Aims

- This course will provide delegates with an overview of common contaminants in food, contaminants legislation and how to sample foods for a range of contaminants.

Objectives

- This course will provide delegates with:
  - An overview of imported food controls
  - Information about common contaminants in food
  - An overview of contaminants legislation and sampling methods
Programme

- 09:30 Registration
- 10:00 Introduction
- 10:15 Overview of imported food controls
- 11:15 Break
- 11:30 Contaminants Legislation
- 12:00 Contaminants Sampling
- 13:00 Lunch
- 13:45 Contaminants Sampling (Continued)
- 14:45 Break
- 15:15 Workshops
- 16:00 Close

Introduction

Overview of imported food controls
Imported Food Control - Overview

For purposes of import control
- Food imported from:
  - Within single market or
  - From third countries
- Food from third countries can be classified as:
  - Product of Animal origin (POAO) or;
  - Food not of Animal Origin (FNAO)

Members of EU

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- Poland
- Portugal
- Romania
- Slovak Republic
- Slovenia
- Spain
- Sweden
- UK

Products of animal origin (POAO)
Food not of Animal Origin (FNAO)

Third country imports - legislation

- Animal origin
  - POAO
  - 97/78
  - TARP Regs 2011
- Not of animal origin
  - FNAO
  - 882/2004
  - OFFC Regs 09

Import controls for products of animal origin (third countries)

- Imports only permitted from approved countries
- POAO handled in approved establishments
- Identification/health marking
- Health certification
- Import through Border Inspection Posts
- Veterinary checks
- Issue of Common Veterinary Entry Document
Third country imports
FNAO

Import controls for foods not of animal origin

- Most FNAO
  - may be imported from anywhere around the world and
  - can be imported into any port of entry.

- Regulation (EC) 882/2004
  - sets out general import conditions regarding the importation of FNAO from third countries.

- Certain high risk FNAO
  - subject to enhanced official controls on import.

Legislative framework

- 669/2009
- 884/2014
- 885/2014
Regulation (EC) 669/2009

- Foods listed in Annex 1
  - Subject to Documentary,
  - Where necessary, identity and physical checks
    - At Designated Point of Entry (DPE)
    - CED issued
    - Prior notification required

Annex 1
FNAO - “known or emerging risk”

- List updated regularly
  - At least quarterly
- According to:
  - RASFF
  - FVO reports
  - Reports and information from third countries
  - Information from member States, EFSA
  - Scientific assessments
Regulation (EU) 884/2014

- Specified FNAO
  - From third countries
  - Entry into EU via
    - DPI “Designated Points of Import”/DPE
  - Prior notification
  - Health certificates required
  - CED issued

Regulation (EU) 884/2014

- Controlled foods:
  - Brazil nuts from Brazil
  - Peanuts from China, Egypt, Ghana, India and Brazil
  - Pistachios from Iran
  - Figs, hazelnuts and pistachios from Turkey
  - Watermelon seeds from Nigeria
  - Peppers from India
  - Nutmeg from India and Indonesia
Regulation 885/2014

Import conditions on:
- Okra
- Curry leaves
- Originating in or consigned from India

Concern
- Pesticide residues

Subject to documentary checks,
- Where necessary, identity and physical checks
  - At Designated Point of Entry (DPE)
  - CED issued
  - Prior notification required
Contaminants

Definition of Contaminant
Article 1 of Regulation (EC) 315/93

- Any substance not intentionally added to food which is present in such food as a result of production
  - including operations carried out in crop husbandry, animal husbandry and veterinary medicine,
  - manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food, or
  - as a result of environmental contamination.'
- Does not include extraneous matter, such as, insect fragments, animal hair, etc.

Agricultural Contaminants

- These chemicals affect primary agricultural products (e.g., cereals, vegetables, nuts and fruits) and derived products

- Common Examples
  - Nitrates
  - Mycotoxins
Mycotoxins

- group of naturally occurring chemicals produced by certain moulds.
  - can occur on a variety of different crops and foodstuffs
    - including cereals, nuts, spices, dried fruits, apple juice and coffee, often under warm and humid conditions.
  - can cause a variety of adverse health effects in humans
    - Damage DNA & cause cancer (Genotoxic)
    - Liver & kidney damage
    - Damage to immune system

Most concern from a food safety perspective include

- aflatoxins (B1, B2, G1, G2 and M1),
- ochratoxin A,
- patulin
- toxins produced by Fusarium moulds,
  - including fumonisins (B1, B2 and B3), trichothecenes (principally nivalenol, deoxynivalenol, T-2 and HT-2 toxin) and zearalenone.

Environmental Contaminants

- These chemicals affect plant and animal products (e.g., cereals, vegetables and fruits, fish and shellfish, meat, milk and egg) and derived products
- Common Examples
  - Heavy Metals (Lead, Cadmium, Mercury)
  - Dioxins, dioxin-like PCBs, non dioxin-like PCBs
  - Polycyclic Aromatic Hydrocarbons (PAHs)
Industrial Contaminants

- These chemicals are unintentionally formed during industrial processes for the production of various foodstuffs

- Common Examples
  - Tin
  - 3-Monochloropropane (3-MCPD)
  - Melamine

Regulation (EC) 315/93

- The levels for contaminants in foodstuffs must be toxicologically acceptable, in the interest of public health
- If not, the food shall not be placed on the market
- Contaminant levels shall be kept as low as can reasonably be achieved by good practices (ALARA)
- Member States may temporarily restrict free movement of food on basis of new information or reassessment – inform Commission if they do this

Setting a Maximum Limit

- Maximum limits are set according to the ALARA principle (as low as reasonably achievable)
- To establish this level Commission will
  - Collect data on contaminant concentrations in foods from across Member States produced according to Good Agricultural Practices (GAP) and Good Manufacturing Practice (GMP)
  - Statistically assess data, variations in levels and draft maximum limit at 95th percentile
  - Member States discuss this, what can be reasonably be achieved
  - Maximum Limit endorsed by Standing Committee and sent to EU Parliament to amend legislation
Regulation 1881/2006

Article 1

- General Rules
  - Foodstuffs listed in the Annex shall not be placed on the market where they contain a contaminant exceeding the level set in the Annex

Regulation (EC) 1881/2006

Annex

- Sets maximum levels for certain contaminants:
  - Nitrates
  - Mycotoxins
  - Metals
  - 3-MCPD
  - Dioxins and PCBs
  - Polycyclic aromatic hydrocarbons (PAHs)
  - Melamine
  - Inherent Plant Toxins
Regulation (EC) 1881/2006

Annex

<table>
<thead>
<tr>
<th>Product (1)</th>
<th>Maximum level (mg/kg, wet weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>3.1.1 Raw milk (‘), heat-treated milk and milk for the manufacture of milk-based products</td>
<td>0.020</td>
</tr>
<tr>
<td>3.1.2 Infant formula and follow-on formulae</td>
<td>0.050</td>
</tr>
<tr>
<td></td>
<td>heat treated (‘), (**)</td>
</tr>
<tr>
<td>3.1.3 Processed cereal-based foods and baby foods for infants and young children (‘) other than 3.1.2</td>
<td>0.050</td>
</tr>
</tbody>
</table>

Sampling for contaminants
Regulation (EC) 1881/2006

Article 8

- Sampling and analysis for official controls performed in accordance with:
  - 1882/2006 - Nitrates
  - 589/2014 – Dioxins
  - 401/2006 - Mycotoxins
  - 333/2007 – Metals, 3-MCPD and PAHs
Sampling for contaminants

General principles

- ‘Lot’
  - An identifiable quantity of food delivered at one time and determined by the official to have common characteristics, (such as origin, variety, type of packing, packer, consignor or markings). In the case of fish, also the size of fish shall be comparable

- ‘Sublot’
  - Designated part of a large lot in order to apply the sampling method on that designated part. Each sublot must be physically separated and identifiable

- ‘Incremental sample’
  - Quantity of material taken from single place in lot or sublot

- ‘Aggregate sample’
  - Combined total of all incremental samples taken from lot or sublot

- ‘Laboratory sample’
  - Sample intended for laboratory

Officers take incremental samples
- Make up aggregate sample

Analyst receives one aggregate sample
- Prepares 3 samples: Enforcement, Defence, Reference
Sampling for contaminants
General principles

- Identification of “Lot” and “Sublot”
  - Varies according to food being sampled
- Generally
  - an identifiable quantity of a food
  - delivered at one time and
  - With common characteristics, such as
    - origin,
    - variety,
    - type of packing,
    - packer,
    - consignor or
    - markings.

Must ensure:
- Sample representative
- Steps taken to prevent contamination:
  - During sampling
  - During storage and transportation of sample
- Adequate information
  - Collected
  - Recorded
  - Forwarded to analyst.
Regulation (EC) 1882/2006
Sampling for Nitrates

- Relevant foods
  - Lettuce
  - Spinach
  - Processed cereal based infant foods

Regulation (EC) 1881/2006
Nitrates

<table>
<thead>
<tr>
<th>Foodstuff(s)</th>
<th>Maximum level mg kg⁻¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Fresh spinach (Spinacea oleracea L.)</td>
<td>0.001</td>
</tr>
<tr>
<td>1.2 Frozen, deep-frozen or frozen spinach</td>
<td>0.0001</td>
</tr>
<tr>
<td>1.3 Fresh Lettuce (Lactuca sativa L.)</td>
<td>0.0001</td>
</tr>
<tr>
<td>1.4 Baby leaf lettuce (Lactuca sativa L.)</td>
<td>0.002</td>
</tr>
<tr>
<td>1.5 Head of lettuce (Lactuca sativa L.)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Regulation (EC) 1882/2006
Sampling for Nitrates

- "Lot" - an identifiable quantity of a food commodity to be harvested at the same time or delivered at one time and determined by the official to have common characteristics, such as origin, variety or soil type within a maximum area of 2 hectares, type of packing, packer, consignor or markings.
Regulation (EC) 1882/2006
Sampling for Nitrates – General Provisions

- Material to be sampled –
  - Each lot which is to be examined shall be sampled separately. Large lots (more than 30 tonnes or larger than 3 hectares) shall be subdivided into sublots and sampled separately

- Packaging & Transport
  - Each sample shall be placed in a clean, inert sealed opaque plastic bag
  - Sample must be transferred to laboratory within 24 hours of sampling and kept cool in transport. If not possible deep-frozen within 24 hours and kept frozen (up to 6 weeks)

- Records
  - A record shall be kept of each sampling, permitting each lot to be identified unambiguously
  - Sampling officer shall record –
    - Variety
    - Grower
    - Production method
    - Date
    - Place of sampling
    - FBO responsible for consignment
    - Other information likely to be of assistance to the analyst

Sampling Lettuce or Spinach in the Field

- Establish the Lot
  - If larger than 3 hectares, divided into sublots of 2 hectares, each sampled separately

- Incremental Samples
  - Collected by walking across field in ‘W’ or ‘X’ pattern
  - Plants cut at ground level

- Aggregate Sample
  - Must contain at least 10 plants and weight at least 1kg
  - Only marketable size units sampled
  - Soil and damaged leaves removed
Regulation (EC) 1882/2006
Sampling for Nitrates

Methodology – Non packaged

<table>
<thead>
<tr>
<th>Weight of lot (kg)</th>
<th>Min no of incremental samples</th>
<th>Aggregate sample minimum weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>50 – 500</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>&gt;500</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

Methodology – packaged

<table>
<thead>
<tr>
<th>Number of packages in lot</th>
<th>Number of packages to be taken</th>
<th>Aggregate sample minimum weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>26 – 100</td>
<td>About 5% At least 2 packs</td>
<td>1</td>
</tr>
<tr>
<td>&gt;100</td>
<td>About 5%, 10 packs maximum</td>
<td>1</td>
</tr>
</tbody>
</table>

Sampling at Retail Stage

Shall be done where possible using same method

Where not possible, an alternative method may be used provided aggregate sample sufficiently representative of the sample lot and is fully described and documented.
Regulation (EC) 589/2014
Sampling for Dioxins and PCBs

Relevant foods:
- Meat and meat products
- Liver
- Fish and fishery products
- Milk and milk products
- Hens eggs and egg products
- Oils and fats
- Animal (inc fish) and vegetable
- Food for infants and young children

Regulation (EC) 1881/2006
Dioxins and PCBs

<table>
<thead>
<tr>
<th>Foods (continued)</th>
<th>Sums of dioxin/polychlorinated biphenyl (µg/kg)</th>
<th>Sums of dioxin/polychlorinated biphenyl (µg/kg)</th>
<th>Sums of dioxin/polychlorinated biphenyl (µg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 Liver and meat products including edible offal of the following animals:</td>
<td>3.7 µg/kg</td>
<td>3.4 µg/kg</td>
<td>4.0 µg/kg</td>
</tr>
<tr>
<td>— Bovine, swine and sheep</td>
<td>3.7 µg/kg</td>
<td>3.4 µg/kg</td>
<td>4.0 µg/kg</td>
</tr>
<tr>
<td>— Poultry</td>
<td>3.7 µg/kg</td>
<td>3.4 µg/kg</td>
<td>4.0 µg/kg</td>
</tr>
<tr>
<td>— Fish</td>
<td>12.5 µg/kg</td>
<td>12.3 µg/kg</td>
<td>11.9 µg/kg</td>
</tr>
</tbody>
</table>

5.3 Liver of1.5 or more months old and/or with the exception of beef and veal products - breeders
Liver of more than 1.5 or more months old and/or with the exception of beef and veal products - breeders
Liver of sheep and lamb products - breeders
Regulation (EC) 589/2014
Sampling for Dioxins and PCBs – General Provisions

- Material to be sampled –
  - Each lot which is to be examined shall be sampled separately.

- Packaging & Transport
  - Each sample shall be placed in a clean, inert container offering adequate protection from contamination.

- A record shall be kept of each sampling, permitting each lot to be identified unambiguously and giving the date and place of sampling with any additional information to assist the analyst.

Regulation (EC) 589/2014
Sampling for Dioxins and PCBs

- “Lot”
- “Identifiable quantity of food delivered at one time and determined by the official to have common characteristics, such as origin, variety, type of packing, packer, consignor or markings. In the case of fish and fishery products, also the size of fish shall be comparable.”

Regulation (EC) 589/2014
Division of Lots

<table>
<thead>
<tr>
<th>Lot weight (kg)</th>
<th>Weight or number of sublots</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 500</td>
<td>3 sublots</td>
</tr>
<tr>
<td>&gt; 500 and ≤ 1000</td>
<td>10 sublots</td>
</tr>
<tr>
<td>&gt; 1000</td>
<td>100 sublots</td>
</tr>
</tbody>
</table>

Table 2

Subdivision of lots into sublots for other products

<table>
<thead>
<tr>
<th>Lot weight (kg)</th>
<th>Weight or number of sublots</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 15</td>
<td>1-3 sublots</td>
</tr>
<tr>
<td>&lt; 15</td>
<td>-</td>
</tr>
</tbody>
</table>
**Regulation (EC) 589/2014**

**Number of Incremental Samples – Non Packaged**

- Aggregate Sample at least 1kg
- Incremental samples at least 100g each

<table>
<thead>
<tr>
<th>Weight/volume of lot (kg or litre)</th>
<th>Min no of incremental samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50</td>
<td>3</td>
</tr>
<tr>
<td>50 – 500</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>10</td>
</tr>
</tbody>
</table>

**Regulation (EC) 589/2014**

**Number of Incremental Samples - Packaged**

<table>
<thead>
<tr>
<th>Number of packages in lot</th>
<th>Number of packages to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-25</td>
<td>At least 1 package</td>
</tr>
<tr>
<td>26 – 100</td>
<td>About 5% At least 2 packs</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>About 5%, 10 packs maximum</td>
</tr>
</tbody>
</table>

**Regulation (EC) 589/2014**

**Sampling of Fish**

- Whole Fish
  - Small fish (< 1kg)
    - Incremental sample = whole fish
  - Large fish (> 1kg)
    - 1-8kg
      - Incremental sample = middle part, backbone to belly (>100g)
    - > 8kg
      - Incremental sample = right side dorso-lateral muscle
      - Can take 3 x 350g samples.

- Whole fish only sampled if normally consumed whole.

Note: only edible part of fish sampled.
Sampling at Retail Stage

- Shall be done where possible using same method
- Where not possible, an alternative method may be used provided that it ensures sufficient representativeness for the sampled lot or sublot.


Sampling for metals, 3-MCPD and PAHs

Relevant foods
- Lead: Milk, infant formulae, meat, fish, shellfish, vegetables, fruit juices, wine, fats and oils.
- Cadmium: Meat, fish (swordfish, tuna, sardines, mackerel, anchovy etc.), fruit, crustaceans, soybeans, vegetables.
- Mercury: Fish
- Tin: Canned foods.
### Regulation (EC) 1881/2006

**Metals, 3-MCPD and PAHs**

**Section 3: Metals**

<table>
<thead>
<tr>
<th>Foodstuff(s)</th>
<th>Minimum level - meaning and height</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Leaf</td>
<td></td>
</tr>
<tr>
<td>3.1.1 Raw milk (%)</td>
<td>3-MCPD level for milk- and milk- products</td>
</tr>
<tr>
<td>3.1.2 Infant formulae and follow-on formulae</td>
<td>ADR</td>
</tr>
<tr>
<td>marketed as powder (%)</td>
<td>ADR</td>
</tr>
<tr>
<td>marketed as liquid (%)</td>
<td>ADR</td>
</tr>
<tr>
<td>3.1.3 Preparations, infant feeds and baby foods for infants and young children (1-3 years) other than 3.1.9</td>
<td>ADR</td>
</tr>
</tbody>
</table>

### Regulation (EC) 333/2007

**Sampling for metals, 3-MCPD and PAHs**

- **Lot**
  - "an identifiable quantity of food delivered at one time and determined by the official to have common characteristics, (such as origin, variety, type of packing, packer, consignor or markings).
- "In the case of fish, also the size of fish shall be comparable;"

**Sampling - General Provisions**

- **Material to be sampled**
  - Each lot or sublot which is to be examined shall be sampled separately.
- **Precautions taken:**
  - To avoid any changes affecting level of contaminants
- **Packaging & Transport**
  - Each sample shall be placed in a clean, inert container offering adequate protection from contamination.
Sampling – General Provisions

- PAH Samples
  - Avoid using plastic containers
  - Officers to use inert PAH-free glass containers, adequately protected from light
  - Where practically impossible at the least direct contact of the sample with plastics shall be avoided, e.g., for solid samples by wrapping in aluminium foil before placing in sampling container

Sampling – General Provisions

- Each sample taken shall be sealed at place of sampling
- A record shall be kept of each sampling, permitting each lot or sublot to be identified unambiguously (reference to the lot number shall be given) and giving the date and place of sampling with any additional information to assist the analyst

Division of Lots

- Bulk Consignments

<table>
<thead>
<tr>
<th>Lot Weight (ton)</th>
<th>Weight or Number of Sublots</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 1500</td>
<td>500 tonnes</td>
</tr>
<tr>
<td>&gt; 300 and ≤ 1500</td>
<td>3 sublots</td>
</tr>
<tr>
<td>≥ 100 and ≤ 300</td>
<td>100 tonnes</td>
</tr>
<tr>
<td>&lt; 100</td>
<td>-</td>
</tr>
</tbody>
</table>

- Other Products

<table>
<thead>
<tr>
<th>Lot Weight (ton)</th>
<th>Weight or Number of Sublots</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 15</td>
<td>15-30 tonnes</td>
</tr>
<tr>
<td>&lt; 15</td>
<td>-</td>
</tr>
</tbody>
</table>
**Number of Incremental Samples**

- **Aggregate** = At least 1kg or litre
- **Non-Packaged**

<table>
<thead>
<tr>
<th>Weight/Volume of lot/sublot (kg/litre)</th>
<th>Min. No. of Incremental Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50</td>
<td>3</td>
</tr>
<tr>
<td>≥ 50 and ≤ 500</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>10</td>
</tr>
</tbody>
</table>

- **Packaged**

<table>
<thead>
<tr>
<th>Number of Packages in lot/sublot</th>
<th>Number of packages to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 25</td>
<td>At least 1 package</td>
</tr>
<tr>
<td>26 – 100</td>
<td>About 5%, at least 2 packages</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>About 5%, maximum 10 packages</td>
</tr>
</tbody>
</table>

**Sampling at Retail Stage**

- Shall be done where possible using same method
- Where not possible, because of unacceptable commercial consequences or where it is practically impossible to sample using this method, an alternative method may be applied provided that it is sufficiently representative of the sampled lot or sublot and is fully documented.

**Regulation 401/2006**

Sampling for mycotoxins
Regulation 401/2006
Sampling for mycotoxins

- Relevant foods:
  - Cereals
  - Nuts
  - Spices
  - Dried Fruits
  - Apple Juice
  - Coffee
  - Bread
  - Wine

Regulation (EC) 1881/2006
Mycotoxins

Regulation (EC) 401/2006
Sampling for Mycotoxins – General Provisions

- Material to be sampled –
  - Each lot which is to be examined shall be sampled separately. Large lots shall be divided into sublots and sampled separately.

- Packaging & Transport
  - Each sample shall be placed in a clean, inert container offering adequate protection from contamination

  A record shall be kept of each sampling, permitting each lot to be identified unambiguously and giving the date and place of sampling with any additional information to assist the analyst
Regulation (EC) 401/2006
Sampling for Mycotoxins – General Provisions

- Precautions taken to avoid:
  - Any changes to mycotoxins
  - Adverse effect to analysis
  - Making aggregate sample unrepresentative

- Samples should be:
  - Placed in clean containers
  - Protected from damage
  - Appropriately labelled

Regulation (EC) 401/2006
Sampling for Mycotoxins

- “Lot”
  - Identifiable quantity of a food commodity delivered at one time and determined by the official to have common characteristics, such as origin, variety, type of packing, packer, consignor or markings.

Different types of Lot

- Annex I provides sampling methods for a variety of different foods including -
  - Cereals and Cereal Products
  - Dried Fruit (including dried vine fruit, except dried figs)
  - Dried Figs, Groundnuts and Nuts
  - Spices
  - Milk and Milk Products, Infant Formula and Follow-on formula
  - Coffee, Coffee Products, Liquorice Root and Extract
  - Fruit Juices, Cider and Wine
  - Solid Apple Products
  - Vegetable Oils
  - Food Supplements (based on rice fermented with red yeast)
Sampling method

- General formula for establishing sampling frequency:

\[
n = \frac{\text{weight of lot} \times \text{weight of incremental sample}}{\text{Weight of aggregate sample} \times \text{weight of individual pack}}
\]

- Weight of Incremental Sample
  - Shall be about 300 grams

- Retail Packs
  - Where each pack much more than 300 grams –
    - Take 300 grams from each pack, or
    - Reduce number of incremental samples to obtain the aggregate
  - Where each pack much less than 300 grams –
    - One incremental sample consist of 2 or more retail packs

Sampling Dried Fig for Aflatoxins

- Weight of Incremental Sample
  - Shall be about 300 grams

- Retail Packs
  - Where each pack much more than 300 grams –
    - Take 300 grams from each pack, or
    - Reduce number of incremental samples to obtain the aggregate
  - Where each pack much less than 300 grams –
    - One incremental sample consist of 2 or more retail packs

Sampling Dried Fig for Aflatoxins

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Lot Weight (tonnes)</th>
<th>Weight of sublots</th>
<th>No. Incremental Samples</th>
<th>Aggregate Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried Figs</td>
<td>≥ 15</td>
<td>15 – 30 tones</td>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>&lt; 15</td>
<td>-</td>
<td>10 – 100 *</td>
<td>≤ 30</td>
</tr>
</tbody>
</table>

* Depends on the weight of the lot – see next table
Sampling Dried Fig for Aflatoxins
Lots ≥ 15 tonnes
- Each lot divided into sublots as required
- Each sublot sampled separately
- Number of incremental samples = 100
- Aggregate sample = 30 kg,
- If commercially unacceptable to sample in this way, alternative can be used as long as representative and fully described and documented

<table>
<thead>
<tr>
<th>Lot Weight (tonnes)</th>
<th>No. Incremental Samples</th>
<th>Aggregate weight (kg)</th>
<th>No. Laboratory Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 0.1</td>
<td>10</td>
<td>3</td>
<td>1 (no division)</td>
</tr>
<tr>
<td>&gt; 0.1 - ≤ 0.2</td>
<td>15</td>
<td>4.5</td>
<td>1 (no division)</td>
</tr>
<tr>
<td>&gt; 0.2 - ≤ 0.5</td>
<td>20</td>
<td>6</td>
<td>1 (no division)</td>
</tr>
<tr>
<td>&gt; 0.5 - ≤ 1.0</td>
<td>30</td>
<td>9 (&lt; 12 kg)</td>
<td>1 (no division)</td>
</tr>
<tr>
<td>&gt; 1.0 - ≤ 2.0</td>
<td>40</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 2.0 - ≤ 5.0</td>
<td>60</td>
<td>18 (&lt; 24 kg)</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 5.0 - ≤ 10.0</td>
<td>80</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 10.0 - ≤ 15.0</td>
<td>100</td>
<td>30</td>
<td>3</td>
</tr>
</tbody>
</table>

Sampling Dried Fig for Aflatoxins
Lots < 15 tonnes

Sampling Dried Fig for Aflatoxins
Sampling 1 tonne totes

Practical guidance: Figs

<table>
<thead>
<tr>
<th>Total Weight of Lot</th>
<th>Packaging Size</th>
<th>No. of Incremental Samples</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 kg</td>
<td>100 gram retail packs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>130 kg</td>
<td>400 gram retail packs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 kg</td>
<td>10 kg sacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 tonnes</td>
<td>25 kg sacks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sampling Dried Fig for Aflatoxins
Derived products with small particle size

<table>
<thead>
<tr>
<th>Lot Weight (tonnes)</th>
<th>No Incremental Samples</th>
<th>Aggregate Sample (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 1 - ≤ 3</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 3 - ≤ 10</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 10 - ≤ 20</td>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 20 - ≤ 50</td>
<td>100</td>
<td>10</td>
</tr>
</tbody>
</table>

- Weight of incremental sample = 100 grams
- Retail packing, weight of incremental sample depends on weight of packing

Practical guidance: Small Particle Sizes

<table>
<thead>
<tr>
<th>Total Weight of Lot</th>
<th>Packaging Size</th>
<th>Number of Incremental Samples</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 kg</td>
<td>100 gram retail packs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>130 kg</td>
<td>400 gram retail packs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 kg</td>
<td>10 kg sacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 tonnes</td>
<td>25 kg sacks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sampling at Retail Stage

- Shall be done where possible using same method
- Where not possible, other effective methods of sampling can be used provided they ensure the aggregate sample is sufficiently representative of the lot, is fully described and documented
- The aggregate sample shall be at least 1 kg
Sampling Figs in Vacuum Packs

- **Dried Figs**
  - Lots ≥ 15 tonnes
    - At least 50 incremental samples
    - Aggregate = 30 kg
  - Lots < 15 tonnes
    - 50% of the number of incremental samples usually required for dried figs less than 15 tonnes to make the aggregate weight

- **Small Particle Size**
  - Lots ≥ 50 tonnes
    - 25 incremental samples = 10 kg aggregate
  - Lots < 50 tonnes
    - 25% of number of incremental samples to make aggregate weight

Sampling Spices for Aflatoxins

- **Weight of Incremental Sample**
  - Shall be about 100 grams

- **Retail Packs**
  - Where each pack much more than 100 grams –
    - Take 100 grams from each pack, or
    - Reduce number of incremental samples to obtain the aggregate
  - Where each pack much less than 100 grams –
    - One incremental sample consist of 2 or more retail packs
### Sampling Spices for Aflatoxins

#### Subdivision of Lots

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Lot Weight (tonne)</th>
<th>Weight of sublots</th>
<th>No. Incremental Samples</th>
<th>Aggregate Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spices</td>
<td>≥ 15</td>
<td>25 tonnes</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>&lt; 15</td>
<td>-</td>
<td>5 – 100 *</td>
<td>0.5 - 30</td>
</tr>
</tbody>
</table>

* Depends on the weight of the lot – see next table

---

#### Lots ≥ 15 tonnes

- Each lot divided into sublots as required
- Each sublot sampled separately
- Number of incremental samples = 100
- Aggregate sample = 10 kg,
- If commercially unacceptable to sample in this way, alternative can be used as long as representative and fully described and documented

---

#### Lots < 15 tonnes

<table>
<thead>
<tr>
<th>Lot Weight (tonnes)</th>
<th>No. Incremental Samples</th>
<th>Aggregate weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 0.01</td>
<td>5</td>
<td>0.5</td>
</tr>
<tr>
<td>&gt; 0.01 - ≤ 0.1</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 0.1 - ≤ 0.2</td>
<td>15</td>
<td>1.5</td>
</tr>
<tr>
<td>&gt; 0.2 - ≤ 0.5</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 0.5 - ≤ 1.0</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 1.0 - ≤ 2.0</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 2.0 - ≤ 5.0</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 5.0 - ≤ 10.0</td>
<td>80</td>
<td>8</td>
</tr>
<tr>
<td>&gt; 10.0 - ≤ 15.0</td>
<td>100</td>
<td>10</td>
</tr>
</tbody>
</table>
## Practical guidance: Spices

<table>
<thead>
<tr>
<th>Total Weight of Lot</th>
<th>Packaging Size</th>
<th>Number of Incremental Samples</th>
<th>What to do</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 kg</td>
<td>100 gram retail packs</td>
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</tr>
<tr>
<td>130 kg</td>
<td>400 gram retail packs</td>
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<td>160 kg</td>
<td>10 kg sacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 tonnes</td>
<td>25 kg sacks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sampling at Retail Stage
- Shall be done where possible using same method
- Where not possible, other effective methods of sampling can be used provided they ensure the aggregate sample is sufficiently representative of the lot, is fully described and documented
- The aggregate sample shall be at least 0.5 kg

Sampling Spices in Vacuum Packs
- Lots ≥ 15 tonnes
  - At least 25 incremental samples
  - Aggregate = 10 kg
- Lots < 15 tonnes
  - 25% of the number of incremental samples usually required for spices in lots less than 15 tonnes to make the usual aggregate weight

Sampling Large Lots
The Contaminants in Food (England) Regulations 2013

- **Regulation 5**
  - "a person who contravenes or fails to comply with any of the EU provisions is guilty of an offence"

- **EU Provisions**
  - Placing on the market food containing contaminants in excess of the limits in 1881/2006
  - Uses, mixes or detoxifies a food in breach of Article 3 of 1881/2006
  - Fails to comply with the specific labelling requirements in Article 5 of 1881/2006
The Contaminants in Food (England) Regulations 2013

- **Regulation 6**
  - Anyone convicted of an offence is liable on summary conviction to a fine not exceeding level 5 on the standard scale

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**Regulation (EC) 178/2002**

**Article 14**

- Due to the level of contaminants in the food, it may be "unsafe" under Article 14 of 178/2002
- Enforcement action may be taken under the Food Safety and Hygiene (England) Regulations 2013

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**Food Safety Act 1990**

- **Section 9**
  - Provides for detention or seizure of food that:

  "Fails food safety requirements"
“Fails food safety requirements”

- Food Safety Act 1990 – Section 8
- Food Safety and Hygiene (England) Regulations 2013 - Regulation 29
- Specific Regulations –
  - Contaminants in Food (England) Regulations 2013
  - Eggs and Chicks Regulations (England) 2009
  - Food Irradiation (England) Regulations 2009
  - Genetically Modified Food (England) Regulations 2004
  - Tryptophan in Food (England) Regulations 2005
  - Scotch Whisky Regulations 2009
  - Spirit Drinks Regulations 2008
  - The Food Additives, Flavourings, Enzymes and Extraction Solvents (England) Regulations 2013

Food Safety Act – Section 8

- Food fails to comply with food safety requirements if it is unsafe within the meaning of Article 14 of 178/2002
- Article 14 - Food not to be placed on the market if ‘unsafe’
  - Food is unsafe if it is:
    - Injurious to health
    - Unfit for human consumption
- Should consider:
  - Normal use of food by consumer
  - Information provided to consumer

Contaminants in Food (England) Regulations 2013

Regulation 8

- Applies Section 9 of the Food Safety Act
- Allows authorised officers to –
  - At all reasonable times inspect any food intended for human consumption which has been placed on the market
  - where, on such an inspection, it appears to the authorised officer that the food fails to comply with any of the requirements of the Contaminants in Food (England) Regulations 2013 the Officer may detain or seize the food
Products of animal origin

POAO Third Country Imports

- Directive 97/78
  - Trade in Animals and Related Products
  - Regulations 2011

Enforcement POAO

- Food
  - Districts, unitaries, London Boroughs
    - Detention
    - Seizure
- County Councils
  - Animal feed
  - Animals
POAO Enforcement notices

- Regulation 32 (6)
  - ETSF/Customs areas
- Regulation 19
  - Illegally imported POAO
- Official Controls (Animals, food and feed) (England) Regulations 2006

Foods not of Animal Origin

Enforcement FNAO

- Official Feed and Food Control Regulations
  - Regulation 32
    - Provides for
      - Detention
      - Destruction
      - Special treatment
      - Use for non-food purpose or
      - Re-export of non-conforming food
    - In accordance with Article 18 & 19, 882/2004
    - In consultation with food business operator
    - If placed on market
      - Withdrawal/recall
Contaminants in Food
Main EC Regulations

1881/2006
max levels for certain contaminants in foodstuffs

1882/2006
Sampling/analysis for levels of nitrates in lettuce and spinach

589/2014
Sampling/analysis for dioxins and dioxin-like PCBs in certain foodstuffs.

401/2006
Sampling and analysis of Mycotoxins in food.

333/2007
Sampling and analysis of: Metals 3-MCPD PAHs