



Directorate-General for
Health & Consumers

**Sampling of large lots for the
presence of mycotoxins**

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Working group – scope

Scope of the working group

- To elaborate a document providing guidance for sampling lots where the sampling provisions as provided for in Regulation (EC) 401/2006 are practically impossible to apply, such is the case where large lots of cereals/oilseeds are stored in warehouses or where cereals are stored in silos (see Annex I – B.3, last indent – footnote 1)

Working group – scope

Scope of the working group

- This means that that the guidelines are not applicable to
 - → situations in which sampling provisions provided for in Regulation (EC) 2006/401 can be applied
 - → sampling of lots/batches in lorries, trucks, train wagons, (of reasonable size not exceeding 500 tonnes)
- However, the provisions on the sampling equipment (in particular the number of incremental samples taken per sampling point)

Situations to be covered

- ships

- * dynamic
- * static

- lots in warehouses

- * dynamic
- * static

- silo's (in particular cylindrical silo's) (large – small)

- * dynamic
- * static

- bulk consignments in closed containers





Sizes of bulk shipments

- **Bulk shipments transported in vessels** – the size of the vessels can vary from **500 t** to cape size vessels of more than **90.000 t**. The holds also vary as depending on the constitution of the vessel itself.
- Some examples of **transport by ship**:
 - - Panamax for about 60.000 metric tonnes in 7 up to 9 holds
 - - Handy-Max for about 35/45.000 metric tonnes in 5 up to 7 holds
 - - Handy for about 15/25.000 metric tonnes in 3 to 5 holds
 - - Coaster for about 2/5.000 metric tonnes in 2 to 3 holds
 - - River barges for 500 up to about 2.500 metric tonnes in 1 to 2 holds.
- One hold can be from 2 up to 10/12 meters deep.
- Rice is generally imported in 20 ton containers: length 6,10 m, height 2,60 m, width 2,20 m (max 24t)

Sizes large batches in storage

Storage:

- Storage facilities (warehouses and silos) vary
 - Flat-(horizontal) warehouses have a size of 15/20 meters x 40 or 60 or 80 meters length or even more and cereals are stored 4 meters (but very often more) high.
 - Vertical silos (metallic or concrete) can have storage capacity between 500 to 20.000 tonnes per cell with 4 to 50 cells in the same building and the height can go from 10 to 50 meters.
- **Rice**
 - The size of the silo destined to rice can range hugely i.e. from 20 tonnes to 1000 tonnes.

Guidelines

Starting points

- one sampling regime for the control of all mycotoxins
- one sampling regime for the control of all cereals and oilseeds

Number of incremental samples to be taken (for lots > 500 tonnes)

- 100 incremental samples + $\sqrt{\text{metric tonnes}}$, this means for a consignment of 10 000 tonnes: 200 incremental samples, 20 kg sample

Guidelines

Sampling equipment

- There are many different types of sampling equipment or devices. The most suitable equipment should be chosen taken into account the product to be sample, the quantity required and the containers to be used.
- Examples of equipment (non-exhaustive) to sample flowing grain/oilseed and static lots are provided in EN-ISO 24333-2009.



Guidelines

Sampling equipment and incremental samples

- When sampling with a spear (sampling probe) with several apertures/openings, the cereals/oilseeds collected by a single aperture/opening can be considered as one incremental sample on the condition that in each aperture/opening the minimum quantity of incremental sample size is collected (100 g in the case of cereals, 200 g in the case of oilseeds). Also a maximum of 1 incremental sample per 0.5 m length of spear can be accepted.

Guidelines

General principles when sampling large batches

- In case the way of transport or storage of a batch does not enable to take incremental samples across the whole batch, sampling of such batches should preferably be done when the product/batch is in flow or in case it is feasible, the lot to be sampled should be moved to another silo, ... to enable sampling across the batch.
- In the case of large warehouses destined to store grains/oilseeds, operators should be encouraged to install equipment in the warehouse enabling (automatic) sampling across the whole stored batch.



Guidelines

Sampling of batches transported by ship

- The sampling of large batches in ships is carried out while the cereals/oilseeds are in flow (dynamic sampling).
- The sampling has to be done per hold (entity that can physically be separated). However to keep the balance of the ship, holds are emptied partly one after the other so that the initial physical separation does no longer exist after transfer into silo's. So sampling can be performed in function of the initial physical separation or in function of the separation after transfer into storage.



Guidelines

Sampling of batches transported by ship **(cont'd)**

- The unloading of a ship of cereals can take several days
- Even if the sample is taken automatically, the presence of an inspector is necessary for official control. Not (always) feasible or appropriate (from resources and cost point of view) for an inspector to have to be present during the whole operation of unloading.
- Sampling allowed to be undertaken of part of the portion to be sampled → the result is considered representative for the whole portion to be sampled, on the condition that the quantity of the sampled part is at least 10 % of the portion to be sampled.
- If the operator questions the representativity of the sampling, then the operator must enable at his cost to sample the whole batch.



Guidelines

Sampling of large batches stored in warehouses

- The minimum length of the spear (sampling probe) to be used for the sampling of static batch/consignment stored in warehouse is 2 meter
- There has to be a representative sampling of the accessible part of the consignment performed and the result of such sampling is considered to be valid for the whole batch
- The analytical result of this sample is decisive to determine the compliance/non compliance of the whole batch
- In case of non-compliance, and in case representativity of such sampling is questioned by the operator → operator has the possibility to request to the authorities on his costs an official representative sampling of the whole consignment stored in the warehouse → involving a movement of the whole static lot.



Guidelines

Sampling of silo's (easily) accessible from above

- The minimum length of the spear (sampling probe) to be used for the sampling of static batch/consignment stored in silo is 2 meter
- There has to be a representative sampling of the accessible part of the consignment performed and the result of such sampling is considered to be valid for the whole batch
- The analytical result of this sample is decisive to determine the compliance/non compliance of the whole batch
- In case of non-compliance, and in case representativity of such sampling is questioned by the operator → operator has the possibility to request to the authorities on his costs an official representative sampling of the whole consignment stored in silo → involving a movement of the whole lot from one silo into another silo.



Guidelines

Sampling of silo's not accessible from above (closed cylindrical silo's) with size >>100 tonnes

- Cereals and oilseeds stored in such silo's cannot be sampled in a static way and therefore in case the cereals/oilseeds in the silo has to be sampled and there is no possibility to move the consignment, the agreement has to be made with the operator that he has to inform the inspector when the silo will be unloaded in order to enable sampling when cereals/oilseeds are in flow.



Guidelines

Sampling of silo's not accessible from above (closed cylindrical silo's) with reasonable size

- Sampling procedure involves the release into a recipient of a quantity of 50 to 100 kg and to take the sample in a representative way from this 50 -100 kg
- The analytical result of this sample is decisive to determine the compliance/non compliance of the whole batch
- In case of non-compliance, and in case representativity of such sampling is questioned by the operator → operator has the possibility to request to the authorities on his costs an official representative sampling of the whole consignment stored in silo → involving a movement of the whole lot from one silo into another silo.



Guidelines

Sampling of bulk consignments in closed containers

- Can only be sampled when unloaded. Is in many cases not possible at point of import and therefore in case such containers are to be sampled the sampling must take place during unloading at point of destination.



Conclusions

Scope of guidelines

- elaborated for the control of mycotoxins in cereals and oilseeds
- will be proposed to be applicable for the control of large batches of feed
- eventually wider application to be discussed.