

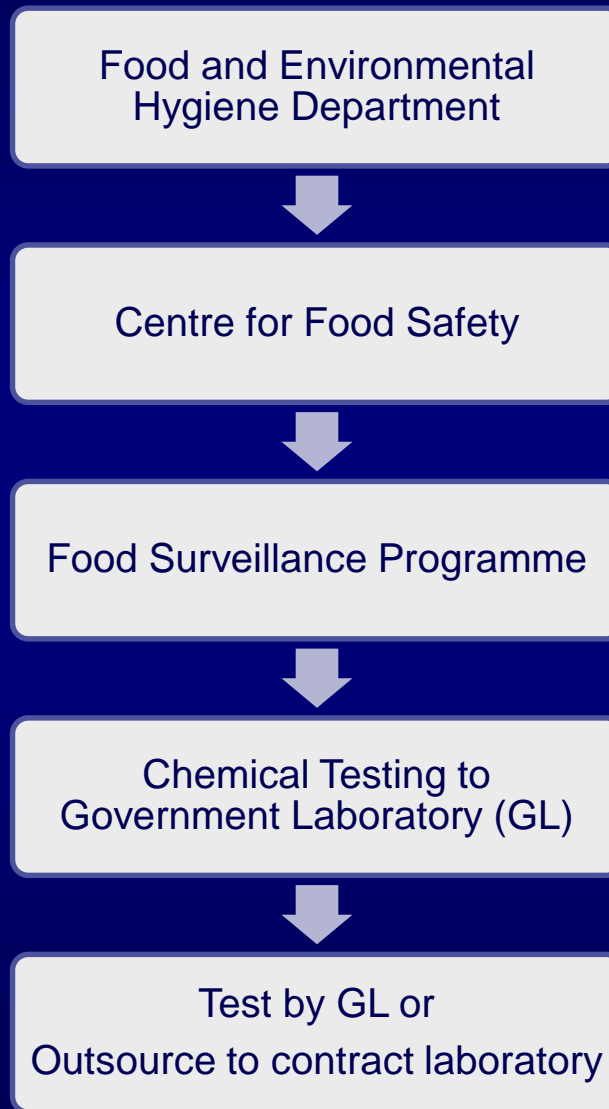


Information Sharing on
Outsourcing of
Food Tests:
Review and Way Forward

**Government Laboratory
November 2019**

Review of Outsourcing Contracts in 2019-20

Food Monitoring



Handling of test results from contract laboratories (1)



Review Test Certificate

Review QC



Follow-up

Handling of test results from contract laboratories (2)

★ Test certificates

- HOKLAS endorsed certificates or certificates endorsed by an accreditation body with which HOKLAS has concluded mutual recognition agreements/arrangements (MRA)
- Signed by an approved signatory
- Sample information, test data and other relevant particulars

Handling of test results from contract laboratories (3)

★ QC and other relevant information

★ Quality control data

- Method blank, spike recoveries, precision of duplicate test, quality control samples etc.

★ Information (e.g. photos) on the appearance and the packaging of the sample

★ Relevant raw data in electronic file

- Including instrumental printout, worksheets for test samples and quality control data

Handling of test results from contract laboratories (4)

★ Follow-up

★ Test results

- Regulatory limits, measurement uncertainty, etc.

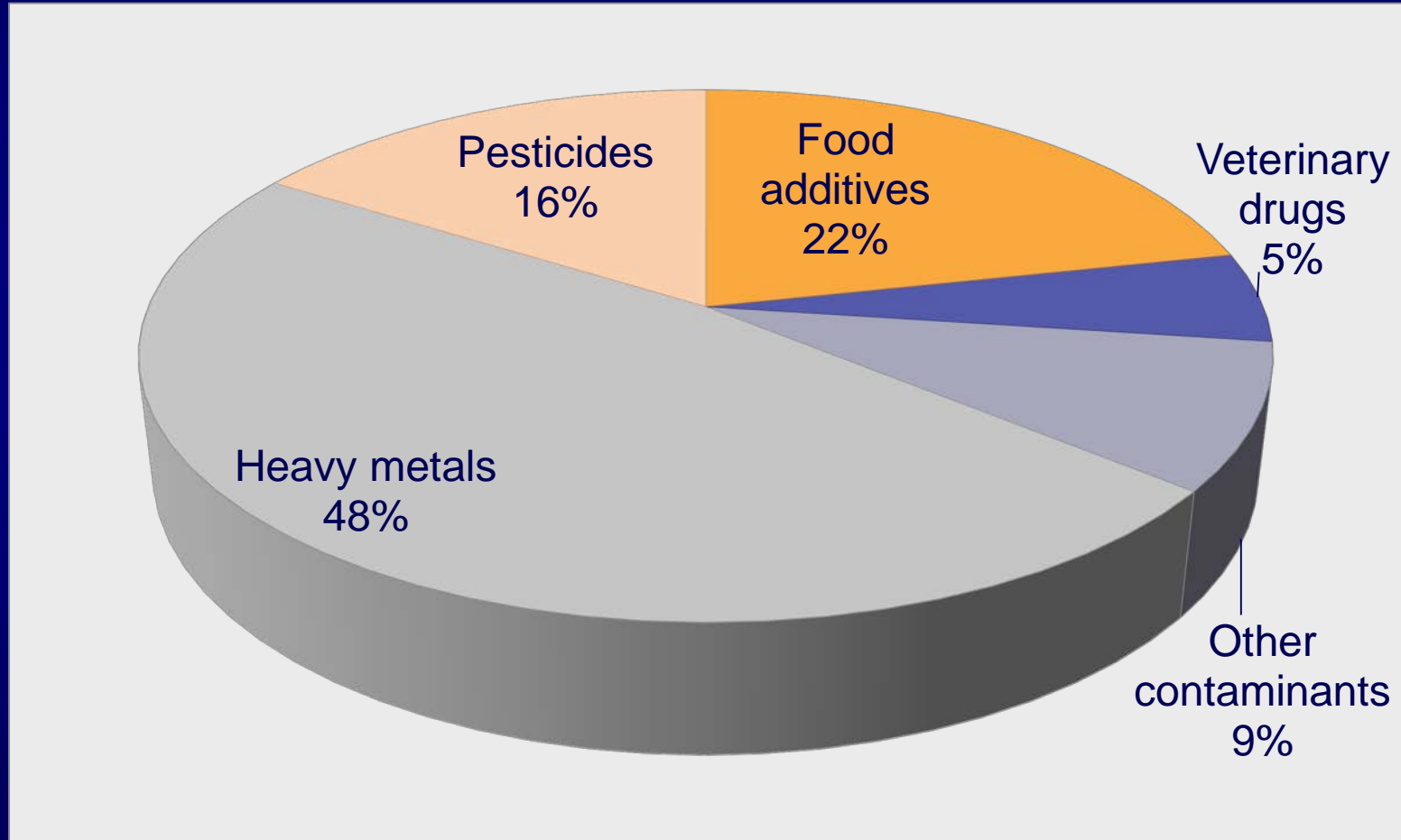
★ Other requirements specified in regulations (Example)

- Food Adulteration (Metallic Contamination) Regulations (Cap. 132V):
 - Section 3 (2) (b): “.... *specified food that has gone through a process of drying, dehydration or concentration*”
 - Section 3 (4): “.... *If all ingredients of a compounded food are specified food, the maximum level of a specified metal in the compound food is the sum of the maximum level of the specified metal in each ingredient multiplied by the proportion*”

Outsourcing in 2019-20

- ★ 24 contracts issued by Oct 2019
 - ✿ total about ~126,000 tests
 - ✿ contract period: 5 months to 1 year
 - ✿ Quotation exercises ended in Oct 2019
- ★ Invitations to quotation sent in 5 phases
 - ✿ Phase I , February 2019 (7 contracts)
 - ✿ Phase II, March 2019 (6 contracts)
 - ✿ Phase III, May 2019 (3 contracts)
 - ✿ Phase IV, July 2019 (3 contracts)
 - ✿ Phase V, October 2019 (5 contracts)

Sample Distribution in 2019-20



CAP 132 Public Health and Municipal Services Ordinance

- ✦ CAP 132H Colouring Matter in Food Regulations
- ✦ CAP 132V Food Adulteration (Metallic Contamination) Regulations (version date 1 Nov 2019)
- ✦ CAP 132W Food and Drugs (Composition and Labelling) Regulations
- ✦ CAP 132AF Harmful Substances in Food Regulations
- ✦ CAP 132BD Preservatives in Food Regulation
- ✦ CAP 132CM Pesticide Residues in Food Regulation

Salient Points (1)

- ✦ Accredited in corresponding tests
 - ✦ maintaining accreditation status (i.e. scope and reporting limit) from application to the end of contract period
- ✦ Test parameters in specified matrices
- ✦ Specified reporting limits
- ✦ Delivery time of results
 - ✦ 3 – 15 days
- ✦ Testing capacity
 - ✦ 30 – 140 samples per week

Salient Points (2)

- ✦ Test sample collection
 - ✦ within 1 working day upon notification
 - ✦ GL Headquarters at Homantin
- ✦ Retention of remaining test samples
- ✦ Past performance will be taken into account when future quotations are evaluated

Issued Contracts (Food Additives) (1)

★ Sulphur dioxide and other preservatives

- ★ 3 contracts on general foodstuffs
- ★ SO₂ alone (1 year)
- ★ SO₂ + 3 acids (benzoic acid, sorbic acid, salicylic acid) + 3 parabens (1 year)
- ★ SO₂ + 2 acids (benzoic acid, sorbic acid) + 3 parabens (6 months)
- ★ Total about 3,400 samples
- ★ reporting limits: 8 mg/kg for SO₂, 30 mg/kg for parabens and 50 mg/kg for acids

Issued Contracts (Food Additives) (2)

★ Nitrate/Nitrite

- ★ 1 contract (1 year) on meat, meat products and dairy products
- ★ about 490 samples
- ★ reporting limits: 5 mg/kg for nitrite (as NaNO_2) and 30 mg/kg for nitrate (as NaNO_3)

★ Propionic acid

- ★ 1 contract (6 months) on flour confectionery
- ★ about 210 samples
- ★ reporting limit: 50 mg/kg

Issued Contracts (Pesticides) (1)

- ✱ Pesticide Residues in Food Regulation (Cap 132CM) came into operation on 1 Aug 2014
- ✱ 7 contracts issued
- ✱ Test parameters: selected from
 - ✱ Survey on pesticide residue testing in December 2017
- ✱ Matrices: unprocessed fruit, vegetables and cereal grains
- ✱ Total no. of samples: ~3,000

Issued Contracts (Pesticides) (2)

- ✦ Pesticide residues in fruit and vegetables
 - ✦ cover residue definitions
 - ✦ reporting limit: according to maximum residue limit (MRL) on quotation documents
 - ✦ April 2019 to March 2020 (3 Contracts)
 - List 19A (40 pesticides) in fruit and vegetables ~ 575 samples
 - List 19B (30 pesticides) in fruit and vegetables ~ 595 samples
 - List 19C (39 pesticides) in fruit and vegetables ~ 595 samples

Issued Contracts (Pesticides) (3)

☀ Pesticide residues in cereal grain

- ☀ August 2019 to January 2020
 - 1 contract on 34 pesticides
 - List 19D in cereal grain ~ 210 samples

☀ Pesticide residues in vegetables

- ☀ August 2019 to January 2020
 - 1 contract on 38 pesticides
 - List 19E in vegetables ~ 105 samples

Issued Contracts (Pesticides) (4)

- ✦ Pesticide residues in fruit and vegetables
 - ✦ August 2019 to January 2020
 - List 19F (68 pesticides) in fruit and vegetables ~ 540 samples
- ✦ Pesticide residues in fruit and vegetables
 - ✦ November 2019 to March 2020
 - List 19G (56 pesticides) in fruit and vegetables ~ 440 samples

Issued Contracts (Veterinary Drug Residues)

★ Chloramphenicol

- ★ 1 contract (1 year) for meat and aquatic products
- ★ about 560 samples
- ★ reporting limit: 0.3 $\mu\text{g}/\text{kg}$

★ Malachite Green

- ★ 1 contract (1 year) for aquatic products
- ★ Malachite Green and Leucomalachite Green
- ★ about 475 samples
- ★ reporting limit: MG and LMG: 0.5 $\mu\text{g}/\text{kg}$ each

Issued Contracts (Other Contaminants) (1)

★ Sudan Dyes

- 1 contract (1 year) on general foodstuffs
- Sudan I, II, III, IV, Sudan Orange G, Sudan Red 7B, Dimethyl Yellow
- about 1,160 samples
- reporting limits: 20 $\mu\text{g}/\text{kg}$ each

★ Melamine

- 1 contract (1 year) on general foodstuffs
- about 420 samples
- reporting limit: 1 mg/kg

Issued Contracts (Other Contaminants) (2)

✦ Boric acid

- ✦ 1 contract (6 months) on general foodstuffs
- ✦ about 95 samples
- ✦ reporting limit: 50 mg/kg

CAP 132V Food Adulteration (Metallic Contamination) Regulations

Version date 1 Nov 2019

Food Adulteration (Metallic Contamination) Regulations

T-2
Cap. 132V

Food Adulteration (Metallic Contamination) Regulations
(Cap. 132 sub. leg. V)

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Last updated date
1.11.2019

Food Adulteration (Metallic Contamination) Regulations

Schedule—Part 2

S-4
Cap. 132V

(a) obtained from one or more milkings without either addition or extraction; and

(b) intended for consumption as liquid milk or for further processing;

secondary milk products (二次加工奶製品) means skimmed milk, partly skimmed milk, evaporated milk and milk powder.

Part 2

Maximum Level of Metal in Food

| Column 1 | Column 2 | Column 3 | Column 4 |
|-------------|--|-----------------------|----------|
| Metal | Food | Maximum Level (mg/kg) | Note |
| 1. Antimony | Vegetables | 1 | |
| | Cereals | 1 | |
| | Meat of animal | 1 | Note 1 |
| | Meat of poultry | 1 | Note 1 |
| | Fish | 1 | Note 2 |
| | Crabs, prawns and shrimps | 1 | Note 3 |
| | Oysters | 1 | |
| | Bottled or packaged drinking waters, other than natural mineral waters | 0.02 | |

Last updated date
1.11.2019

Verified Copy

Application of Old / New Standard (Cap 132V)

7. Continued application of **old standard until 31 October 2020**

- (1) During the period between 1 November 2019 and 31 October 2020 (both dates inclusive), a person who does an act in relation to any food (other than any food specified in paragraph (2)) that contains a metal at any level is taken not to have contravened regulation 3 if doing the act immediately before 1 November 2019 would not have contravened these Regulations as in force immediately before 1 November 2019.
- (2) The food are fruit and vegetable and their juice, meat and edible offal of animal and poultry, aquatic animal and poultry egg which—

Verified Copy

Last updated date
1.11.2019

Food Adulteration (Metallic Contamination) Regulations

14

Regulation 7

Cap. 132V

- (a) has not been subjected to a process of preservation; or
(b) has been preserved by chilling but not freezing.

(L.N. 113 of 2018)

Old Standard applies to food other than those stated in Regulation 7(2) until 31 Oct 2020

New Standard
Applicable from 1 Nov 2019 onwards for

(Fresh/Chilled)
-Fruit
-Vegetable
-Meat and edible offal of animal and poultry
-Aquatic animal
-Poultry egg

Issued Contracts (Heavy Metals) (1)

☀ 3 Contracts for Old Standard

- ☀ 7 Heavy metals
- ☀ 4 Heavy metals
- ☀ 1 Heavy metals

☀ 4 Contracts for New Standard [NEW!]

- ☀ Methylmercury in fish
- ☀ Inorganic arsenic in aquatic animals
- ☀ 6 Heavy metals in vegetables
- ☀ 1-6 Heavy metals in miscellaneous food

Issued Contracts (Heavy Metals) (1)

Old Standard

★ 7 Heavy metals

- ★ 1 year contract for Sb, As, Cd, Cr, Pb, Hg and Sn in miscellaneous foods
- ★ About 1,750 samples
- ★ reporting limits: 0.02 mg/kg – 10 mg/kg

★ 4 Heavy metals

- ★ 1 year contract for any 4 heavy metals out of Sb, As, Cd, Cr, Pb, Hg, and Sn in general foodstuffs
- ★ About 1,870 samples
- ★ reporting limits: 0.02 mg/kg – 10 mg/kg

Issued Contracts (Heavy Metals) (2)

Old Standard

- ★ 1 Heavy metal
 - ★ 1 year contract for any 1 heavy metal out of Sb, As, Cd, Cr, Pb, Hg, and Sn in general foodstuffs
 - ★ About 2,400 samples
 - ★ reporting limits: 0.02 mg/kg – 10 mg/kg

Issued Contracts (Heavy Metals) (3)

New Standard – Phase I [NEW!]

☀ Inorganic arsenic

- 1 year contract (till Oct 2020) for inorganic arsenic in aquatic animals
- About 400 samples
- reporting limits: 0.1 mg/kg

☀ Methylmercury

- 1 year contract (till Oct 2020) for methylmercury in fish
- About 255 samples
- reporting limits: 0.5 mg/kg

Issued Contracts (Heavy Metals) (4)

New Standard – Phase I

[NEW!]

★ 6 Heavy metals

- ★ 5 months contract for Sb, As, Cd, Cr, Pb and Hg in vegetables
- ★ About 620 samples
- ★ reporting limits: lower limits for Pb and Hg (see next slide)

★ 1 to 6 Heavy metals

- ★ 1 year contract (till Oct 2020) for 1 to 6 heavy metals out of Sb, As, Cd, Cr, Pb and Hg in miscellaneous foods
- ★ About 2090 samples
- ★ reporting limits: see next slide

Issued Contracts (Heavy Metals) (5)

New Standard – Phase I

[NEW!]

☀ Reporting limits

| | 6M in Vegetables | 1-6M in Misc Foods |
|----------------------------|------------------|--------------------|
| Arsenic (as total arsenic) | 0.1 mg/kg | 0.1 mg/kg |
| Antimony | 0.2 mg/kg | 0.2 mg/kg |
| Cadmium | 0.02 mg/kg | 0.02 mg/kg |
| Chromium | 0.2 mg/kg | 0.2 mg/kg |
| Lead | 0.05 mg/kg | 0.1 mg/kg |
| Mercury (as total mercury) | 0.01 mg/kg | 0.03 mg/kg |

Way Forward:
Outsourcing Contracts
in 2020-21

Outsourcing Contracts in 2020-21 (1)

- ✦ Around 124,000 tests
- ✦ Some contracts begin in April 2020
 - ✦ invitations to quotation will be sent in January /February 2020
- ✦ Contract period
 - ✦ 6 months to 1 year

Technical Specifications (1)

("Entry requirements")

Accreditation – scope and reporting limits

PART 5
TECHNICAL SPECIFICATIONS

2. Service Provider shall be accredited by Hong Kong Accreditation Service (HKAS) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) or by an accreditation body with which HOKLAS has concluded mutual recognition agreements/arrangements (MRA), before the Quotation Closing Date, with the Scope of Accreditation including the testing of residues of 19 pesticides in cereal grains.

XX Accreditation body

Name of accreditation body

Note.
Please provide:

- (i) a copy of notification letter / accreditation certificate(s) pertaining to the test scope as in Clause 3 of Terms of Quotation,
- (ii) a summary of test methods accredited by the accreditation body for the provision of service, including the reporting limits and measurement uncertainties of all test parameters as given in the Services Specifications,
- (iii) contact information (e.g. email address) of the accreditation body, if other than HKAS;
- (iv) other relevant documents deemed necessary for quotation evaluation.

| Column 4 | Column 5 |
|---|---|
| Required Reporting Limit (mg/kg) | Service Provider's Reporting Limit (mg/kg) |
| 0.05 | 0.01 |
| 0.1 | 0.1 |

| No. | Pesticide | Residue definition | Column 4 | Column 5 | Compliance (tick as appropriate) | |
|-----|---------------------|---|----------------------------------|--|----------------------------------|----|
| | | | Required Reporting Limit (mg/kg) | Service Provider's Reporting Limit (mg/kg) | Yes | No |
| 1 | Atrazine | Atrazine | 0.05 | | | |
| 2 | Carfentrazone ethyl | Sum of carfentrazone-ethyl and carfentrazone-chloropropionic acid (alpha,2-dichloro-5-(4-difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl)-4-fluorobenzenepropionic acid) | 0.1 | | | |

Technical Specifications (2)

("Entry requirements")

Accreditation – scope and reporting limits

2. Service Provider shall be accredited by Hong Kong Accreditation Service (HKAS) under Hong Kong Laboratory Accreditation Scheme (HOKLAS) or by an accreditation body with which HOKLAS has concluded mutual recognition agreements/arrangements (MRA), before the Quotation Closing Date, with the Scope of Accreditation including the testing of residues of 19 pesticides in cereal grains.

Name of accreditation body: **XX Accreditation body**

Note:
Please provide:

- (i) a copy of notification letter / accreditation certificate(s) pertaining to the test scope as in Clause 3 of Terms of Quotation,
- (ii) a summary of test methods accredited by the accreditation body for the provision of service, including the reporting limits and measurement uncertainties of all test parameters as given in the Services Specifications,
- (iii) contact information (e.g. email address) of the accreditation body, if applicable.

a copy of notification letter / accreditation certificate(s) / extract of accreditation report(s) / confirmation from accreditation body pertaining to the test scope and the most updated accredited reporting limit(s) as in clause 3 of Terms of Quotation.

< **GL may verify the submitted information with relevant accreditation bodies >

Appendix I of accreditation report

Page 1 of 1
Appendix I

Scope of Assessment:
Government Laboratory – Analytical and Advisory Services Division
政府化驗所 – 分析及諮詢事務部

| Government Laboratory | | | | Reporting limit |
|-----------------------|---|---|--|-----------------|
| TEST CATEGORY 測試類別 | ITEMS, MATERIALS OR PRODUCTS TESTED 測試項目、材料或產品 | SPECIFIC TESTS OR PROPERTIES MEASURED 特定測試或量度的特性 | SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED 規範、標準方法或應用技術 | |
| | Food | | | |
| | Fish | Methylmercury ✓ | Toxane Methods GL-TE-96 (LC-ICP-MS) | 0 mg/kg |
| | Drinking Water | Chloramine V ✓ | Toxane Methods GL-TE-97 (LC-ICP-MS) | 0.1 µg/L |
| | Rice | Inorganic arsenic ✓ | Toxane Methods GL-TE-100 (HG-ICP-MS) | 0.1 mg/kg |

Technical Specifications (1)

("Entry requirements")

Proficiency Test

- ★ At least one *Proficiency Test* in the past 12 months (calculated from closing date of quotation)
 - ★ *Proficiency Test* shall be organized by a proficiency test provider accredited in accordance with ISO/IEC 17043:2010 or equivalent
- ★ *Satisfactory positive results in the PT*
 - ★ results that were correctly quantified with z-scores within the range of ± 2.0 in Proficiency Tests
- ★ Within test scope of Service Specifications

Other General Requirements

- ✦ **Maintain accreditation status**
 - ✦ maintaining the accreditation status (i.e. scope and reporting limit) from application to the end of contract period
- ✦ **Test sample collection**
 - ✦ within 1 working day upon notification
 - ✦ at specified locations
- ✦ **Report results within specified period**
- ✦ **Retention / return of remaining test samples**

Outsourcing: Test Areas

- ✱ Food additives
- ✱ Pesticide residues
- ✱ Veterinary drug residues
- ✱ Heavy metals
- ✱ Other contaminants

Contracts on Additives (1)

★ Sulphur dioxide and other preservatives

- ★ About 3 contracts
- ★ Different combinations of :
 - SO₂
 - SO₂ + 2 or 3 acids (benzoic acid, sorbic acid, with or without salicylic acid) + 3 parabens
- ★ about 3,300 samples total
- ★ reporting limits: 8 mg/kg for SO₂, 30 mg/kg for parabens and 50 mg/kg for acids

Contracts on Additives (2)

- ✦ Propionic acid in flour confectionary (~210 samples)
 - ✦ reporting limit: 50 mg/kg
- ✦ Nitrate / nitrite in meat, meat products and dairy products (~495 samples)
 - ✦ reporting limit: 30 mg/kg as NaNO_3 and 5 mg/kg as NaNO_2

Contracts on Veterinary Drug Residues

- ✦ Chloramphenicol in meat and aquatic products (~690 samples)
 - ✦ reporting limit: 0.3 $\mu\text{g}/\text{kg}$
- ✦ Malachite green in aquatic products (~660 samples)
 - ✦ reporting limit: 0.5 $\mu\text{g}/\text{kg}$ for MG or LMG

Contracts on Other Contaminants

- ✱ Sudan dyes in general foodstuffs (~1,045 samples)
 - ✱ Sudan I, II, III, IV, Sudan Orange G, Sudan Red 7B and Dimethyl Yellow
 - ✱ reporting limit : 20 µg/kg each
- ✱ Melamine in general foodstuffs (~420 samples)
 - ✱ reporting limit: 1 mg/kg
- ✱ Boric acid in general foodstuffs (~95 samples)
 - ✱ reporting limit: 50 mg/kg,

Contracts on Heavy Metals (1)

★ April – October 2020

- ★ Cap 132V Amended Regulation Phase I
- ★ New Standard – fresh/chilled food
- ★ Old Standard – other food

★ November 2020 onwards

- ★ Full implementation of Amended Regulation
- ★ New Standard – all food
- ★ Include preserved food, compounded food, cereals, etc.
- ★ Invitations to be sent in Sep/Oct 2020

★ over 8,000 samples in total

Contracts on Heavy Metals (2)

Old Standard

- ✦ 7M / 4M / 1M heavy metals in general foodstuffs
- ✦ ~3500 samples; 2 to 3 contracts
- ✦ Contract period: Apr to Oct 2020 (7 months)

| Analyte | Reporting Limits |
|---------------|---|
| Antimony (Sb) | 0.2 ppm |
| Arsenic (As) | 0.1 ppm (0.132 ppm as As_2O_3) |
| Cadmium (Cd) | 0.02 ppm |
| Chromium (Cr) | 0.2 ppm |
| Lead (Pb) | 0.1 ppm |
| Mercury (Hg) | 0.03 ppm |
| Tin (Sn) | 10 ppm |

Contracts on Heavy Metals (3)

New Standard – Phase I

- ☀ 6 Heavy metals in vegetables with lower limits
- ☀ Contract period: Apr to Oct 2020 (7 months)

| Analyte | Reporting Limits |
|--------------------------------------|------------------|
| Arsenic (expressed as total arsenic) | 0.1 mg/kg |
| Antimony | 0.2 mg/kg |
| Cadmium | 0.02 mg/kg |
| Chromium | 0.2 mg/kg |
| Lead | 0.05 mg/kg |
| Mercury (expressed as total mercury) | 0.01 mg/kg |

Contracts on Heavy Metals (4)

New Standard – Phase I

- ★ Ongoing contracts till Oct 2020 (awarded in FY2019-20)
 - ★ Inorganic arsenic in aquatic animals
 - ★ Methylmercury in fish
 - ★ 1-6 heavy metals in miscellaneous foods

Contracts on Heavy Metals (5)

New Standard – Full implementation

- ☀ Inorganic arsenic [NEW!]
 - ☀ Matrices: rice and aquatic products
 - ☀ reporting limit: 0.1 mg/kg
 - ☀ Contract period: from Nov 2020

- ☀ Methylmercury
 - ☀ Matrix: fish
 - ☀ reporting limit: 0.5 mg/kg
 - ☀ Contract period: from Nov 2020

Contracts on Heavy Metals (6)

New Standard – Full implementation

- ★ **NEW** contracts will include Tin
- ★ About 3 to 4 contracts
- ★ Contract period: from Nov 2020

| | Lower reporting limits | Regular reporting limits |
|----------------------------|------------------------|--------------------------|
| Arsenic (as total arsenic) | 0.1 mg/kg | 0.1 mg/kg |
| Antimony | 0.2 mg/kg | 0.2 mg/kg |
| Cadmium | 0.02 mg/kg | 0.02 mg/kg |
| Chromium | 0.2 mg/kg | 0.2 mg/kg |
| Lead | 0.05 mg/kg | 0.1 mg/kg |
| Mercury (as total mercury) | 0.01 mg/kg | 0.03 mg/kg |
| Tin | 10 mg/kg | 10 mg/kg |

Contracts on Pesticide Residues

- 7 contracts similar to FY 2019-20
- ~2,600 samples in total
- Cover residues definition (unless otherwise stated in service specifications)
- Reporting limit: according to MRL on quotation documents
- Depend on testing capability of service providers at time of launch

Survey on Pesticide Residues Testing

- Survey on pesticide residues testing will be conducted in December 2019
 - Multi-residue test methods
 - Food matrices: - Fruit and vegetables
 - Cereal grains

GL's proficiency test (PT) programmes

- ✦ PT programmes (current)
 - ✦ Boric acid in food
 - ✦ Propionic acid in flour confectionery
 - ✦ Inorganic arsenic in seafood

The background is a dark blue gradient with a repeating pattern of stylized Erlenmeyer flasks. Each flask is centered within a circular frame that has several concentric lines radiating from its top edge, resembling a ripple effect. The flasks and circles are rendered in a lighter shade of blue, creating a subtle, textured pattern.

Thank You