATTLE AND SHEEP:</u> Cattle and sheep on the holding are not under movement restrictions for any other reason (excluding a 6-day standstill).</p> <p><u>ALL STOCK</u> Withdrawal periods have been observed for all veterinary medicines and other treatments administered to the animals while on this holding and previous holdings.</p> <p>To the best of my knowledge the animals are not showing signs of any disease or condition that may affect the safety of meat derived from them.</p> <p>No analysis of samples taken from animals on the holding or other samples has shown that the animals in this consignment may have been exposed to any disease or condition that may affect the safety of meat or to substances likely to result in residues in meat.</p> <p style="color: red;">Any externally sourced feedstuffs fed to the animals in this consignment while on this holding were from an assured source.</p>	
Keeper's signature	
Print Name	
Date	
If the animals do not fulfil all the above statements, tick this box and provide additional information on the back of this page.	

ADDITIONAL FOOD CHAIN INFORMATION

For Cattle, Sheep, Pigs and Poultry

Details of holding movement restrictions for animal health or other reasons	

Information about withdrawal periods not met or animals showing signs of a disease or condition that may affect the safety of meat derived from them.	
Identification of animal	Delete as appropriate:
	Withdrawal period / disease / condition
	Withdrawal period / disease / condition
	Withdrawal period / disease / condition
	Withdrawal period / disease / condition
Give the date of treatment and/or describe the disease or condition, or diagnosis if a veterinary surgeon has examined the animal(s)	

Details of analysis of samples taken from animals on the holding or other samples that have shown that the animals in this consignment may have been exposed to any disease or condition that may affect the safety of meat, or to any substances likely to result in residues in meat.

Details of non-assured feeds fed to the animals in this consignment while on the holding.

Keeper's signature	
Print name	
Date	

Appendix 3: Example Warranty Declaration

WARRANTY DECLARATION FORM

This warranty declaration can be used for forages (silage, forage maize, whole crop, feed straw etc) sourced externally from non-assured farms. A complete record of all externally sourced feedstuffs must be maintained in the farm feed records.

Name of Supplier _____

Address _____

Product Supplied _____

Delivery Date _____

Name of Buyer _____

Address _____

I, being the supplier named above, confirm that I have taken every reasonable precaution to keep the product stated above free from contamination and fit for the purpose of use as a feed material for consumption by livestock.

Signed _____

Date _____

Appendix 4: Acknowledgements

In producing this report the Industry Feed Assurance Group would like to acknowledge formally the guidance and input provided throughout our deliberations by Dr Patrick Wall, Associate Professor of Public Health, University College Dublin and former chairperson of the European Food Safety Authority. Dr Wall Chaired the Inter Agency Review Group on the Dioxin Contamination Incident in Ireland in December 2008 and brought to our initiative a wealth of expertise as to what policies, and practices, the agri-food sector in Northern Ireland might put in place to prevent similar incidents from occurring in the future. We are grateful for his invaluable input.

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