Proposed Amendments to the Food Adulteration (Metallic Contamination) Regulations

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Metallic contaminants in food

- **Metals: naturally present and ubiquitous in the environment.**
- **Metallic contaminants: enter the food supply chain through environmental contamination or during food production process.**
- **May be present in food in trace amount.**
- **Ordinary adults: diet is one of the important sources of exposure to metallic contaminants.**
- **Adverse health effects: depend on the chemical nature, the amount and duration of individual exposure, etc.**
  - **Cadmium: chronic exposure may affect the kidney function. The International Agency for Research on Cancer classified cadmium and cadmium compounds as Group 1 agents (i.e. carcinogenic to human) upon occupational exposure.**
  - **Mercury: methylmercury exposure in the womb can adversely affect a baby's growing brain and nervous system.**
  - **Tin: acute effects resulting from consumption of canned foods and drinks with high levels of tin contamination may result in gastrointestinal symptoms such as abdominal pain, vomiting and diarrhoea.**

Regulation of metallic contamination in food in Hong Kong

- **Public Health and Municipal Services Ordinance (Cap. 132):-**
  - **Section 54: all food for sale must be fit for human consumption.**
- **Food Adulteration (Metallic Contamination) Regulations (Cap. 132V) (the Regulations):-**
  - **Regulation 3 prohibits the import, manufacture or sale etc., for human consumption, of any food containing any metal in such amount as to be dangerous or prejudicial to health.**

Regulation of metallic contamination in food in Hong Kong (Cont'd)

- **First and Second Schedules: 19 maximum permitted concentrations of 7 metallic contaminants, namely arsenic, antimony, cadmium, chromium, lead, mercury and tin, in food.**
- **Food categories of 4 metallic contaminants (namely arsenic, lead, mercury and tin) cover "all food in solid / liquid form".**

The Regulations

Schedule:	1	MAXIMUM PERMITTED CONCENTRATION OF CERTAIN METALS NATURALLY PRESENT IN SPECIFIED FOODS		30/06/1997

[regulation 3]

A Metal	B Description of food	C Maximum permitted concentration in parts per million
Arsenic (AS_2O_3)	Solids being fish and fish products	6
	Solids being shellfish and shellfish products	10

Schedule:	2	MAXIMUM PERMITTED CONCENTRATION OF CERTAIN METALS PRESENT IN SPECIFIED FOODS		30/06/1997

[regulation 3]

A Metal	B Description of food	C Maximum permitted concentration in parts per million
Antimony (Sb)	Cereals and vegetables	1
	Fish, crab-meat, oysters, prawns and shrimps	1
	Meat of animal and poultry	1
Arsenic (AS_2O_3)	Solids other than- (i) fish and fish products; and (ii) shellfish and shellfish products	1.4
	All food in liquid form	0.14
Cadmium (Cd)	Cereals and vegetables	0.1
	Fish, crab-meat, oysters, prawns and shrimps	2
	Meat of animal and poultry	0.2
Chromium (Cr)	Cereals and vegetables	1
	Fish, crab-meat, oysters, prawns and shrimps	1
	Meat of animal and poultry	1
Lead (Pb)	All food in solid form	6
	All food in liquid form	1
Mercury (Hg)	All food in solid form	0.5
	All food in liquid form	0.5
Tin (Sn)	All food in solid form	230
	All food in liquid form	230

Cover all food in solid/ liquid forms

Areas of concern (1)

- **The current Regulations were enacted in 1960 and the latest major amendments to the First and Second Schedules were made in 1983.**
  - **Some maximum permitted concentrations stipulated under the Regulations are not in line with the MLs adopted by Codex:-**
    - **A few standards are more stringent than those of Codex (e.g. cadmium in leafy vegetables).**
    - **Majority of the standards are less stringent than Codex (e.g. lead in meat of cattle, pigs and sheep).**

Areas of concern (2)

- **Different food descriptions and nomenclatures are used in the Regulations and the Codex standards:-**
  - **Maximum permitted concentrations for certain metallic contaminants for specified food, or all food in solid or liquid forms have been laid down under the Regulations whereas Codex standards for specified food / food groups have been established.**
  - **No interpretation of the food definitions as well as the portion of the food commodity to which the limit applies under the Regulation.**
    - ✓ **e.g. definition of leafy vegetables, as well as the types and scientific names of vegetables belonging to this food group, are available from the relevant Codex Classification.**
    - ✓ **Portion to which the ML applies: Whole commodity as usually marketed after removal of obviously decomposed or withered leaves.**

Areas of concern (3)

- **There is no interpretation in the Regulations on how the maximum permitted concentrations can be applied to food in a dried, dehydrated or concentrated form; as well as multi-ingredient products.**

The need to update the Regulations

- Better protecting public health;
- Facilitate effective regulation; and
- Promote harmonisation between local and international standards.

Proposed amendments

- To replace the existing food categories of "all food in solid / liquid form" with specific maximum levels (MLs) targeting individual food / food groups;
- To adopt Codex MLs unless otherwise justified;
- To establish MLs for food / food groups which are of significance to the population in Hong Kong and which there is no relevant Codex MLs;
- To update the food descriptions and nomenclatures in the Regulations, with reference to the available Codex's food descriptions and nomenclatures or those of other jurisdictions as appropriate; and
- To incorporate interpretation of MLs into the Regulations.

Factors being considered

- Codex's latest standards on metallic contamination.
- Relevant standards of other jurisdictions, such as Australia, Canada, the European Union, Japan, Korea, the Mainland, New Zealand, Singapore, the USA.
- Local food consumption pattern / dietary practices.
- Centre for Food Safety's (CFS) risk assessments results.

(i) To set specific MLs targeting individual food / food groups

- **Most jurisdictions nowadays do not set MLs for all types of food (including food in solid and liquid forms.**
- **In-line with Codex's principle: MLs should only be set for food / food groups in which the contaminants may be found in amounts that are significant for the total exposure of the general local population.**
- **Conducive to a more focused, tailor-made and proportionate regulation over metallic contamination in food.**
- **Calibrated in accordance with the known risks associated with the food item concerned.**

(ii) To adopt Codex MLs unless otherwise justified

- **Merits:-**
  - **Safeguard food safety.**
  - **Bring our regulatory practices in alignment with international standards.**
  - **Prevent possible trade barriers and disputes.**
- **All except 7 Codex MLs to be adopted**

(See slides 14-17)

(ii) To adopt Codex MLs unless otherwise justified (Cont'd)

- **The 7 Codex MLs of metallic contaminants in food which are not proposed to be adopted:-**
  - **Codex guideline level (GL) for methylmercury (MeHg) in predatory fish**
  - **Codex ML for cadmium in "rice, polished"**
  - **Five Codex MLs for tin in certain meat products in containers other than tinplate containers**

(a) Codex GL for MeHg in predatory fish

- **Existing ML: 0.5 mg/kg (Total Hg)**
- **Codex GLs: 1 mg/kg MeHg in predatory fish & 0.5 mg/kg MeHg in other fish**
- **Proposed ML: 0.5 mg/kg of MeHg in fish including predatory fish**
- **Rationale:-**
  - **1st Hong Kong Total Diet Study (HKTDS): about 11% of women aged 20-49 (childbearing age) had dietary exposure to MeHg exceeded the relevant HBGV, even though the average population was not at risk.**
    - **PTWI to protect the developing fotetus from neurotoxic effects: 1.6 µg/kg bw/week**
    - **General adult population: 3.3 µg/kg bw/week would not pose any risk of neurotoxicity**
  - **MeHg exposure during pregnancy is of a public concern due to potential health risks to foetus.**
  - **Fish is the major dietary source of MeHG.**
  - **The proposed ML is more stringent than Codex GL for predatory fish, but less stringent than existing ML – minimal impact on the fish supply. Will not compromise the local food safety.**
  - **CFS will continue delivering dietary advice to susceptible population subgroups.**

(b) Codex ML for cadmium in "rice, polished"

- **Existing ML: 0.1 mg/kg in cereals (including polished rice)**
- **Codex ML: 0.4 mg/kg in polished rice**
- **Proposed ML: 0.2 mg/kg in polished rice**
  - **Rationale:**
    - **Rice is a staple food in Hong Kong.**
    - **EU, Korea, The Mainland & Singapore: 0.2 mg/kg.**
    - **Japan supported the ML of 0.4 mg/kg because of the relatively high cadmium levels in some rice samples from Japan.**

(c) 5 Codex MLs for tin in certain meat products in containers other than tinplate containers

- Existing ML: 230 mg/kg (Tin in all food in solid/liquid form)
- Proposed ML: 250 mg/kg for tin in canned food (and one ML at 150 mg/kg in canned beverages)

Metal	Food categories	Codex standard (mg/kg)
Tin	Cooked cured chopped meat, cooked cured ham, cooked cured pork shoulder, corned beef and luncheon meat	50 (For products in containers other than tinplate containers)

- Rationales:-
  - Codex's MLs for the concerned meat products were established many years ago (in 1981). Not been adopted by other jurisdictions.
  - ML for tin at 250 mg/kg in canned food is adequate to safeguard food safety (i.e. tin contamination in containers other than tinplate containers is not expected).

(iii) To establish MLs for food / food groups which are of significance to the population in Hong Kong and which there is no relevant Codex MLs

- **Factors being taken into account:-**
  - **Local food consumption pattern / dietary practice;**
  - **Results of risk assessment studies and total diet study conducted locally in the past;**
  - **Recent food incidents in Hong Kong and other jurisdictions;**
  - **Relevant standards of other jurisdictions;**
  - **Codex's principle that contaminant levels in food shall be as low as reasonably achievable (i.e. ALARA);**
  - **Whether the proposed MLs are adequate to protect public health and comparable to the MLs adopted by other jurisdictions.**

(iv) To update the food descriptions and nomenclatures in the Regulations

- **How?**
  - **Make reference to the available Codex's food descriptions and nomenclatures or those of other jurisdictions as appropriate.**
- **Why?**
  - **Bring the Regulations in alignment with the internationally accepted food descriptions and nomenclatures.**
  - **Facilitate interpretation of the proposed metallic contamination levels under the Regulations by local and overseas stakeholders alike.**

(v) To incorporate interpretation of MLs into the Regulations

- **Codex MLs are set for primary agricultural products.**
- **Currently no interpretation in the Regulations on how the maximum permitted concentrations can be applied to food in a dried, dehydrated or concentrated form; as well as multi-ingredient products.**

(v) To incorporate interpretation of MLs into the Regulations (Cont'd)

- **Propose to follow Codex's guidance:-**
  - **When products are concentrated, dried or diluted, we will use the concentration or dilution factor to obtain a primary judgement of the contaminant levels in these processed products.**
  - **The maximum contaminant concentration in a multi-ingredient food can, likewise, be calculated from the composition of the food.**

Overview of the proposed MLs

- **Total number of metallic contaminants covered will increase from <u>7 to 14</u>**
  - **7 metals currently regulated under the regulations.**
  - **7 additional metals with Codex MLs set exclusively with regards to "natural mineral waters" and/or "bottled/packaged drinking waters (other than natural mineral waters)".**
    - **Not in food**

Overview of the proposed MLs (Cont'd)

- **Total number of MLs under the Regulations will increase from 19 to 145.**
- **Reason: the proposed new approach of replacing the existing food categories of "all food in solid / liquid form" with specific MLs targeting individual food / food groups.**

Metallic contaminant	Current Regulations (No. of MLs)	Proposed Amendments (No. of MLs)
Antimony	3	9
Arsenic	4	17
Cadmium	3	28
Chromium	3	10
Lead	2	52
Mercury	2	15
Tin	2	2
7 additional metals (i.e. (i) barium, (ii) boron, (iii) copper, (iv) manganese; (v) nickel, (vi) selenium and (vii) uranium)	0	12
Total	**19**	**145**

Overview of the proposed MLs (Cont'd)

- **Of the 145 proposed MLs:-**
  - **90 of them are more stringent than the existing maximum permitted concentrations.**
  - **6 of them are less stringent than the existing maximum permitted concentrations.**

Overview of the proposed MLs (Cont'd)

- Have set MLs for those types of food on an absolutely necessary basis only.
- For food / food groups without specific MLs under the Regulations, CFS will continue to conduct risk assessment to assess whether the food concerned will be dangerous or prejudicial to health.
- Strike a balance between safeguarding public health and avoiding undue regulation.

Implications on food supply

- **The proposed MLs are not likely to affect the food supply in Hong Kong in general.**
  - **According to the results of the routine food surveillance / baseline studies of CFS, the levels of metallic contamination in food available in local market can generally comply with the proposed MLs.**

Capability of local testing and laboratory sector

- **Capable of providing testing services for the metallic contaminants as proposed, provided that the sector is given sufficient time in advance to gear up for making available such testing services.**

Vegetable sector

- **Proposed MLs for vegetables cover antimony, arsenic, cadmium, chromium, lead, mercury, as well as tin (for canned food only)**
  - **Less stringent than existing maximum permitted concentrations [1]**
    - **Cadmium in leafy vegetables**
  - **More stringent than existing maximum permitted concentrations [17]**
    - **Arsenic in vegetables**
    - **Cadmium in bulb vegetables**
    - **Cadmium in Brassica vegetables**
    - **Cadmium in fruiting vegetables**
    - **Chromium in vegetables (except pulses)**
    - **Lead in bulb vegetables**
    - **Lead in Brassica vegetables**
    - **Lead in fruiting vegetables**
    - **Lead in leafy vegetables**
    - **Lead in legume vegetables**
    - **Lead in pulses**
    - **Lead in root and tuber vegetables**
    - **Lead in edible fungi**
    - **Mercury in vegetables**
    - **Mercury in edible fungi**

Vegetable sector (Cont'd)

- **Possible sources of contamination during crop production**
  - **Soil, water, fertilizers and soil additives, etc.**
- **Farmers are recommended to observe good agricultural practice (GAP)**

  [Ref: https://www.afcd.gov.hk/english/agriculture/agr_useful/agr_useful_gap/agr_useful_gap.html]

Vegetable sector (Cont'd)

- **Vegetable traders, importers, wholesalers and retailers are advised to:-**
  - **familiarise themselves with the requirements of the Regulation**
  - **seek clarification from their suppliers to make sure that the food sold complies with the requirements of the local legislation, and keep the transaction documents for record.**
- **CFS would consider providing briefings and guidelines for different sectors as and when appropriate.**

Way forward

- A 3-month public consultation exercise from 6 June 2017 to 5 September 2017.
- Please send your comments by letter, facsimile or e-mail to CFS on or before 5 September 2017:-

Centre for Food Safety

Food and Environmental Hygiene Department

43/F, Queensway Government offices,

66 Queensway, Hong Kong

Facsimile: (852) 2893 3547

E-mail address: metal_consulation@fehd.gov.hk

Public forums

- **Session 1**

  Date & Time: 11 July 2017 (Tue), 10:30am

  Venue: Assembly Hall,
  2/F, Lai Chi Kok Government Offices,
  19 Lai Wan Road,
  Lai Chi Kok, Kowloon

- **Session 2**

  Date & Time: 11 August 2017 (Fri), 10:30am

  Venue: Lecture Theatre,
  G/F, Hong Kong Central Library,
  66 Causeway Road,
  Causeway Bay, Hong Kong

Thank you!

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