

# **Trace Element Analysis for the Food Adulteration (Metallic Contamination) (Amendment) Regulation 2018**

19.10.2018



# Antimony in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.2 ppm

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Vegetables  | 1  | 1   | Notes 1-8  |
| Cereals   | 1  | 1   |  |
| Meat of animal  | 1  | 1   | Applies to whole commodity (without bones).<br>Also applies to fat from the meat.  |
| Meat of poultry   | 1  | 1   | Applies to whole commodity (without bones).<br>Also applies to fat from the meat.  |
| Fish  | 1  | 1   | Applies to whole commodity after removing the digestive tract.   |
| Crabs, prawns and shrimps   | 1  | 1   | Applies to edible portion of the crab, including the live rand gonads or parts thereof after removal of shell.                                 |
| Oysters   | 1  | 1   | Applies to whole commodity after removal of shell.   |
| Natural mineral waters (Note 9)   | Not available (Note 10)                        | 0.005 mg /L   |  |
| Bottled/packageg drinking waters (other than natural mineral waters) (Note 9) | Not available (Note 10)                        | 0.02 mg /L  |  |



# Antimony in CAP 132V amendment

Note 1: Bulb/dry onions and garlic: refers to whole commodity after removal of roots and adhering soil and whatever parchment skin is easily detached.

Note 2: Head cabbages and kohlrabi: refers to whole commodity as marketed, after removal of obviously decomposed or withered leaves ; Cauliflower and broccoli: refers to flower heads (immature inflorescence only); Brussels sprouts: refers to “buttons” only.

Note 3: “Fruiting vegetables, Cucurbits” and “Fruiting vegetables, other than Cucurbits ”: refers to whole commodity after removal of stems.

Note 4: Leafy vegetables (including Brassica leafy vegetables): refers to whole commodity as usually marketed, after removal of obviously decomposed or withered leaves.

Note 5: Legume vegetables: refers to whole commodity as consumed. The succulent forms may be consumed as whole pods or as the shelled product.

Note 6: Pulses: applicable to whole commodity

Note 7: Root and tuber vegetables: refers to whole commodity after removing tops and adhering soil (by rinsing in running water or by gentle brushing of the dry commodity) ; Potato: refers to peeled potato.

Note 8: Stalk and stem vegetables: refers to whole commodity as marketed after removal of obviously decomposed or withered leaves ; Rhubarb: refers to leaf stems only ; Globe artichoke: applies to flower head only ; Celery and asparagus: refers to the whole commodity after removing adhering soil.



# Arsenic in CAP 132V amendment

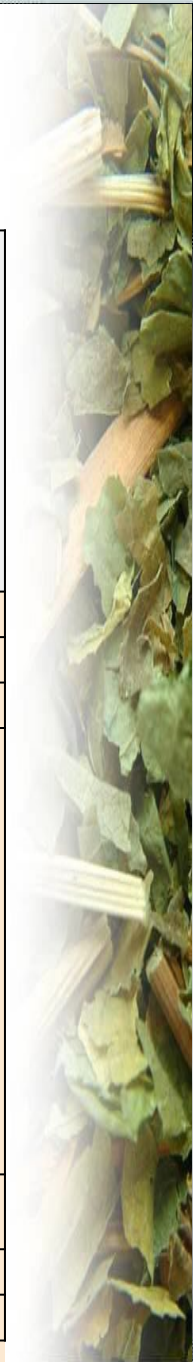
Current Reporting Limit requirement in GL contract: 0.1 ppm

| Food items  | Existing maximum permitted concentration (expressed as (As <sub>2</sub> O <sub>3</sub> )) (ppm) | Existing maximum permitted concentration (expressed as inorganic arsenic) (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|---|---|---|--|
|   |   |   | <b>Expressed as total arsenic</b>                               |  |
| Edible fats and oils (Note 9)   | 1.4<br>[solid food]/<br>0.14<br>[liquid food]   | 1.1<br>[solid food]/<br>0.1<br>[liquid food]                                    | 0.1   | Not apply to fish oil.*  |
| Fat spreads and blended spreads (Note 9)  | 1.4   | 1.1   | 0.1   |  |
| Salt, food grade (Note 9)   | 1.4   | 1.1   | 0.5   |  |
| Natural mineral waters (Note 9)   | 0.14  | 0.1   | 0.01 (mg/L)   |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 9) | 0.14  | 0.1   | 0.01 (mg/L)   |  |



# Arsenic in CAP 132V amendment

| Food items              | Existing maximum permitted concentration (expressed as $\text{As}_2\text{O}_3$ ) (ppm) | Existing maximum permitted concentration (expressed as inorganic arsenic) (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies<br>(The proposed ML applies to the edible portion if there is no specification)   |
|-------------------------|--|---|---|---|
|                         |  |   | <b>Expressed as inorganic arsenic</b>                           |   |
| Rice, husked (Note 9)   | 1.4  | 1.1   | 0.35  |   |
| Rice, polished (Note 9) | 1.4  | 1.1   | 0.2   |   |
| Aquatic animals         | 10   | 7.9   | 0.5   | Not apply to fish and intestine of sea cucumber.<br>Applies to edible portion of the crab, including the liver and gonads or parts thereof after removal of shell.<br>Cephalopods: Applies to whole commodity after removal of shell and viscera.<br>Scallops: Applies to whole commodity after removal of shell and viscera. |
| Fish                    | 6  | 4.8   | 0.1   | Whole commodity after removing the digestive tract.   |
| Fish oil*               | 0.14   | 0.1   | 0.1   |   |
| Seaweed                 | 1.4  | 1.1   | 1   |   |





# Cadmium in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.02 ppm

| Food items   | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|--|--|---|--|
| Bulb vegetables  | 0.1  | 0.05  | Note 2   |
| Brassic vegetables                                     | 0.1  | 0.05  | Not apply to Brassica leafy vegetables.<br>Note 3  |
| Fruiting vegetables, Cucurbits                         | 0.1  | 0.05  | Note 4   |
| Fruiting vegetables, other than Cucurbits              | 0.1  | 0.05  | Not apply to tomatoes.<br>Note 4   |
| Leafy vegetables (including Brassica leafy vegetables) | 0.1  | 0.2   | Note 5   |
| Legume vegetables                                      | 0.1  | 0.1   | Note 6   |
| Pulses   | 0.1  | 0.1   | Note 7   |
| Root and tuber vegetables                              | 0.1  | 0.1   | Note 8   |
| Stalk and stem vegetables                              | 0.1  | 0.1   | Note 9   |
| Vegetables unless otherwise specified                  | 0.1  | 0.1   | Notes 2-9  |
| Cereals (Note 10)                                      | 0.1  | 0.1   | Not apply to buckwheat, canihua, quinoa, wheat and rice.   |
| Wheat  | 0.1  | 0.2   |  |
| Meat of cattle, pigs and sheep                         | 0.2  | 0.05  | Applies to whole commodity (without bones). Also applies to fat from the meat.   |
| Meat of poultry  | 0.2  | 0.05  | Applies to whole commodity (without bones). Also applies to fat from the meat.   |
| Liver of cattle, pigs and sheep                        | Not available (Note 11)                        | 0.5   |  |
| Liver of poultry                                       | Not available (Note 11)                        | 0.5   |  |
| Kidney of cattle, pigs and sheep                       | Not available (Note 11)                        | 1   |  |
| Kidney of poultry                                      | Not available (Note 11)                        | 1   |  |



# Cadmium in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.02 ppm

|   |   |              |  |
|---|---|--------------|--|
| Fish  | 2   | 0.1          | Whole commodity after removing the digestive tract.  |
| Bivalve molluscs (Note 12)  | 2 [oysters] /<br>Not available (Note 11)                                | 2            | Applies to whole commodity after removal of shell.<br><br>Scallops: Applies to whole commodity after removal of shell and viscera. |
| Cephalopods (Note 1)  | Not available (Note 11)   | 2            | Applies to whole commodity after removal of shell and viscera.   |
| Crustaceans   | 2<br>[crab-<br>meat, prawns<br>and shrimps]/<br>Not available (Note 11) | 2            | Applies to edible portion of the crab, including the liver and gonads or parts thereof after removal of shell.                     |
| Gastropods  | Not available (Note 11)   | 2            | Applies to whole commodity after removal of shell and viscera.   |
| Salt, food grade (Note 1)   | Not available (Note 11)   | 0.5          |  |
| Natural mineral waters (Note 1)   | Not available (Note 11)   | 0.003 (mg/L) |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) | Not available (Note 11)   | 0.003 (mg/L) |  |



# Chromium in CAP 132V amendment

Current Reporting Limit requirement in GL contract : 0.2 ppm

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/ kg, unless otherwise specified) | Portion of the commodity/ product to which the proposed ML applies ( The proposed ML applies to the edible portion if there is no specification) |
|---|--|--|--|
| Vegetables  | 1  | 0.5  | Not apply to pulses.<br>Notes 1 -7   |
| Pulses  | 1  | 1  | Note 8   |
| Cereals   | 1  | 1  |  |
| Meat of animal  | 1  | 1  | Applies to whole commodity (without bones).<br>Also applies to fat from the meat.  |
| Meat of poultry   | 1  | 1  | Applies to whole commodity (without bones).<br>Also applies to fat from the meat.  |
| Fish  | 1  | 1  | Whole commodity after removing the digestive tract.  |
| Crabs, prawns and shrimps   | 1  | 1  | Applies to edible portion of the crab, including the liver and gonads or parts thereof after removal of shell.                                   |
| Oysters   | 1  | 1  | Applies to whole commodity after removal of shell.   |
| Natural mineral waters ( Note 9)  | Not available ( Note 10)                       | 0.05 (mg/L)  |  |
| Bottled/ packaged drinking waters (other than natural mineral waters) ( Note 9) | Not available ( Note 10)                       | 0.05 (mg/L)  |  |





# Lead in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.1 ppm

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/ product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|---|
| Fruits (Note 1)                                       | 6  | 0.1   | Not apply to cranberry, currants and elderberry.<br>Note 2  |
| Cranberry (Note 1)                                    | 6  | 0.2   | Note 3  |
| Currants (Note 1)                                     | 6  | 0.2   | Note 4  |
| Elderberry (Note 1)                                   | 6  | 0.2   | Note 3  |
| Bulb vegetables (Note 1)                              | 6  | 0.1   | Note 5  |
| Brassica vegetables (Note 1)                          | 6  | 0.1   | Not apply to Brassica leafy vegetables.<br>Note 6   |
| Fruiting vegetables, Cucurbits (Note 1)               | 6  | 0.05  | Note 7  |
| Fruiting vegetables, other than Cucurbits (Note 1)    | 6  | 0.05  | Note 7  |
| Leafy vegetables (Brassica leafy vegetables) (Note 1) | 6  | 0.3   | Not apply to spinach.<br>Note 8   |
| Legume vegetables (Note 1)                            | 6  | 0.1   | Note 9  |



# Lead in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.1 ppm

| Food items                                    | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Preserved tomatoes†                           | 6  | 0.05  |  |
| Processed tomato concentrates†                | 6  | 0.05  |  |
| Table olives (Note 1)                         | 6  | 0.4   |  |
| Pickled cucumbers (cucumber pickles) (Note 1) | 6  | 0.1   |  |
| Canned chestnuts and canned chestnuts puree†  | 6  | 0.05  |  |
| Cereal grains (Note 1)                        | 6  | 0.2   | Not apply to buckwheat, cañihua and quinoa.  |
| Aquatic animals                               | 6  | 1   | Not apply to fish, bivalve molluscs and crustaceans.<br>Applies to edible portion after removal of viscera.                                    |
| Fish (Note 1)                                 | 6  | 0.3   | Whole commodity after removing the digestive tract.  |
| Bivalve molluscs                              | 6  | 1.5   | Applies to whole commodity after removal of shell.<br>Scallops: Applies to whole commodity after removal of shell and viscera.                 |



# Lead in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.1 ppm

|  |                               |             |   |
|--|-------------------------------|-------------|---|
| Crustaceans  | 6                             | 0.5         | Applies to edible portion of the crab, including the liver and gonads or parts thereof after removal of shell.  |
| Milk (Note 1)  | 1                             | 0.02        |   |
| Secondary milk products (Note 1)   | 6 [solid food]<br>/1 [liquid] | 0.02        | Applies to the food as consumed.  |
| Infant formula, formula for special medical purposes intended for infants and follow-up formula (Note 1) | 6                             | 0.01        | Applies to formula as consumed.   |
| Salt, food grade (Note 1)  | 6                             | 2           |   |
| Natural mineral waters (Note 1)  | 1                             | 0.01 (mg/L) |   |
| Bottled/packaged drinking waters (other than natural mineral waters) (Note 1)                            | 1                             | 0.01 (mg/L) |   |
| Fruit juices (Note 1)  | 1                             | 0.03        | Not apply to juices exclusively from berries and other small fruits.<br>Applies to whole commodity (not concentrated) or commodity reconstituted to the original juice concentration, ready to drink.<br>Applies also to nectars, ready to drink. |
| Fruit juices exclusively from berries and other small fruits (Note 1)                                    | 1                             | 0.05        | Applies to whole commodity (not concentrated) or commodity reconstituted to the original juice concentration, ready to drink.<br>Applies also to nectars, ready to drink.   |



# Lead in CAP 132V amendment

## Joint FAO/WHO Food Standards Programme CODEX ALIMENTARIUS COMMISSION CODEX CLASSIFICATION OF FOODS AND ANIMAL FEEDS

Fruiting vegetables, Cucurbits

Class A

**Type 2**

**Vegetables**

**Group 011**

**Group Letter Code VC**

Portion of the commodity to which the MRL applies (and which is analysed): **Whole commodity after removal of stems.**

|         |  |
|---------|--|
| VC 0045 | <b>Fruiting vegetables, Cucurbits</b>  |
| VC 0046 | <b>Melons, except Watermelon</b><br>Several var. and cultivars of <i>Cucumis melo</i> L. |
| VC 0420 | <b>Balsam apple</b><br><i>Momordica balsamina</i> L.                                     |
| VC 0421 | <b>Balsam pear</b><br><i>Momordica charantia</i> L.                                      |
| VC 4193 | <b>Bitter cucumber</b> , see Balsam pear   |





# CAP 132V amendment

Calculate the concentration of analytes in a food sample as follows:

$$M \text{ in mg/kg} = (A \times D \times V) / W$$

- M** = concentration of analyte in the sample, mg/kg  
**A** = concentration of analyte in the sample solution,  $\mu\text{g/L}$   
**D** = dilution factor of the sample solution, if any  
**V** = volume of sample solution made up after digestion, L  
**W** = weight of the sample taken for analysis, g

e.g. **A** 2↓  $\Rightarrow$  **M** 2↓ ; **W** 2↑  $\Rightarrow$  **M** 2↓





# Mercury in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 0.03 ppm

| Food items   | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|--|--|---|--|
| <b>Expressed in methylmercury</b>  |  |   |  |
| Fish (Note 1)  | 0.5 (total mercury)                            | 0.5   | Whole commodity after removing the digestive tract.  |
| <b>Expressed in total mercury</b>  |  |   |  |
| Vegetables   | 0.5 (total mercury)                            | 0.01  | Not apply to edible fungi.<br>Notes 2-9  |
| Edible fungi   | 0.5 (total mercury)                            | 0.1   |  |
| Rice, husked rice, polished rice, maize, maize flour, wheat, wheat flour         | 0.5 (total mercury)                            | 0.02  |  |
| Milk   | 0.5 (total mercury)                            | 0.01  |  |
| Secondary milk products  | 0.5 (total mercury)                            | 0.01  | Applies to the food as consumed.   |
| Natural mineral waters (Note 10)   | 0.5 (total mercury)                            | 0.001 (mg/L)  |  |
| <b>Expressed in inorganic mercury</b>  |  |   |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 10) | 0.5 (total mercury)                            | 0.006 (mg/L)  |  |



# Screening Strategy in Analysis

## Arsenic

| Commodity/Product Name | Maximum Level (ML) mg/kg | Portion of the Commodity/Product to which the ML applies | Notes/Remarks  |
|------------------------|--------------------------|--|--|
| Rice, polished         | 0.2                      | Whole commodity  | The ML is for inorganic arsenic (As-in). Countries or importers may decide to use their own screening when applying the ML for As-in in rice by analysing total arsenic (As-tot) in rice. If the As-tot concentration is below or equal to the ML for As-in, no further testing is required and the sample is determined to be compliant with the ML. If the As-tot concentration is above the ML for As-in, follow-up testing shall be conducted to determine if the As-in concentration is above the ML. |

## Mercury

| Commodity / Product Name | Maximum Level (ML) (mg/kg) | Portion of the Commodity/Product to which the ML Applies                        | Notes/Remarks   |
|--------------------------|----------------------------|---|---|
| Tuna                     | 1.2                        | Whole commodity fresh or frozen (in general after removing the digestive tract) | Countries or importers may decide to use their own screening when applying the ML for methylmercury in fish by analysing total mercury in fish. If the total mercury concentration is below or equal to the ML for methylmercury, no further testing is required and the sample is determined to be compliant with the ML. If the total mercury concentration is above the ML for methylmercury, follow-up testing shall be conducted to determine if the methylmercury concentration is above the ML. The ML also applies to fresh or frozen fish intended for further processing. Countries should consider developing nationally relevant consumer advice for women of childbearing age and young children to supplement the ML. |
| Alfonsino                | 1.5                        |   |   |
| Marlin                   | 1.7                        |   |   |
| Shark                    | 1.6                        |   |   |



# Tin in CAP 132V amendment

Current Reporting Limit requirement in GL contract: 10 ppm

| Food items       | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|------------------|--|---|--|
| Canned foods     | 230  | 250   | Not apply to canned beverages.   |
| Canned beverages | 230  | 150   |  |



# Elements in CAP 132V amendment

## Barium (Ba)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Natural mineral waters (Note 1)   | Not available (Note 2)                         | 0.7 (mg/L)  |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) |  | 1.3 (mg/L)  |  |

## Boron (B)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Natural mineral waters (Note 1)   | Not available (Note 2)                         | 5 (mg/L)  |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) |  | 2.4 (mg/L)  |  |





# Elements in CAP 132V amendment

## Copper (Cu)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Natural mineral waters (Note 1)   | Not available (Note 2)                         | 1 (mg/L)  |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) |  | 2 (mg/L)  |  |

## Manganese (Mn)

| Food items                      | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---------------------------------|--|---|--|
| Natural mineral waters (Note 1) | Not available (Note 2)                         | 0.4 (mg/L)  |  |





# Elements in CAP 132V amendment

## Nickel (Ni)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Natural mineral waters (Note 1)   | Not available (Note 2)                         | 0.02 (mg/L)   |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) |  | 0.07 (mg/L)   |  |

## Selenium (Se)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Natural mineral waters (Note 1)   | Not available (Note 2)                         | 0.01 (mg/L)   |  |
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) |  | 0.04 (mg/L)   |  |



# Elements in CAP 132V amendment

## Uranium (U)

| Food items  | Existing maximum permitted concentration (ppm) | Proposed maximum level (ML) (mg/kg, unless otherwise specified) | Portion of the commodity/product to which the proposed ML applies (The proposed ML applies to the edible portion if there is no specification) |
|---|--|---|--|
| Bottled/packageged drinking waters (other than natural mineral waters) (Note 1) | Not available (Note 2)                         | 0.03 (mg/L)   |  |



**Thank you**



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4 October 2018

Dear colleagues,

**Call for Participation**  
**Proficiency Testing Programme (GLHK PT 18-03)**  
**Inorganic Arsenic in Aquatic Product**

| <b>Event</b>                    | <b>Period</b>     |
|---------------------------------|-------------------|
| Call for Participation          | 4 October 2018    |
| Deadline of Registration        | 26 October 2018   |
| Sample Collection               | 5-7 November 2018 |
| Deadline of Result Submission   | 31 December 2018  |
| Statistical Analysis of Results | January 2019      |
| Distribution of Final Report    | February 2019     |

