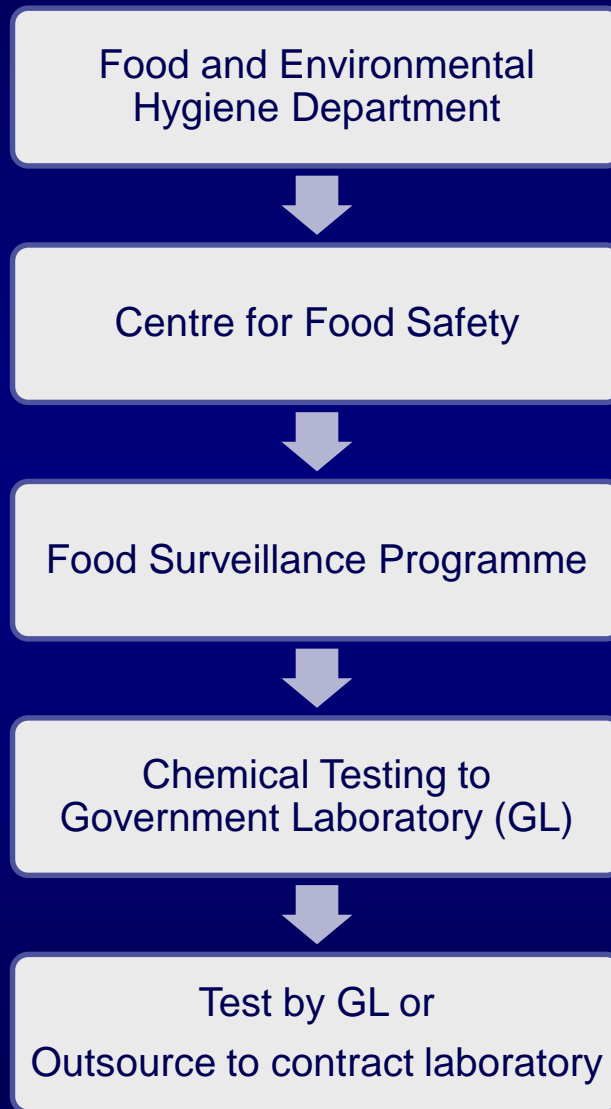




Briefing Session on
Outsourcing of
Food Tests:
Review and Way Forward

**Government Laboratory
October 2021**

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 recognised by HKAS under a mutual recognition arrangement (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*”

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
 - ✦ 20 – 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



ISO 14001 Certification

- ✦ GL has since 1998 established, implemented, maintained and continually improved an environmental management system (EMS) in accordance with ISO 14001 standard.
- ✦ Survey on Environmental Protection 2021
- ✦ Environmental friendly approach (e.g. chemical waste handled by ISO 14001 certified company)

Review of Outsourcing Contracts in 2021-22

Outsourcing in 2021-22

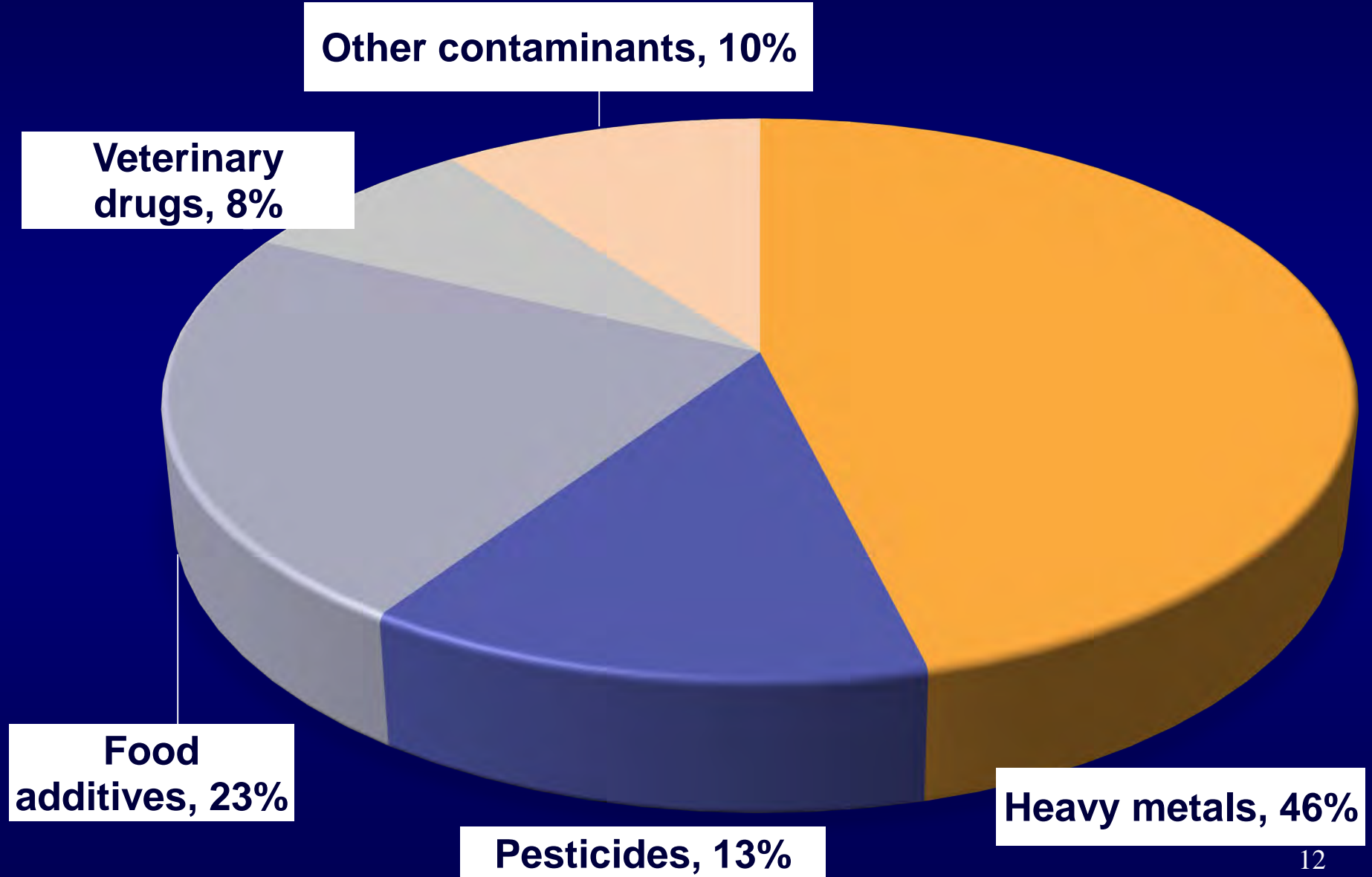
★ 22 contracts

- ★ total about 125,000 tests
- ★ contract period: 5 months to 1 year
- ★ Quotation exercises ended in Oct 2021

★ Invitations to quotation

- ★ Phase I , December 2020/January 2021 (7 contracts)
- ★ Phase II, February 2021 (9 contracts)
- ★ Phase III, May 2021 (3 contracts)
- ★ Phase IV, June 2021 (2 contracts)
- ★ Phase V, September 2021 (1 contract)

SAMPLE DISTRIBUTION IN 2021-22



CAP 132 Public Health and Municipal Services Ordinance

- ✱ CAP 132H Colouring Matter in Food Regulations
- ✱ CAP 132V Food Adulteration (Metallic Contamination) Regulations
- ✱ 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

Issued Contracts (Food Additives) (1)

★ Sulphur dioxide and other preservatives

- ★ 3 contracts in 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 3,200 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) in 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) in flour confectionery
- ★ about 210 samples
- ★ reporting limit: 50 mg/kg

Issued Contracts (Pesticides) (1)

- ✦ Pesticide Residues in Food Regulation (Cap 132CM)
- ✦ 6 contracts issued
- ✦ Test parameters: selected from
 - ✦ Survey on pesticide residue testing in December 2019
- ✦ Matrices: Fruit, vegetables and cereal grains
- ✦ Total no. of samples: About 2,300

Issued Contracts (Pesticides) (2)

☀ Pesticide residues

- ☀ residue definitions
- ☀ reporting limit: according to maximum residue limit (MRL) on quotation documents
- ☀ April 2021 to March 2022 (3 Contracts)
 - List 21A (79 pesticides) in fruit and vegetables, about 500 samples
 - List 21B (32 pesticides) in fruit and vegetables, about 500 samples
 - List 21C (53 pesticides) in cereal grain, about 255 samples

Issued Contracts (Pesticides) (3)

☀ Pesticide residues

☀ August 2021 to January 2022 (2 Contracts)

- List 21D (40 pesticides) in vegetables, about 105 samples
- List 21E (75 pesticides) in fruit and vegetables, about 515 samples

☀ November 2021 to March 2022 (1 Contract)

- List 21F (61 pesticides) in fruit and vegetables, about 435 samples

Issued Contracts (Veterinary Drug Residues)

★ Chloramphenicol

- 1 contract (1 year) for meat and aquatic products
- about 670 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 675 samples
- reporting limit: MG and LMG: 0.5 $\mu\text{g}/\text{kg}$ each

Issued Contracts (Heavy Metals) (1)

☀ 1 to 7 Heavy metals in general foodstuffs

- ☀ 1 year contract for 1 to 7 heavy metals out of Sb, As, Cd, Cr, Pb, Hg and Sn in general foodstuffs
- ☀ About 2830 samples
- ☀ reporting limits: lower limits for Pb and Hg (see next slide)

☀ 1 to 6 Heavy metals in general foodstuffs

- ☀ 1 year contract for 1 to 6 heavy metals out of Sb, As, Cd, Cr, Pb and Hg in general foodstuffs
- ☀ About 1320 samples
- ☀ reporting limits: lower limits for Pb and Hg (see next slide)

Issued Contracts (Heavy Metals) (2)

- ★ 1 to 7 Heavy metals in miscellaneous foods
 - 1 year contract for 1 to 7 heavy metals out of Sb, As, Cd, Cr, Pb, Hg and Sn in miscellaneous foods
 - About 2550 samples
 - reporting limits: see next slide

Issued Contracts (Heavy Metals) (3)

☀ Reporting limits

	HMs in General Foodstuffs	HMs 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
Tin	10 mg/kg	10 mg/kg

Issued Contracts (Heavy Metals) (4)

☀ Inorganic arsenic

- ☀ 1 year contract for inorganic arsenic in rice and aquatic products
- ☀ About 900 samples
- ☀ reporting limits: 0.1 mg/kg

☀ Methylmercury

- ☀ 1 year contract for methylmercury in fish
- ☀ About 430 samples
- ☀ reporting limits: 0.5 mg/kg

Issued Contracts (Other Contaminants) (1)

★ Sudan Dyes

- 1 contract (1 year) in general foodstuffs
- Sudan I, II, III, IV, Sudan Orange G, Sudan Red 7B, Dimethyl Yellow
- about 1,070 samples
- reporting limits: 20 µg/kg each

★ Melamine

- 1 contract (1 year) in general foodstuffs
- about 415 samples
- reporting limit: 1 mg/kg

Issued Contracts (Other Contaminants) (2)

✦ Boric acid

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

✦ Aflatoxins

- ✦ 1 contract (12 months) in oils, nuts and cereals
- ✦ about 185 samples
- ✦ reporting limit: 0.5 ug/kg each of aflatoxin B1, B2, G1, G2

Way Forward:
Outsourcing Contracts
in 2022-23

Outsourcing Contracts in 2022-23

- ✦ Around 124,000 tests
- ✦ Some contracts begin in April 2022
 - ✦ invitations to quotation will be sent in January / February 2022
- ✦ 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 Required Reporting Limit (mg/kg)	Column 5 Service Provider's Reporting Limit (mg/kg)	Compliance (tick as appropriate)	
					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-fluorobenzenepropanoic 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 – 分析及諮詢服務部

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 規范、標準方法或技術名稱	
FOOD				
	Flour	Multi-elementary	Reference Method: GL/TE/96/IC/27-001	0 mg/kg
	Dusting wheat	Chlorophyll Vb	Reference Method: GL/TE/97/IC/26P-001	0.1 mg/l
	Wheat	Impurity: arsenic	Reference Method: GL/TE/00/08/26/26P-001	0.1 mg/kg

Technical Specifications (3)

("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
- ★ About 3,300 samples in total
- ★ Different combinations of :
 - ★ SO₂
 - ★ SO₂ + 2 or 3 acids (benzoic acid, sorbic acid, with or without salicylic acid) + 3 parabens
- ★ 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 (About 210 samples)
 - ✱ reporting limit: 50 mg/kg
- ✱ Nitrate / nitrite in meat, meat products and dairy products (About 495 samples)
 - ✱ reporting limit: 30 mg/kg as NaNO_3 and 5 mg/kg as NaNO_2

Contracts on Pesticide Residues

- About 6 contracts planned for FY 2022-23
- About 2,300 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

Contracts on Veterinary Drug Residues

- ✱ Chloramphenicol in meat and aquatic products
(About 690 samples)
 - ✱ reporting limit: 0.3 $\mu\text{g}/\text{kg}$
- ✱ Malachite green in aquatic products
(About 675 samples)
 - ✱ reporting limit: 0.5 $\mu\text{g}/\text{kg}$, each for MG or LMG

Contracts on Heavy Metals (1)

- ✦ About 8,000 samples in total
- ✦ Inorganic arsenic
 - ✦ Matrices: rice and aquatic products
 - ✦ reporting limit: 0.1 mg/kg
 - ✦ Contract period: Apr 2022 – Mar 2023
- ✦ Methylmercury
 - ✦ Matrix: fish
 - ✦ reporting limit: 0.5 mg/kg
 - ✦ Contract period: Apr 2022 – Mar 2023

Contracts on Heavy Metals (2)

- ✦ About 3 contracts with 2 including Tin
- ✦ Contract period: Apr 2022 – Mar 2023

	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 Other Contaminants (1)

- ★ Sudan dyes in general foodstuffs (About 1,070 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 (About 420 samples)
 - ★ reporting limit: 1 mg/kg
- ★ Boric acid in general foodstuffs (About 95 samples)
 - ★ reporting limit: 50 mg/kg

Contract on Other Contaminants (2)

– Total Aflatoxin

- ✦ Aflatoxin in oils, nuts and cereal (About 185 samples)
 - ✦ Aflatoxin B1, B2, G1, G2
 - ✦ reporting limit : 0.5 $\mu\text{g}/\text{kg}$ each
- ✦ Confirmation by MS/MS technique
- ✦ Contract period – 12 months

Harmful Substance in Food (Amendment) Regulation 2021 (Cap 132AF)

✿ Amendments, such as

✿ Aflatoxins, total

- Sum of aflatoxins B1, B2, G1, G2
- 10 ug/kg to 15 ug/kg

✿ Melamine

✿ Others

✿ Please visit the website of CFS for the relevant technical information:

https://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/whatsnew_fstr_Food_Regulations_Harmful_Substances.html

Survey on Pesticide Residues Testing

- Survey on pesticide residues testing will be conducted in December 2021
 - 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



Thank You