

**European Union comments for the
CODEX COMMITTEE ON CONTAMINANTS IN FOOD
11th Session**

Rio de Janeiro, Brazil, 3 – 7 April 2017

Agenda Item 10

**Proposed draft Code of Practice for the prevention and reduction of
mycotoxin contamination in spices**

(CL 2017/28-CF)

*Mixed Competence
Member States Vote*

The European Union and its Member States (EUMS) welcome and appreciate the work done on the proposed draft Code of Practice for the prevention and reduction of mycotoxin contamination in spices by the electronic working group (eWG) chaired by Spain and co-chaired by India and The Netherlands.

The EUMS wish to make following specific comments to the proposed draft Code of Practice for the Prevention and Reduction of Mycotoxins in Spices:

§4 and §10: for reasons of consistency with the use of the acronyms "GMPs" and "GSPs" in §4, to mention only the acronym "GAPs" and delete "good agricultural practices"

§ 10: Even if § 10 is related to pre-harvest agricultural conditions, given that the main risk for contamination by aflatoxins and ochratoxin A is during drying and storage it is appropriate to make reference to it in the paragraph and to reword the paragraph 10 as follows: "10. Spices are susceptible to contamination by toxigenic fungi in the field, **during drying and storage**. The use of appropriate ~~good agricultural practices (GAP)~~ to reduce the toxigenic fungi growth and dissemination is recommended."

Heading 2: This is a main heading, it is therefore appropriate to mention the full wording beside the acronym. However, as points 2.2.4 and 2.3.3 refer explicitly to good storage practices, the heading should also refer to Good Storage Practices (GSPs).

§ 8: the definition of spices refers to "dried components" and "dried plants". It might be appropriate in order to avoid confusion and to ensure completeness to clarify that this include also spices harvested as dried (and that it does not only relate to spices which are dried after harvesting)

It is also appropriate to further clarify the relation of the second part of §8 with the information provided in Appendix II, § 2, point i. with specific reference to the Classification of Food and Feed (CAC/MISC 4-1989) and in particular to the revised group of spices (Type 005 – Group 028) as proposed for adoption by CAC in REP 11/PR, Appendix VI.

- In REP11/PR, Appendix VI, 8 subgroups (028A to 028H) are proposed. However in the second part of §8 no reference is made to the subgroup 028H, Citrus peel.

- On the other hand, the second part of §8 refers to

* "bulbs" and "plant tops" not mentioned in the group of spices (Type 005 – Group 028). Also the example garlic is not included in the group 028. The example saffron after "bulbs" has to be deleted as it is an example of "stigmas"

* "pods" which are in the group of spices (Type 005 – Group 028) included into the subgroup 0028B "fruit or berry"

* "resins" which are in the group of spices (Type 005 – Group 028) referred to by note 2 to Asafoetida grouped under subgroup 028D "root or rhizome"

* "mustard" as example of seeds while in the group of spices (Type 005 – Group 028) mustard seed is not included in the subgroup 028A "seeds" and is even not included into the group of spices (Group 028).

* "chilli" as example of "fruits" while in the group of spices (Type 005 – Group 028) chilli (*Capsicum sp.*) is not included in the subgroup 028B "fruit or berry" and is even not included into the group of spices (Group 028).

§ 12: In addition to crop rotation (which is not feasible for all spices), it is also appropriate to avoid vicinity of crops which are known to be host plants for *Aspergillus flavus*, such as maize.

§ 14 and § 15: as they (partly) overlap it is proposed to combine the two paragraphs into one paragraph.

§ 18: Mycotoxin biosynthesis might be increased due to suboptimal application of fungicides due to fungicide stress. Furthermore no fungicide has been adopted for the practical control of *Aspergillus flavus/A. parasiticus* infection . It would be appropriate to add these elements to § 18 which would then read as follows:

"The use of fungicides is a very effective practice to prevent fungal growth. However, no fungicide, or combinations of fungicides, or other chemical treatments appear to have been adopted for the practical control of *Aspergillus flavus/A. parasiticus* infection and subsequent aflatoxin contamination of spices pre-harvest. Furthermore fungicides must be applied with special care since some of them could lead to the reduction of certain non-toxigenic fungal flora and stimulation of other toxigenic fungi growth and suboptimal application of fungicides can have a counteractive effect as mycotoxin biosynthesis might be increased due to fungicide stress"

§ 24: it is proposed to reword the paragraph as follows: "Mechanical damage of the plant material, which may occur during the post-harvest manipulation of crops, increases the possibility of fungal contamination and should be avoided."

§ 25: it is proposed to reword the second sentence as follows: "Alternatively, the source plant that has fallen to the ground can be collected separately and can be included in the main lot after it has been washed, cleaned, dried and evaluated for contamination".

§ 26: it should be specified in which cases the recommended practice of covering the soil under the plant with a clean sheet of plastic during picking seems to be relevant, as it is not feasible or even useful for the harvest of certain spices (e.g in the case of large fields of chillies).

§ 27: besides mentioning the risks related to harvesting overripe crops, it might be appropriate to highlight also the risks related to harvesting unripe crops (more time needed to dry than ripe crops)

§ 28: Aflatoxins and ochratoxin A are the main mycotoxins in spices. These toxins are produced during the steps following harvest, if the crop is not dried quickly enough to safe levels, that is below a_w 0,7. The Code of Practice should give more advice and examples to farmers on good drying practices in line with what has been provided under point 4.6 § 30 to §39 in the Code of Practice for the prevention and reduction of ochratoxin A contamination in coffee (CAC/RCP 69-2009).

Detailed information on drying is provided in the section "2.3 Industrial processing conditions". The information provided in that section on good practices on drying (§ 42 to §48) are also relevant for farmers to be applied when drying is performed on the farm and therefore should be explicitly mentioned or referred to in the section of post-harvest agricultural conditions). By mentioning it only under industrial processing techniques, this might be perceived as these good practices are not applicable when the drying is performed on the farm.

Good practices as provided for the Code of Practice for the prevention and reduction of ochratoxin A contamination in coffee (CAC/RCP 69-2009) are provided as annex to these comments and the elements which are eventually not sufficiently covered in §42 and 48 in CL 2017/28-CF are highlighted in bold and italic. Reference is made to the paragraph in CL 2017/28-CF with similar or comparable practices.

§ 31: It is stated that harvested commodities that have not been dried to a safe storage moisture level should not be stored or transported in closed bins, however they should not be stored at all. If drying is not possible at farm level, the harvest should be transported to a processing plant to be dried without delay.

§ 55: it is mentioned that spices should not be stored with non-food products. The examples given "such as kerosene, lubricating oils might indeed affect the flavour of the spice but the largest risk is an unacceptable contamination of the spice with these non-food products. This should be explicitly mentioned.

Title of point 2.3.4.1: It is proposed to change the title to "Preventing the increase of moisture content" instead of "preventing moisture content".

§ 41: it is mentioned "before washing with potable water". However it is appropriate to mention that if washing is not needed it should not be carried out as washing might spread the contamination of certain hot spots to the rest of the harvest."

§ 44: Fungi that are able to produce aflatoxins and ochratoxin A do not grow below a_w 0,7, therefore the recommendation to dry to achieve a water activity as low as a_w 0,6 as recommended in this paragraph might not be necessary.

§ 51: Gamma irradiation might be effective to reduce fungal growth. However, it is appropriate to clearly state that gamma irradiation does not reduce the level of mycotoxins formed earlier in the chain.

The EUMS wish to make the following comments as regards the recommendations from the eWG to the CCCF mentioned in § 3 and § 7 of appendix II of CL 2017/28-CF:

- Following the consideration of the above comments, the EUMS would agree to advance the proposed draft Code of practice for the prevention and reduction of mycotoxins in spices in the step procedure.

- The EUMS agree with the proposed recommendations to be made to the Committee on Food Hygiene and the Committee on Food Labelling.

- The EUMS agree to discontinue the work on the development of specific annexes to the Code of Practice, at this stage, until more information on specific management practices becomes available.

ANNEX

Good practices as provided for in section 4.6, §30 - §38 in the Code of Practice for the prevention and reduction of ochratoxin A contamination in coffee (CAC/RCP 69-2009)

The §30 - §38 in the Code of Practice for the prevention and reduction of ochratoxin A contamination in coffee (CAC/RCP 69-2009) are hereafter renumbered from §1 to § 8 (§31 being not relevant for spices)

The elements which are eventually not sufficiently covered in §42 and 48 in CL 2017/28-CF are highlighted in bold and italic. Reference is made to the paragraph in CL 2017/28-CF with similar or comparable practices.

1. The main purpose of the drying operation is to efficiently decrease the high water content of the just harvested spices to a safe level in order to get a stable, safe and good quality product.

2. In the sun drying process, the product is spread on surfaces such as cement or brick terraces, tarpaulin, plastic canvas, bamboo and sisal mats, raised tables covered in wire mesh or fish farm netting. *(covered by § 43 and § 48 1a)*

3. The drying process can be divided into three stages. In each stage, aflatoxin and OTA producing fungi will have varying opportunities for growth.

4. At the first stage, there is a slight decrease in moisture content. The high moisture content ($a_w > 0.95$) provides unsuitable conditions for aflatoxin and OTA producing fungi to grow. However, other microorganisms, such as other fungi (yeasts) and bacteria, may spoil the product if it is kept too long at $a_w > 0.95$ after harvest.

5. The second stage is the one of maximum loss in moisture content. During this stage (a_w lower than 0.95 but higher than 0.80), there are favourable conditions for aflatoxin and OTA producing fungi to grow and therefore it is necessary to implement precautionary measures as recommended in paragraph 8.

6. At the third stage ($a_w < 0.80$), is much drier compared to the previous two stages. There is a slower slight decrease in the remaining moisture content. Conditions at this stage do not favour the growth of aflatoxin and OTA producing fungi.

7. The aflatoxin and OTA-producing fungi require favourable conditions during a certain period of time to grow and produce the toxin. The level of available water is the most important factor to be considered. At high water activity ($a_w > 0.95$) OTA-producing fungi will not likely grow, as fast-growing hydrophilic fungi and yeasts grow first. At lower water activity ($a_w < 0.80$) the aflatoxin and OTA-producing fungi can be present but not produce the toxin, and at a_w below 0.78–0.76 they cannot grow. ***Therefore the most important point is to control the period of time in which the spices remain in the drying yard, in the range of water activity where aflatoxin and OTA-producing fungi can grow (a_w 0.8–0.95).*** According to experimental results, 5 days or less in the drying yard is enough and effective to prevent aflatoxin and OTA accumulation. In general, a maximum a_w of 0.67 to 0.70 and moisture content < 12.5% (wet basis) is sufficient for protecting spices from damage by fungi. ***(the non-highlighted part is a repetition of the information provided in §3- §6 above)***

8. Recommended measures to dry spices efficiently are:

a) The drying yard should be located away from contaminant sources such as dusty areas and should receive maximum sun exposure and air circulation, during most of the day, to speed up the drying of the spices. Shady and low areas should be avoided.

b) The surface for the drying yard should be chosen according to the climate of the region, cost and quality of the dried product, as any type of surface has advantages and disadvantages. Bare soil is not appropriate for rainy areas. Plastic canvas gets humid under the spice layer, promoting fungal growth. In rainy or wet regions spices must be covered and re-spread, once the surface has dried.

c) The pace and total time of the harvest should be based on the available area of the drying yard and the average time necessary for drying, considering both good and bad weather.

d) The following practical measures should be incorporated into the drying process:

d.1) Dry spices only in thin layers, 3 to 5 cm in depth. In some cases (e.g. low air humidity, good air circulation and sun intensity, or in usually dry regions), thicker layers can be used. ***(covered by §48 1e)***

d.2) Turn over the spice layer constantly during the day time to allow faster drying, to reduce the risk of fungi growing and help to produce a better quality product. ***(covered by §48 1e)***

d.3) Allow for the appropriate ventilation of the wet spice during the night in order to avoid condensation. ***(covered by § 44 and §48 1e)***

d.4) Do not mix different types of spices nor spices from different days of harvest. Use a specific identification for each one of them to identify each type of spice and day of harvest.

d.5) Protect the drying yard area from animals, which can be a source of biological contamination for the drying spice ***(covered by §45, 46 and §48 1c)***

d.6) In order to avoid insect damage during drying, check for the presence of insects and if necessary use integrated pest management in drying yard for the control thereof.

d.7) Monitor the drying process regularly. Start taking samples from different points of each lot, two or three days before it is expected to be fully dry and continue re-evaluating it daily until it reaches the desired moisture content. Instrumental measurements should be adopted at field level.

d.8) Avoid rewetting the spices because it favours rapid fungal growth and the possibility of aflatoxin and OTA production. ***(covered by §48 1e)***

e) Provide a clear and practical training for drying yard workers, including adequate use of moisture measuring equipment.

f) Repair, clean, protect and keep equipments in a clean storage area until the next season. Moisture measuring equipment should be regularly cross checked and calibrated once a year before harvest.