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Changing requirements of food safety & quality in EU regulations & their effect on the organic sector

(meat & poultry products)

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- Outline of general food safety issues to do with livestock – physical, chemical & microbiological contamination
- Information on microbial pathogens
- Different risks - raw & cooked meats
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Contamination - Physical

What is the hazard?

FOREIGN BODY CONTAMINATION

Eg Flies, glass, wood, metal

What is the risk?

Can hurt people but extent is normally limited. Can badly affect reputation – bits of a rat aren't a good advert in a product

How do you control it?

Good Manufacturing Practice – well maintained equipment, tidy processing areas, well-trained staff, tight specifications for raw material, supplier audits, good pest control etc

Contamination – Chemical - 1

What is the hazard?

CHEMICAL CONTAMINATION

Eg dioxins in Belgian pork, beef, poultry, eggs in 1999.
Nitrofuran in organic chicken UK 2004

What is the risk?

Normally at such a low level that it's unlikely to hurt people, but can badly affect reputation. The dioxin issue (caused by industrial oil contamination of animal feed) severely damaged Belgium's export markets but probably caused no actual harm.

How do you control it?

As above, GMP– well maintained equipment, tidy processing areas, well-trained staff, tight specifications for raw material, supplier audits etc

Contamination – Chemical - 2

Having said there are generally no serious effects of chemical contamination, the Spanish "Cooking Oil" scandal in 1981, probably killed over 1,000 people & was responsible for a great deal of illness & permanent disability.

It seems the "cooking oil" was never the cause – it was most likely due to excessive organophospate pesticide sprayed onto tomatoes in Almeria. According to the English Guardian newspaper, there was a cover-up by the government to protect their fruit & veg exports & their tourist trade.

Contamination - Zoonoses

What is the hazard?

ANIMAL DISEASE

Eg Foot & Mouth, BSE, Avian flu

What is the risk?

BSE – Potentially lethal. FMD – animal welfare issue Avian Flu – may be very serious. All have serious effects on commerce & reputation

How do you control it?

Good animal welfare, traceability, controls, supplier audits, legislation

Contamination - Microbial

What is the hazard?

MICROBIOLOGICAL CONTAMINATION

Eg E.coli vtec 0157 killed 20 people in Scotland in 1996

What is the risk?

In the worst case, can be widespread & fatal.

How do you control it?

Understand the microbes that are likely to affect your products & put in controls to kill or prevent growth of any microbes that are naturally present & prevent further contamination

Microbial Growth - 1

Bacteria can double in number in as little as 20 minutes, if conditions are suitable.

This means that a 100 bacteria can become 1.6 million in 4 $\frac{1}{2}$ hours.

Conditions vary for each type of bacteria but pathogens generally grow best in warm, moist conditions, medium pH, nutrient source

Microbial Growth –2

To reduce bacterial growth –

- ✓ Use good quality raw materials
- ✓ Prevent further contamination (good hygiene, clean equipment etc)
- ✓ Keep cool (<4°C) or warm (>63°C)
- ✓ Use quickly

Sadly, even the above good practice isn't enough

Microbial Growth – 3 - Myths

"Pathogens can't grow in cold acid conditions"

Fact: Listeria can survive & even grow slowly at temps near 0'C, pH4.4 to pH9.4, with or without oxygen. (Sanitizers have killed most of the bacteria which used to compete with Listeria.)

"There need to be millions of bacteria before they cause illness"

Fact: E.coli VTEC 0157 can cause illness when there are as few as 100 bacteria present

So meat doesn't look bad, bacteria difficult to detect

Microbiological Risks – Cooked Meat

Raw & cooked meats present very different risks

Cooked meat is considered "High Risk" because it is not normally further cooked before being eaten.

It is a good medium for bacterial growth, so great care must be taken with hygiene & temperature control

<u>There must be no cross-contamination with raw foods</u>

Microbiological Risks – Raw Meat - 1

Raw meat is not considered "High Risk" because it is further cooked before being eaten. However cooking will only reduce the number of bacteria, it won't kill them all

It is also a good medium for bacterial growth, so great care must be taken with hygiene & temperature control from slaughter onwards

Microbiological Risks – Raw Meat - 2

To ensure a low initial bacterial load:-

Good animal welfare to reduce stress & improve health & disease resistance

Take care, pre-slaughter to reduce stress & infection from other animals. Animals should be kept clean & dry

Take care, post-slaughter to reduce contamination from faeces, hides, knives

Red Meat Safety & Clean Livestock

The UK Food Standards Agency recently launched their "Red Meat Safety & Clean Livestock" policy, following the publication of the Pennington Report (1996) into the E.coli 0157 food poisoning outbreak in Scotland

(Why does it take so long to do something so obvious?)

Current EU Food Hygiene Reg -1

The Food Hygiene Directive, **Directive 93/43/EEC** concerns the hygiene of foodstuffs and introduces the HACCP system into European legislation. The Directive states that:

"Food business operators shall identify any step in their activities which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles, used to develop the system of HACCP."

Current EU Food Hygiene Reg – 2

HACCP is short for **Hazard Analysis and Critical Control Points (HACCP)**, where:

- **Hazard** means the potential to cause harm and can be microbiological, chemical or physical;
- **Critical control point** is a step in the production process which, if controlled by control measures, will eliminate or reduce a hazard to an acceptable level.
- **Control measures** are actions and/or activities that are required to eliminate hazards or reduce their occurrence to an acceptable level.

Current EU Food Hygiene Reg - 3

HACCP is a system that focuses on hygiene procedures in food production processes throughout the production and transport chain (e.g. transport of refrigerated goods is also covered by HACCP). The aim is to improve the guarantee for food safety through process monitoring, rather than by checking the end product

EC178/2002 General Food Law Feb'02 - 1

Establishes the rights of consumers to safe food & to accurate honest information

Integrated "farm to fork" approach

Aims to ensure a high level of protection of human life & health, taking into account the protection of animal health & welfare, plant health & the environment"

Implemented Jan'05

EC178/2002 General Food Law Feb'02 - 2

Traceability of food & feed products – only 1 step back & forward – internal traceability not required

Responsibility of operators

Withdrawal of unsafe food/feed from market & notification to competent Authorities

Key aspects:

Risk Analysis – risk assessment, risk management, risk communication

Transparency – effective public consultation to increase consumer confidence

Precautionary Principle – reasonable grounds for concern but inadequate data

EC 178/2002 Traceability

- traceability as the ability to trace and follow food, feed, and ingredients through all stages of production, processing and distribution.
- The Regulation contains general provisions for traceability (applicable from 1 January 2005) which cover all food and feed, all food and feed business operators, without prejudice to existing legislation on specific sectors such as beef, fish, GMOs etc. Importers are similarly affected as they will be required to identify from whom the product was exported in the country of origin. Unless specific provisions for further traceability exist, the requirement for traceability is limited to ensuring that businesses are at least able to identify the immediate supplier of the product in question and the immediate subsequent recipient, with the exemption of retailers to final consumers (one step back-one step forward).

New EU Food Hygiene Regs - 1

These aim to "merge, harmonise & simplify" hygiene requirements in the EU & will require the same standards for imports as for food produced within the EC

(Published 2004. In force 2006)

EC 852/2004 General Hygiene Laws for all food

EC 853/2004 Specific requirements for certain foods incl. meat & meat products

New EU Food Hygiene Regs - 2

1. General obligations (Article 3): Food business operators shall ensure that all stages of **production**, **processing** and **distribution** of food under their control satisfy the relevant hygiene requirements laid down in the Regulation.

New EU Food Hygiene Regs - 3

2. General and specific hygiene requirements (Article 4): The following specific hygiene measures must be adopted as appropriate:

- Compliance with microbiological criteria for foodstuffs
- Procedures necessary to meet the criteria as laid down in the Regulation
- Compliance with temperature control requirements for foodstuffs
- Maintenance of the cold chain
- Sampling and analysis

New EU Food Hygiene Regs - 4

3. Hazard analysis and critical control points (Article 5): Food business operators shall put in place and maintain procedures based on the following HACCP principles:

- **Identifying any hazards** that must be prevented, eliminated or reduced to acceptable levels
- **Identifying the critical control points** at the step or steps at which control is essential to prevent or eliminate a hazard or to reduce it to acceptable levels
- **Establishing critical limits** at critical control points for the prevention, elimination or reduction of identified hazards

New EU Food Hygiene Regs – 4a

HACCP continued

- Establishing and implementing effective **monitoring procedures** at critical control points
- **Establishing corrective actions** when monitoring indicates that a critical control point is not under control
- Establishing procedures to **verify** that these measures are working effectively
- Establishing documents and records to **demonstrate the effective application** of these measures

New EU Food Hygiene Regs – 5

4. Official controls, registration and approval (Article 6): Food business operators must notify the appropriate competent authority of each establishment under its control that carries out any of the stages of production, processing and distribution of food.

Effects of New Regs on Organic Sector

- UK already has these requirements in place, enforced by the Supermarkets
- very little change, other than Inspection Bodies now appear to have a statutory duty to inform the appropriate authority if they become aware of any food safety issues
- Previously this was compromised by confidentiality requirements
- In the UK, new EU Regs mean that 300 small abattoirs may close – welfare issues

Is organic food safer than conventional? 1

- People tend to think it is, especially for babies & children - potentially dangerous situation, since they have fewer defences
- Organic processors, especially on-farm processors, tend not to be so knowledgeable or experienced
- Small scale so can't employ Microbiologists or Technical Managers

Is organic food safer than conventional? 2

Processing equipment may not be adequate – cooking/cooling temps/times can be critical

- Small scale so can't always buy ingredients directly from Suppliers – so may not get best ingredients or information
- Farmer's Markets – poor temperature control
- In the UK, supervised by EHOs, on a risk assessment basis. This is fine if the EHO is competent

Sausages

- Minced meats have a very high bacterial count, mincing gives 1000-fold more surface area = 1000-fold more bacteria
- Conventional sausages contain preservative
- Organic sausages don't
- They should be made from very fresh meat, in very hygienic conditions, kept at 4°C or less, cooked very thoroughly & eaten within 2-3 days
- I doubt this happens …

Cured Meats

- Cured meats need nitrite/nitrate
- This prevents the growth of Clos.botulinum
- The UK is the only country which has a derogation allowing organic cured meats to contain nitrite
- What do the other countries do?
- Small producers must ensure cure is properly applied & effective
- New regs will reduce the amount of nitrite that can be added. This, together with the drive for lower salt levels could cause food safety problems