Feed Safety System in Framework to Ensure Safety of Feed in Japan

Ministry of Agriculture, Forestry and Fisheries
Animal Products Safety Division,
Food Safety and Consumer Affairs Bureau

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I. Framework to Ensure Safety of Feed

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Hazards in animal feeds

Chemical hazards
Mycotoxins, Dioxins, Heavy metals
Pesticides residues, Melamine, Radionuclides ...

Biological hazards
Salmonella, EHEC, Prion ...

Physical hazards
Foreign objects (glass, metal ...)

may threaten animal and human health.
decrease production of foods of animal origin.
Appropriate hazard controls by all stakeholders are needed for feed and food safety.
Outline of the Feed Safety Act

Enacted in 1953 (revised 11 times)

Purpose
To ensure public safety and stable production of livestock, etc. by ensuring feed safety and quality improvement through establishment of the regulations on production, etc. of feed and feed additives, etc.

Target animals
Cattle, swine, chicken, cultured aquatic animals and others (31 kinds)

Feed additives
155 items such as vitamins, minerals, amino-acids and enzymes including antibiotics

(for safety)
Setting of specifications and standards, order of disposition, etc., verification of specific feed, etc., registration of manufacturers, prohibition of manufacturing unsafe feed, etc.

(for quality)
Setting of quality specifications, labeling standards, and registration of verification institutions

Measures taken

Others
Notification of manufacturers, importers, etc., notification of import of feed, etc., on-site inspections, etc.

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Framework to Ensure Safety of Feed

Agricultural Materials Council

Food Safety Commission

Minister of Agriculture, Forestry and Fisheries (MAFF)

Regional Agricultural Administration Office

observation survey

Governors of prefectures

on-site inspection

Manufacturers / importers of feed and feed additives

on-site inspection

Vendors

Livestock farmers / Aquaculture farmers

Feed chain (distribution of feed)
Ministerial Ordinance concerning standards and specifications of feeds and feed additives

Regulatory limits of harmful substances in feed (Notification of the Director-General, Food Safety and Consumer Affairs Bureau, MAFF)
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Chemicals in feeds

✓ Harmful chemicals: Maximum limits are set.
  – Pesticides Residues
    61 pesticides in grain, any hay and fodder
    80 pesticides in rice grain, straw and silage for feed
  – Contaminants
    As, Cd, Hg, Pb
    Aflatoxin B$_1$, Deoxynivalenol, Zearalenone
    Radioactive cesium
  – Melamine, (and cyanuric acid)

✓ Feeds and feed additives produced by recombinant-DNA techniques: Safety review is mandatory.

(as of Jan 2019)
### Maximum Residue Limits for Pesticides in Feeds

#### Some examples

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Wheat grain</th>
<th>Barley grain</th>
<th>Rye grain</th>
<th>Corn grain</th>
<th>Oats grain</th>
<th>Sorghum grain</th>
<th>Any hay and fodder</th>
</tr>
</thead>
<tbody>
<tr>
<td>BENTA ZONE</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>3</td>
</tr>
<tr>
<td>DICAMBA</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.5</td>
<td>3</td>
<td>3</td>
<td>200</td>
</tr>
<tr>
<td>DIQUAT</td>
<td>2</td>
<td>5</td>
<td>0.03</td>
<td>0.05</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>GLYPHOSATE</td>
<td>5</td>
<td>20</td>
<td>0.2</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td>IMIDACLOPRID</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.1</td>
<td>0.05</td>
<td>0.05</td>
<td>6</td>
</tr>
</tbody>
</table>

(as of Jan 2019)
Maximum Levels of Contaminants and Natural Toxins in Feeds

<table>
<thead>
<tr>
<th>Element</th>
<th>Compound feeds or mix feeds, hays</th>
<th>Rice straw</th>
<th>Fish meals(FM), meat meals(MM), meat bone meals(MBM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEAD</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>CADMIUM</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>MERCURY</td>
<td>0.4</td>
<td>0.4</td>
<td>1</td>
</tr>
<tr>
<td>ARSENIC</td>
<td>2</td>
<td>7</td>
<td>15(FM), 7(MM,MBM)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mycotoxin</th>
<th>Feeds</th>
<th>Maximum Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFLATOXIN B₁</td>
<td>Compound feeds or mix feeds for adult animals (except cow feed)</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Compound feeds for cow and young animals</td>
<td>0.01</td>
</tr>
<tr>
<td>ZEARALENONE</td>
<td>Compound feeds or mix feeds (except poultry feed)</td>
<td>1</td>
</tr>
<tr>
<td>DEOXYNIVALENOL</td>
<td>Compound feeds or mix feeds (except feed for cattle aged older than three months)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Compound feeds or mix feeds for cattle aged older than three months</td>
<td>4</td>
</tr>
</tbody>
</table>

(as of Jan 2019)
# BSE-related Feed Regulations

1. Ban of usage of animal-derived feed ingredients (such as MBM)

<table>
<thead>
<tr>
<th>Animal of origin of feed ingredients</th>
<th>Target animals of feed</th>
<th>Ruminant</th>
<th>Swine</th>
<th>Poultry</th>
<th>Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle, sheep and goat</td>
<td></td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>○ ※</td>
</tr>
<tr>
<td>Swine</td>
<td></td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Fish and shellfish</td>
<td></td>
<td>×</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

※: excluding SRM (brain from cattle of over 30 month etc.)
○: These feed materials can be used to target animals.
×: These feed materials cannot be used to target animals.

2. Separation of manufacturing process of ruminant feed

The manufacturing process of the ruminant feed shall be completely separated from the manufacturing process of the feed using animal-derived feed ingredients.
Manufacturing Management

1998  Guidelines for formula feed mill to prevent/reduce Salmonella

2003  Guidelines for the prevention of ruminant-feed contamination with animal-derived proteins

2004  Guidelines for safe use of used cooking oil for feed

2006  Guidelines for safe use of food industrial waste for feed
Manufacturing Management

2007 Guidelines for the manufacturing and quality managements of feeds containing antimicrobial feed additives

2008 Guidelines for the prevention of feed-contamination with harmful chemical substances

2015 Guidelines for the Good Manufacturing Practice (GMP) of feeds
Framework of the guidelines for GMP

Higher-level safety control (needed for ISO 22000 accreditation)

Effective and efficient safety control

Continual improvement by PDCA cycle

<table>
<thead>
<tr>
<th>GMP Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Organization &amp; Employees</td>
</tr>
<tr>
<td>➢ Facilities &amp; Equipment</td>
</tr>
<tr>
<td>➢ Safety confirmation of ingredients</td>
</tr>
<tr>
<td>➢ Hygiene control</td>
</tr>
<tr>
<td>➢ Process &amp; Quality control</td>
</tr>
<tr>
<td>➢ Tests &amp; Inspections</td>
</tr>
<tr>
<td>➢ Self-inspection</td>
</tr>
<tr>
<td>➢ Dealing with abnormal situations</td>
</tr>
<tr>
<td>➢ Dealing with complaints</td>
</tr>
<tr>
<td>➢ Recall operation</td>
</tr>
<tr>
<td>➢ Cooperation with administrative body, etc.</td>
</tr>
</tbody>
</table>
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On-site inspections by FAMIC

Ministry of Agriculture, Forestry and Fisheries (MAFF) ➔ FAMIC ➔ Manufacturing site, warehouse, etc. of feed and feed additives

On the site:
- Inspection of records, documents, labels, and manufacturing facility
- Collecting samples of feed, etc.

Back to FAMIC office (laboratory):
- Preparation of analysis samples
- Test samples regarding feed safety

If needed, correction measures, order of disposal, etc.

Publication of the results of the inspection

# of feed inspection (FY 2017)
Inspected sites: 566;
Tested samples: 704;
Case of violation: 0
MAFF develops an annual “Surveillance/Monitoring plan” (referred to as “S/M plan”) based on a five-year plan of harmful chemical substances.

FAMIC analyzes substances in the “S/M Plan” in feed, in addition to analyses of matrix/analyte combinations not in the plan.

Surveillance: Survey a field to determine the extent of a problem

Compliance: Determine compliance with an economic or legal specification

Monitoring: Monitor trends to determine if any corrective action has to be taken


Surveillance and monitoring

Three major purposes that analytical values are used for:

- **Surveillance**: Survey a field to determine the extent of a problem
- **Compliance**: Determine compliance with an economic or legal specification
- **Monitoring**: Monitor trends to determine if any corrective action has to be taken

S/M data used for setting standards

Distribution, etc. of those feeds may be prohibited in order to avoid producing unsafe feed and harmful livestock products.

If problematic
BSE (Occurrence & OIE risk status)

(The number of cattle)

May 2009:  Approved by OIE as a country with controlled BSE risk
May 2013:  Approved by OIE as a country with negligible BSE risk

By fiscal year of confirmation

By birth year of BSE-infected cattle

The last BSE-infected cattle was born in January 2002. There’s been no BSE cattle born in Japan for over 14 years.

The feed regulations based on the Law was started in October 2001.
Number of non-compliance cases

Changes in the number of the non-compliance cases found by on-site inspections by FAMIC (1994-2017)

Risk management measures taken by feed manufacturers and others have also contributed to decrease of non-compliance cases.
Thank you.