



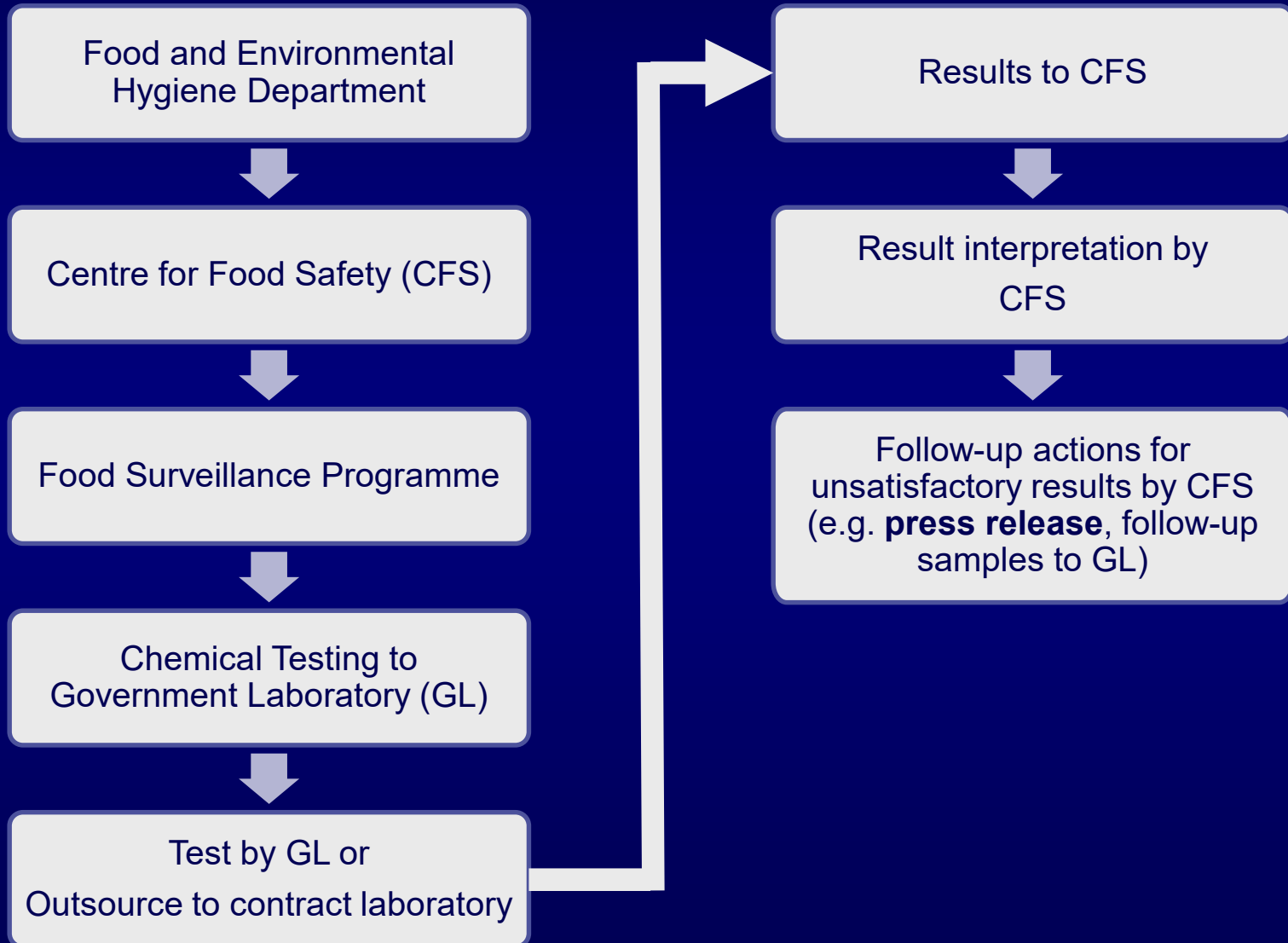
Briefing Session on
Outsourcing of
Food Tests:
Review and Way Forward

Government Laboratory
November 2023

Outline

- ✦ Food Monitoring and Handling of Test Results
- ✦ Review of Outsourcing Contracts in 2023-2024
- ✦ Way Forward: Outsourcing Contracts in 2024-2025

Food Monitoring



Handling of test results from contract laboratories (1)



Review Test Report

Review QC



Follow-up

Handling of test results from contract laboratories (2)

★ Test reports

- HOKLAS endorsed reports or reports 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, matrix spike, duplicate, laboratory control samples, etc.

★ Information (e.g. photos) on the appearance, labelling 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

- ★ Measurement uncertainty
- ★ Repeated analysis
- ★ Confirmation (by second technique or changes of instrumental conditions, e.g. another column)
- ★ Return remaining samples to GL

Handling of test results from contract laboratories (5)

★ Follow-up

- ★ 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*”

Handling of test results from contract laboratories (6)

★ Follow-up

- Other requirements specified in regulations (Example: Sulphur dioxide)
 - Preservatives in Food Regulation (Cap. 132BD) :
 - *Specific preservatives/antioxidants not exceeding the maximum permitted level are allowed to be used as food additives in the corresponding foods in Hong Kong.*
 - Food and Drugs (Composition and Labelling) Regulations (Cap. 132W) :
 - *If the food contains sulphite (sulphur dioxide) in a concentration of 10 parts per million or more, the name and functional class of the sulphite shall be specified in the list of ingredients.*

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 – 150 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

Review of Outsourcing Contracts in 2023-24

Outsourcing in 2023-24

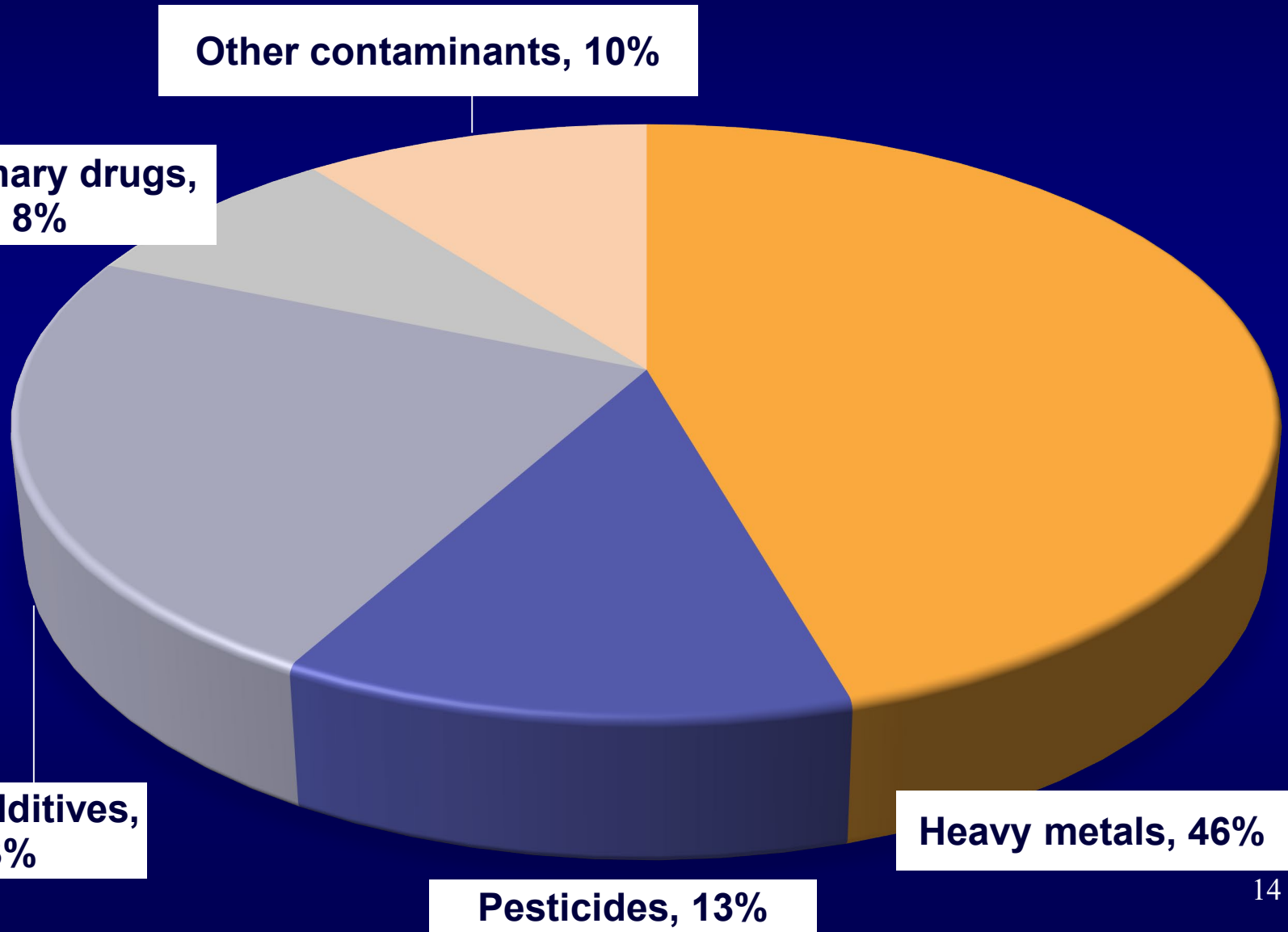
★ 22 contracts

- ★ Total about 18,000 samples
- ★ Contract period: from 5 months to 1 year
- ★ Quotation exercises ended in September 2023

★ Invitations to quotation

- ★ Phase I , January 2023 (8 contracts)
- ★ Phase II, February 2023 (8 contracts)
- ★ Phase III, May 2023 (3 contracts)
- ★ Phase IV, June 2023 (2 contracts)
- ★ Phase V, August 2023 (1 contract)

SAMPLE DISTRIBUTION IN 2023-24



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 3,210 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 750 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
- ✱ Matrices: Fruit, vegetables and cereal grains
- ✱ Total no. of samples: About 2,240

Issued Contracts (Pesticides) (2)

☀ Pesticide residues

- ☀ Residue definitions
- ☀ Reporting limit: according to maximum residue limit (MRL) on quotation documents
- ☀ April 2023 to March 2024 (3 Contracts)
 - List 23A (79 pesticides) in fruit and vegetables, about 490 samples
 - List 23B (32 pesticides) in fruit and vegetables, about 490 samples
 - List 23C (62 pesticides) in cereal grain, about 510 samples

Issued Contracts (Pesticides) (3)

☀ Pesticide residues

- ☀ August 2023 to January 2024 (2 Contracts)
 - List 23D (40 pesticides) in vegetables, about 110 samples
 - List 23E (78 pesticides) in fruit and vegetables, about 370 samples

- ☀ November 2023 to March 2024 (1 Contract)
 - List 23F (66 pesticides) in fruit and vegetables, about 290 samples

Issued Contracts (Veterinary Drug Residues)

★ Chloramphenicol

- ★ 1 contract (1 year) for meat and aquatic products
- ★ About 730 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 750 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 2870 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 1330 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 2540 samples
 - Reporting limits: see next slide

Issued Contracts (Heavy Metals) (3)

☀ Reporting limits

	1-7M (LL) ~2870 samples	1-6M (LL) ~1330 samples	1-7M (HL) ~2540 samples
	Vegetables, Compounded food, etc	Cereals	Meat, Fruit, etc
Arsenic (as total As)	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg
Antimony	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg
Cadmium	0.02 mg/kg	0.02 mg/kg	0.02 mg/kg
Chromium	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg
Lead	0.05 mg/kg	0.05 mg/kg	0.1 mg/kg
Mercury (as total Hg)	0.01 mg/kg	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 940 samples
- ☀ Reporting limits: 0.1 mg/kg

☀ Methylmercury

- ☀ 1 year contract for methylmercury in fish
- ☀ About 490 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 and liquid infant formula
- ★ About 460 samples
- ★ Reporting limit: 1 mg/kg (General foodstuff)
- ★ Reporting limit: 0.15 mg/kg (Liquid infant formula)

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 240 samples
- ✦ Reporting limit: 0.5 ug/kg each of aflatoxin B1, B2, G1, G2

Way Forward:
Outsourcing Contracts
in 2024-25

Outsourcing Contracts in 2024-25

- ✦ Around 18,400 samples
- ✦ Some contracts begin in April 2024
 - ✦ Invitations to quotation will be sent in January / February 2024
- ✦ Contract period
 - ✦ From 5 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-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

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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 規格、標準方法或應用技術	
FOOD				
	Fish	Multiresidue ✓	In-house Methods GL-TE-96 (LC-ECF-M5)	0 ug/kg
	Drinking Water	Chlorine(VI) ✓	In-house Methods GL-TD-97 (LC-ECF-M5)	0.1 ug/L
	Rice	Inorganic arsenic ✓	In-house Methods GL-TD-100 (HG-ECF-M5)	0.1 ug/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 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 3,250 samples in total
- ★ Three 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 900 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 2024-25
- About 2,350 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 770 samples)
 - ✱ Reporting limit: 0.3 µg/kg
- ✱ Malachite green in aquatic products
(About 790 samples)
 - ✱ Reporting limit: 0.5 µg/kg, each for MG or LMG

Contracts on Heavy Metals (1)

- ✱ About 8,250 samples in total
- ✱ Three contracts on heavy metals (total) from one to seven metals
- ✱ One contract on inorganic arsenic
- ✱ One contract on methylmercury

Contracts on Heavy Metals (2)

- ★ Three contracts with two including Tin
- ★ Contract period: Apr 2024 – Mar 2025

	1-7M (LL) ~2870 samples	1-6M (LL) ~1320 samples	1-7M (HL) ~2600 samples
	Vegetables, Compounded food, etc	Cereals	Meat, Fruit, etc
Arsenic (as total As)	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg
Antimony	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg
Cadmium	0.02 mg/kg	0.02 mg/kg	0.02 mg/kg
Chromium	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg
Lead	0.05 mg/kg	0.05 mg/kg	0.1 mg/kg
Mercury (as total Hg)	0.01 mg/kg	0.01 mg/kg	0.03 mg/kg
Tin	10 mg/kg	-----	10 mg/kg



Contracts on Heavy Metals (3)

☀ Inorganic arsenic (about 980 samples)

- Matrices: rice and aquatic products
- Reporting limit: 0.1 mg/kg
- Contract period: Apr 2024 – Mar 2025

☀ Methylmercury (about 510 samples)

- Matrix: fish
- Reporting limit: 0.5 mg/kg
- Contract period: Apr 2024 – Mar 2025

Contracts on Other Contaminants (1)

- ★ Sudan dyes in general foodstuffs (About 1,120 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 and liquid infant formula (About 320 samples)
 - ★ Reporting limit: 1 mg/kg for general foodstuffs; 0.15 mg/kg for liquid infant formula
- ★ Boric acid in general foodstuffs (About 95 samples)
 - ★ Reporting limit: 50 mg/kg

Contracts on Other Contaminants (2)

- ✦ Aflatoxin in oils, nuts and cereal (About 300 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

Test Parameters of Interest

- ✿ Cap132AF Harmful Substances in Food Regulations (Amendment) 2021
 - ✿ Nitrofurans (e.g. AOZ, AMOZ) in aquatic products
 - ✿ Synthetic hormones in meat
 - ✿ Beta-agonist (Clenbuterol & Salbutamol) in meat
 - ✿ Benzo(a)pyrene (BaP) in fat and oil
 - ✿ 3-MCPD in condiments
 - ✿ Patulin in apple juice & its beverage products
 - ✿ Deoxynivalenol (DON) in cereal-based food
- ✿ Cap132U Sweeteners in Food Regulations
 - ✿ Sweeteners in general foodstuff

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

- ✿ https://www.cfs.gov.hk/english/food_leg/food_leg.html

GL's proficiency test (PT) programmes

☀ PT programmes

- ☀ Boric acid in food
- ☀ Propionic acid in flour confectionery
- ☀ Benzoic acid in food
- ☀ Inorganic arsenic in aquatic product

https://www.govtlab.gov.hk/en/our_work/proficiency_testing_programmes.html



ISO 14001 Certification

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



Thank You