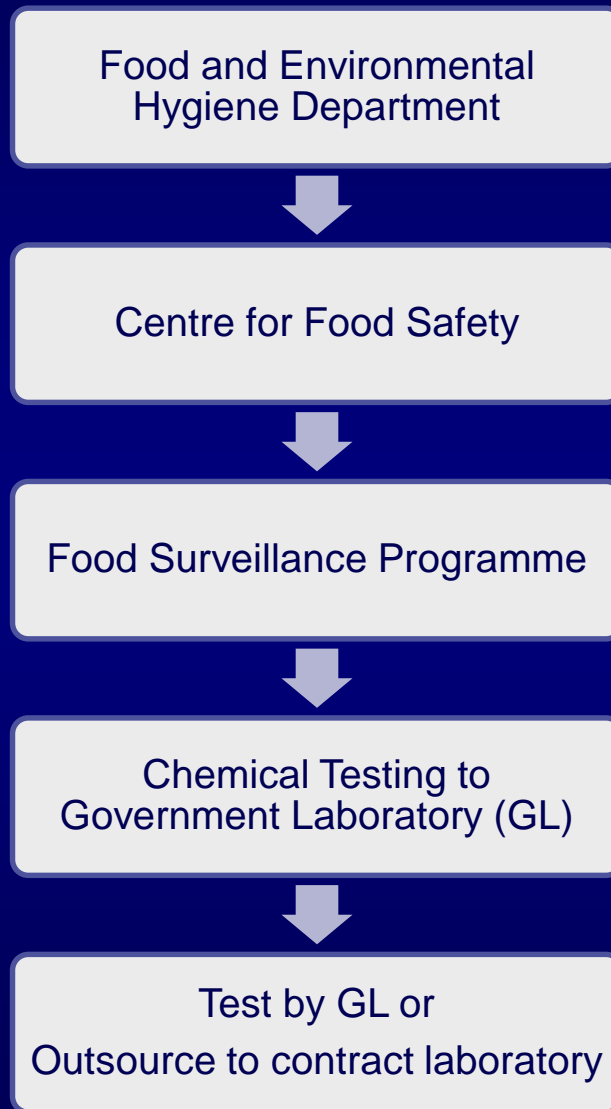




Briefing Session on  
Outsourcing of  
Food Tests:  
Review and Way Forward

**Government Laboratory  
November 2020**

# 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
  - ✦ 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



# Review of Outsourcing Contracts in 2020-21

# Outsourcing in 2020-21

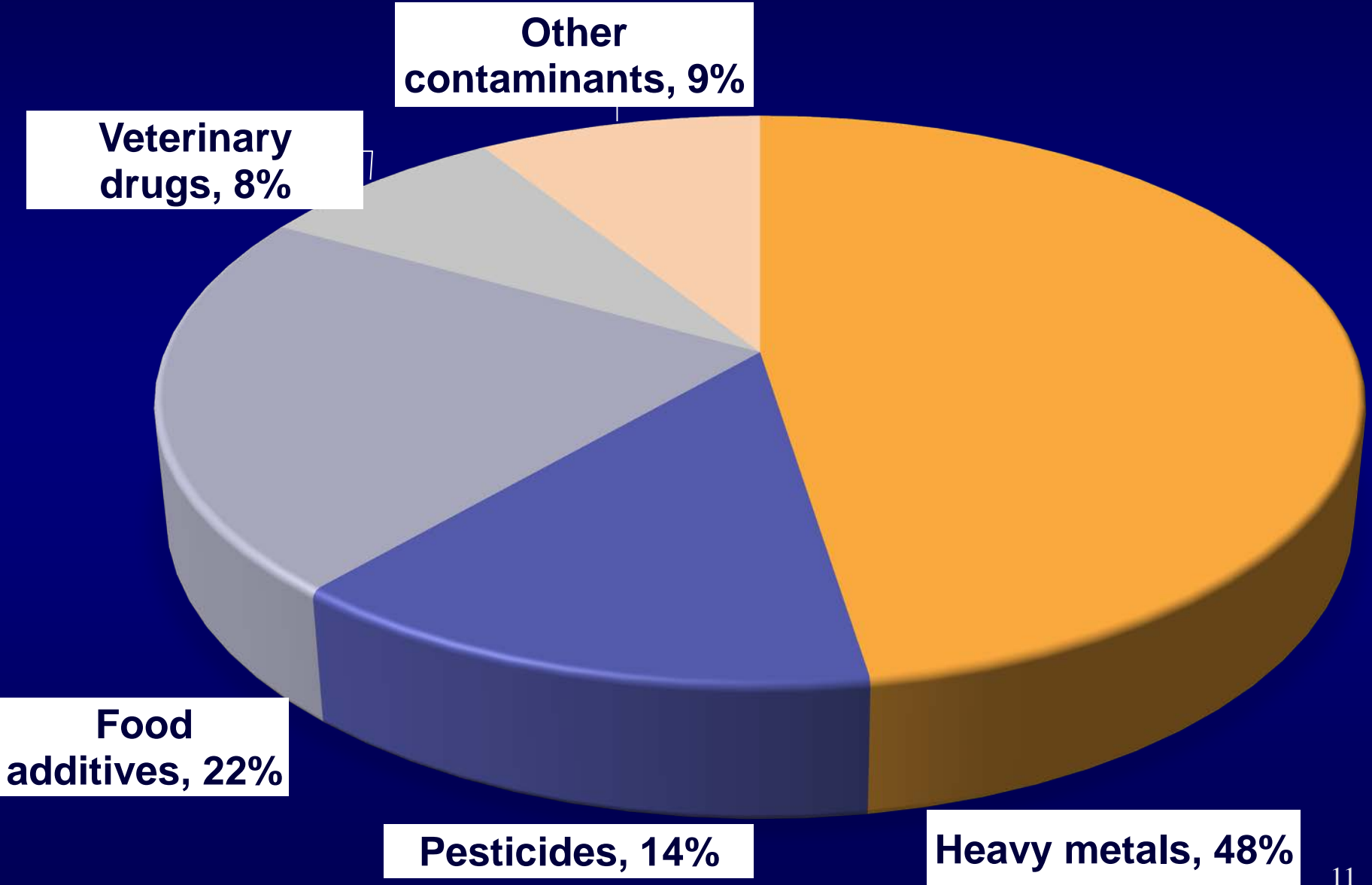
## ★ 28 contracts

- ★ total about 125,000 tests
- ★ contract period: 5 months to 1 year
- ★ Quotation exercises ended in Oct 2020

## ★ Invitations to quotation

- ★ Phase V, October 2019 (3 contracts)
- ★ Phase I, February 2020 (7 contracts)
- ★ Phase II, March 2020 (8 contracts)
- ★ Phase III, May 2020 (3 contracts)
- ★ Phase IV, July 2020 (2 contracts)
- ★ Phase V, October 2020 (5 contracts)

# SAMPLE DISTRIBUTION IN 2020-21



# 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 on general foodstuffs
- ★ SO<sub>2</sub> alone (1 year)
- ★ SO<sub>2</sub> + 3 acids (benzoic acid, sorbic acid, salicylic acid) + 3 parabens (1 year)
- ★ SO<sub>2</sub> + 2 acids (benzoic acid, sorbic acid) + 3 parabens (6 months)
- ★ Total about 3,200 samples
- ★ reporting limits: 8 mg/kg for SO<sub>2</sub>, 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  $\text{NaNO}_2$ ) and 30 mg/kg for nitrate (as  $\text{NaNO}_3$ )

## ★ 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)
- ✦ 7 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 2,600

# Issued Contracts (Pesticides) (2)

## ☀ Pesticide residues in fruit and vegetables

- ☀ residue definitions
- ☀ reporting limit: according to maximum residue limit (MRL) on quotation documents
- ☀ April 2020 to March 2021 (4 Contracts)
  - List 20A (40 pesticides) in fruit and vegetables, about 475 samples
  - List 20B (30 pesticides) in fruit and vegetables, about 495 samples
  - List 20C (39 pesticides) in fruit and vegetables, about 525 samples
  - List 20D (43 pesticides) in cereal grain, about 210 samples



# Issued Contracts (Pesticides) (3)

## ☀ Pesticide residues

### ☀ August 2020 to January 2021 (2 Contracts)

- List 20E (40 pesticides) in vegetables, about 105 samples
- List 20F (75 pesticides) in fruit and vegetables, about 405 samples

### ☀ November 2020 to March 2021 (1 Contract)

- List 20G (70 pesticides) in fruit and vegetables, about 335 samples

# Issued Contracts (Veterinary Drug Residues)

## ★ Chloramphenicol

- 1 contract (1 year) for meat and aquatic products
- about 690 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

# CAP 132V Food Adulteration (Metallic Contamination) Regulations

Version date 1 Nov 2019

Food Adulteration (Metallic Contamination) Regulations

T-2  
Cap. 132V

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

**Contents**

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Last updated date  
1.11.2019

Food Adulteration (Metallic Contamination) Regulations

Schedule—Part 2

S-4  
Cap. 132V

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(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

[From Apr 2020 to Oct 2020]

- ✦ 7 Heavy metals
- ✦ 4 Heavy metals
- ✦ 1 Heavy metals

## ✦ 4 Contracts for New Standard

[From Apr 2020 to Oct 2020]

- ✦ 6 Heavy metals in vegetables

[From Nov 2019 to Oct 2020]

- ✦ Methylmercury in fish
- ✦ Inorganic arsenic in aquatic animals
- ✦ 1-6 Heavy metals in miscellaneous foods

# Issued Contracts (Heavy Metals) (2)

## ✦ 4 Contracts for New Standard

[From Nov 2020 to Mar 2021]

- ✦ Methylmercury in fish
- ✦ Inorganic arsenic in rice and aquatic products
- ✦ Heavy metals in general foodstuffs (1-7M)
- ✦ Heavy metals in miscellaneous food (1-7M)

# Issued Contracts (Heavy Metals) (3)

## Old Standard

### ★ 7 Heavy metals

- ★ 7 months contract (Apr – Oct 2020) for Sb, As, Cd, Cr, Pb, Hg and Sn in miscellaneous foods
- ★ About 1,600 samples
- ★ reporting limits: 0.02 mg/kg – 10 mg/kg

### ★ 4 Heavy metals

- ★ 7 months contract (Apr – Oct 2020) for any 4 heavy metals out of Sb, As, Cd, Cr, Pb, Hg, and Sn in general foodstuffs
- ★ About 1,000 samples
- ★ reporting limits: 0.02 mg/kg – 10 mg/kg

# Issued Contracts (Heavy Metals) (4)

## Old Standard

- ★ 1 Heavy metal
  - 7 months contract (Apr – Oct 2020) for any 1 heavy metal out of Sb, As, Cd, Cr, Pb, Hg, and Sn in general foodstuffs
  - About 420 samples
  - reporting limits: 0.02 mg/kg – 10 mg/kg



# Issued Contracts (Heavy Metals) (5)

## New Standard – Phase I

### ☀ Inorganic arsenic

- ☀ 1 year contract (Nov 2019 – Oct 2020) for inorganic arsenic in aquatic animals
- ☀ About 400 samples
- ☀ reporting limits: 0.1 mg/kg

### ☀ Methylmercury

- ☀ 1 year contract (Nov 2019 – Oct 2020) for methylmercury in fish
- ☀ About 255 samples
- ☀ reporting limits: 0.5 mg/kg

# Issued Contracts (Heavy Metals) (6)

## New Standard – Phase I

### ★ 1 to 6 Heavy metals

- ★ 1 year contract (Nov 2019 – 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

### ★ 6 Heavy metals

- ★ 7 months contract (Apr – Oct 2020) for Sb, As, Cd, Cr, Pb and Hg in vegetables
- ★ About 620 samples
- ★ reporting limits: lower limits for Pb and Hg (see next slide)

# Issued Contracts (Heavy Metals) (7)

## New Standard – Phase I

### ☀ 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

# Issued Contracts (Heavy Metals) (8)

## New Standard – Phase II

### ☀ Inorganic arsenic

- 5 months contract (Nov 2020 – Mar 2021) for inorganic arsenic in rice and aquatic products
- About 325 samples
- reporting limits: 0.1 mg/kg

### ☀ Methylmercury

- 5 months contract (Nov 2020 – Mar 2021) for methylmercury in fish
- About 175 samples
- reporting limits: 0.5 mg/kg

# Issued Contracts (Heavy Metals) (9)

## New Standard – Phase II

- ✦ 1 to 7 Heavy metals (with lower Pb and Hg limits)
  - ✦ 5 months contract (Nov 2020 – Mar 2021) for 1 to 7 heavy metals out of Sb, As, Cd, Cr, Pb, Hg and Sn in general foodstuffs (mainly cereal and vegetables)
  - ✦ About 1470 samples
  - ✦ reporting limits: see next slide
- ✦ 1 to 7 Heavy metals
  - ✦ 5 months contract (Nov 2020 – Mar 2021) for 1 to 7 heavy metals out of Sb, As, Cd, Cr, Pb, Hg and Sn in miscellaneous foods
  - ✦ About 960 samples
  - ✦ reporting limits: see next slide

# Issued Contracts (Heavy Metals) (10)

## New Standard – Phase II

### ★ 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 (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 1,045 samples
- reporting limits: 20 µg/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



Way Forward:  
Outsourcing Contracts  
in 2021-22

# Outsourcing Contracts in 2021-22

- ✦ Around 124,000 tests
- ✦ Some contracts begin in April 2021
  - ✦ invitations to quotation will be sent in January / February 2021
- ✦ 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
<b>Required Reporting Limit (mg/kg)</b>	<b>Service Provider's Reporting Limit (mg/kg)</b>
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**

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	Multiresidue ✓	Toxams Methods GL-TE-96 (LC-ICP-MS)	0 mg/kg
	Drinking Water	Chloramine V1 ✓	Toxams Methods GL-TE-97 (LC-ICP-MS)	0.1 µg/L
	Rice	Inorganic arsenic ✓	Toxams Methods GL-TE-100 (HPLC-ICP-MS)	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  $\pm 2.0$  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 :
    - ✦ SO<sub>2</sub>
    - ✦ SO<sub>2</sub> + 2 or 3 acids (benzoic acid, sorbic acid, with or without salicylic acid) + 3 parabens
  - ✦ reporting limits: 8 mg/kg for SO<sub>2</sub>, 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  $\text{NaNO}_3$  and 5 mg/kg as  $\text{NaNO}_2$

# Contracts on Pesticide Residues

- About 6 contracts planned for FY 2021-22
- 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 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)

## New Standard – Full implementation

- ✦ About 8,650 samples in total
- ✦ Inorganic arsenic
  - ✦ Matrices: rice and aquatic products
  - ✦ reporting limit: 0.1 mg/kg
  - ✦ Contract period: Apr 2021 – Mar 2022
- ✦ Methylmercury
  - ✦ Matrix: fish
  - ✦ reporting limit: 0.5 mg/kg
  - ✦ Contract period: Apr 2021 – Mar 2022

# Contracts on Heavy Metals (2)

## New Standard – Full implementation

- ✦ About 2 contracts include Tin
- ✦ Contract period: Apr 2021 – Mar 2022

	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

- ★ Sudan dyes in general foodstuffs (About 1,045 samples)
  - ★ Sudan I, II, III, IV, Sudan Orange G, Sudan Red 7B and Dimethyl Yellow
  - ★ reporting limit : 20  $\mu\text{g}/\text{kg}$  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 under Planning

## Other Contaminants – Total Aflatoxin (NEW)

- ✦ Aflatoxin in oils, nuts and cereal (About 185 samples)
  - ✦ Aflatoxin B1, B2, G1, G2
  - ✦ reporting limit : 0.5 µg/kg each ( Tentative )
- ✦ Contract may begin in April 2021
  - ✦ invitations to quotation may be sent in January / February 2021
- ✦ Confirmation by MS/MS technique
- ✦ Proposed contract period – 12 months

# Harmful Substance in Food (Cap 132AF)

- ☀ Scheduled substances (as at 2008)

- ☀ Aflatoxin
- ☀ Malachite green
- ☀ Melamine
- ☀ Various veterinary drugs

- ☀ Keep an eye on the development



# 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**