

# Pesticide Residues in Food Regulation (Cap. 132CM)

**Centre for Food Safety**

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# Background

- ✿ The **Pesticide Residues in Food Regulation** (Regulation) came into operation on 1 August 2014 after a two-year grace period.
- ✿ There are two Schedules
  - ✦ Schedule 1 specifies a list of maximum residue limits / extraneous maximum residue limits for certain pesticide-food pairs (i.e. the maximum concentration of specified pesticide residues permitted in specified food commodities);
  - ✦ Schedule 2 specifies a list of exempted pesticides

# Background

- ✿ The general principle of the Regulation is that except for exempted pesticides, import or sale of food containing pesticide residues with no specified MRLs/EMRLs in Schedule 1 is only allowed if the consumption of the food concerned is not dangerous or prejudicial to health.
- ✿ In determining whether the consumption of a food is dangerous or prejudicial to health, the probability of known or potential adverse public health effects which may occur from dietary exposure of the general public to the pesticide residues concerned must be evaluated.

# Section 1

## ✿ Commencement

- ✿ This Regulation comes into operation on 1 August 2014.

# Section 2 (1)

## ✿ Interpretation

- ✿ To adopt Codex's definition of “pesticides” and other related terms
  - The main structure of the framework has taken reference from that of Codex
  - It defines terms, e.g., “pesticide” and “pesticide residue”, in a way consistent with Codex
  - Promote harmonisation of local and international standards

# Section 2 (2)

⊕ Including the following -

- Compounded food (合成食物)
- Exempted pesticide (獲豁免除害劑)
- Extraneous maximum residue limit (EMRL) (最高再殘餘限量)
- Maximum residue limit (MRL) (最高殘餘限量)
- Pesticide (除害劑)
- Pesticide residues (除害劑殘餘)
- Primary food commodity (原食品)
- Residue definition (殘餘物定義)

# Section 3

## ✿ Application

This Regulation does not apply to the food which is imported solely for the purpose of export if the food –

- (a) is air transhipment cargo; or
- (b) during the period between its import and export, remains in the vessel, vehicle or aircraft in which it was imported.

# Section 4 (1)

✿ Import and sale of food containing pesticide residues is **only allowed** if —

- ✿ the food and the pesticide residues concerned are specified in Schedule 1 and the amount of the residues does **not exceed the limit** specified in the Schedule;
- ✿ the pesticide residues concerned are residues of an **exempted pesticide** set out in Schedule 2; or
- ✿ the consumption of the food is **not dangerous or prejudicial to health**
  - for pesticide residues with no specified MRLs/EMRLs in Schedule 1 , and
  - not an exempted pesticide



# Section 4 (2)

## ✿ Special types of foods

### ✿ Section 5

- Food in a dried, dehydrated or concentrated food
- Food in other processed forms

### ✿ Section 6

- Compounded food

## ✿ Penalty

- ✿ Maximum penalty of a fine at level 5 (HK\$50,000) and imprisonment for 6 months

# Section 5

- ✿ Principles for determining MRL/EMRL for certain food (other than compounded food)
  - ⊕ Food in a dried, dehydrated or concentrated form
    - MRL/EMRL is to be adjusted proportionately by reference to the ratio between the weight of the food before and after dilution or reconstitution
  - ⊕ Food in other processed forms, e.g., rice flour
    - MRL/EMRL of the primary food commodity from which the food is derived is applicable to the food

# Section 6

## ✿ Principles for determining MRL/EMRL for compounded food

### ⊕ Pro-rata MRL/EMRL

- % of MRL/EMRL for the residue definition of the pesticide in respect of an ingredient that equals the % of the ingredient in the compounded food.

# Section 7

## ✿ Factors for determining safety of food with pesticide residues include –

- ✦ toxicological profile and safety reference values of the pesticide concerned;
- ✦ characteristics of the pesticide and level of the pesticide residues in the food concerned;
- ✦ consumption pattern of the food, and long-term and short-term dietary exposure data;
- ✦ any statutory requirement related to the food;
- ✦ information provided by an importer/supplier of the food;
- ✦ information, reports or testing results provided by a public analyst;
- ✦ information (including reports, decision documents) provided by an international food or health authority or food or health authority outside Hong Kong, etc.

# Section 8

- ✿ Provides that a prosecution of an offence under the Regulation may be brought in the name of DFEH.

# Schedule 1 (1)

- ✿ Sets out the maximum limits of certain pesticide residues that are allowed in certain food and the interpretation provisions for that Schedule
  - ⊕ consists of 360 pesticides and MRLs/EMRLs for over 7 000 pesticide-food pairs
    - Part 1: MRLs
    - Part 2: EMRLs

# Schedule 1 (2)

- ✿ Based primarily on the available standards recommended by Codex in 2011
  - ✿ supplemented by standards of the Mainland and other major food exporting countries to Hong Kong available at the time
  - ✿ taking into consideration comments received from stakeholders during the public consultation held in July to September 2011.
- ✿ These standards had been scrutinized by conducting risk assessment.

Column 1	Column 2	Column 3	Column 4	Column 5
Item	Pesticide	Residue definition	Description of food	Maximum residue limit (MRL) (mg/kg)
138.7	Fenpyroximate	Fenpyroximate	Cattle milk (F)	0.005
138.8	Fenpyroximate	Fenpyroximate	Cattle meat (Fat)	0.02
138.9	Fenpyroximate	Fenpyroximate	Cattle kidney	0.01
138.10	Fenpyroximate	Fenpyroximate	Cattle liver	0.01
138.11	Fenpyroximate	Fenpyroximate	Tree nuts	0.05
138.12	Fenpyroximate	Fenpyroximate	Melons, except watermelon	0.05
138.13	Fenpyroximate	Fenpyroximate	Cucumber	0.03
138.14	Fenpyroximate	Fenpyroximate	Fruiting vegetables, other than Cucurbits	0.2
139.1	Fenthion	Sum of fenthion, its oxygen analogue and their sulfoxides and sulphones, expressed as	Rice, husked	0.05

Schedule 1—Part 1

Pesticide Residues in Food Regulation

L.N. 7



# Interpretation of MRLs/EMRLs for Foods of Animal Origin (1)

## ✿ Part 3 of Schedule 1 - Certain meat or poultry meat

Column 1	Column 2	Column 3	Column 4	Column 5
Item	Pesticide	Residue definition	Description of food	Maximum residue limit (MRL) (mg/kg)
63.39	Chlorpyrifos	Chlorpyrifos	Cattle meat (Fat)	1
63.40	Chlorpyrifos	Chlorpyrifos	Goat meat	0.05
63.41	Chlorpyrifos	Chlorpyrifos	Horse meat	0.25

# Interpretation of MRLs/EMRLs for Foods of Animal Origin (2)

- ✿ Part 3 of Schedule 1 - Certain meat or poultry meat
  - ⊕ Where “(Fat)” forms part of the description of a food (i.e., meat from mammals other than marine mammals or poultry meat) as set out in Column 4 of either Part 1 or Part 2 of the Schedule 1 to the Regulation, the corresponding MRL/EMRL in Column 5 applies only to the fat of the food (i.e., expressed on a fat basis)

# Interpretation of MRLs/EMRLs for Foods of Animal Origin (3)

## ✿ Part 3 of Schedule 1 - Certain milk products

Column 1	Column 2	Column 3	Column 4	Column 5
Item	Pesticide	Residue definition	Description of food	Maximum residue limit (MRL) (mg/kg)
136.12	Fenpropathrin	Fenpropathrin	Pig fat	1
136.13	Fenpropathrin	Fenpropathrin	Sheep fat	1
136.14	Fenpropathrin	Fenpropathrin	Cattle milk (F)	0.1
136.15	Fenpropathrin	Fenpropathrin	Cattle meat (Fat)	0.5

# Interpretation of MRLs/EMRLs for Foods of Animal Origin (4)

## ✿ Part 3 of Schedule 1 - Certain milk products

- ✿ the pesticide residue is fat soluble and the corresponding MRLs for milk products shall be applied as explained below:

- a) For a “milk product” with a fat content less than 2%, the MRL applicable is half that specified for “milk”. For example, the MRL of fenpropathrin in skimmed milk (<2% fat) will be “0.1mg/kg (MRL for milk specified in Column 5) divided by 2”, i.e., 0.05mg/kg
- b) For a “milk product” with a fat content of 2% or more, the MRL applicable is 25 times that specified for milk, expressed on a fat basis. For example, the MRL of fenpropathrin in butter (a milk product >2% fat) will be “25\*0.1mg/kg, expressed on a fat basis”, i.e., 2.5mg fenpropathrin residues per kg fat content of butter

# Schedule 2

## ✿ Sets out the exempted pesticides (78)

### ⊕ Criteria –

- whether the use of the pesticide will result in residues occurring in food;
- whether the residues of the pesticide are identical to or indistinguishable from natural food components; and
- whether the residues of the pesticide have any toxicological significance or will be dangerous or prejudicial to human health.

### ⊕ Made reference to the lists adopted by major food exporting countries to Hong Kong in drawing up our own

## Schedule 2

[s. 2]

### Exempted Pesticide

Column 1	Column 2
Item	Description of pesticide
1.	1,4-Diaminobutane
2.	Acetophenone
3.	Alder bark
4.	<i>Alternaria destruens</i> strain 059
5.	Ammonium acetate
6.	Ammonium bicarbonate / potassium bicarbonate / sodium bicarbonate
7.	Amorphous silicon dioxide
8.	<i>Ampelomyces quisqualis</i> isolate M10 and strain AQ10
9.	<i>Bacillus cereus</i> strain BP01
10.	<i>Bacillus pumilus</i> strain QST2808
11.	<i>Bacillus subtilis</i> strains GBO3, MBI600 and QST713
12.	<i>Bacillus thuringiensis</i>
13.	<i>Beauveria bassiana</i> strain GHA
14.	Boric acid / borates (borax (sodium borate decahydrate), disodium octaborate tetrahydrate, boric oxide (boric anhydride), sodium borate and sodium metaborate)
15.	Bromochlorodimethylhydantoin (BCDMH)
16.	Calcium carbonate / sodium carbonate
17.	Capsaicin

# Update of the lists of MRLs/EMRLs and exempted pesticides (1)

- ✿ DFEH will update Schedules 1 and 2 to the Regulation as necessary.
- ✿ Traders are welcomed to make proposals, with sufficient supporting information to DFEH for consideration:
  - ⊕ to revise existing MRLs/EMRLs
  - ⊕ to propose new MRLs/EMRLs and exempted pesticides for inclusion in Schedules 1 and 2
    - will be suitably incorporated in the next updating exercise
    - free of charge

# Update of the lists of MRLs/EMRLs and exempted pesticides (2)

- ✿ Factors for consideration –
  - ✿ latest international developments;
  - ✿ consistency with the existing list;
  - ✿ availability of relevant supporting information and reference materials for testing; and
  - ✿ whether the limits concerned could pass the risk assessment scrutiny.



# Preparation of Guidelines

✿ CFS has prepared guidelines to assist the trade in complying with the requirements of the Regulation –

1. User Guidelines
2. Guidelines on Food Classification for the Regulation [Updated in July 2015]
3. Guide to the Proposal for Addition or Revision of MRLs and EMRLs, and Addition of Exempted Pesticides under the Regulation (Cap. 132CM)

# Online Searchable Database

- ✿ To facilitate the trade and relevant stakeholders to find appropriate MRL/EMRL for the pesticide-food pair concerned

# Examples of Section 5 and 6 of the Regulation

# Section 5

- ✿ Principles for determining MRL/EMRL for certain food (other than compounded food)
  - ⊕ Food in a dried, dehydrated or concentrated form
    - MRL/EMRL is to be adjusted proportionately by reference to the ratio between the weight of the food before and after dilution or reconstitution

# Example 1 – Carbendazim in Dehydrated Carrot

1. Search the MRL of carbendazim in carrot specified in Schedule 1

⇒ 0.2mg/kg (item 49.62)

2. Look up the water content of fresh carrot and dehydrated carrot from reliable database(s) or determine the water content by conducting laboratory analysis

⇒ water content of fresh carrot = 89%

⇒ water content of dehydrated carrot = 10%

$$\frac{100\% - \text{“Water content in dehydrated carrot” (\%)}}{100\% - \text{“Water content in fresh carrot” (\%)}} \times \text{MRL (or EMRL)}$$

$$= ((100 - 10) / (100 - 89)) \times 0.2$$

$$= 8.2 \times 0.2$$

$$= \underline{1.6\text{mg/kg}}$$

*The adjusted MRL for carbendazim in the dehydrated carrot is calculated to be 1.6mg/kg*

# Section 5

- ✿ Principles for determining MRL/EMRL for certain food (other than compounded food)
  - ⊕ Food in other processed forms, e.g., rice flour
    - MRL/EMRL of the primary food commodity from which the food is derived is applicable to the food

## Example 2 – Deltamethrin in Orange Juice

- ✿ Orange juice is derived from “orange, sweet”. When MRL for orange juice is not available, MRL for “orange, sweet” will be applicable to orange juice
- ✿ MRL for deltamethrin in “orange, sweet, sour” specified in Schedule 1, i.e., 0.05mg/kg (item 86.15), is applicable to its orange juice

# Section 6

## ✿ Principles for determining MRL/EMRL for compounded food

### ⊕ Pro-rata MRL/EMRL

- % of MRL/EMRL for the residue definition of the pesticide in respect of an ingredient that equals the % of the ingredient in the compounded food.



# Example 3 – Abamectin in Strawberry Milk Shake

1. Look up the recipe of the concerned food product –
  - ✦ Assuming that a 200g sample of strawberry milk shake contains 20g of strawberry (i.e., 10% of the strawberry milk shake by weight) and 180g of milk (i.e., 90% of the strawberry milk shake by weight)
2. Search the MRL of abamectin for each ingredient specified in Schedule 1, i.e.,
  - ✦ MRL of abamectin in strawberry = 0.02mg/kg (item 7.4)
  - ✦ MRL of abamectin in cattle milk = 0.005mg/kg (item 7.16)
3. Compute the adjusted MRL of abamectin in the strawberry milk shake
$$= (\text{MRL for abamectin of strawberry}) \times [\% \text{ of strawberry in strawberry milk shake (by weight)}] + (\text{MRL of abamectin in milk}) \times [\% \text{ of milk in strawberry milk shake (by weight)}]$$
$$= 0.02\text{mg/kg} \times 10\% + 0.005\text{mg/kg} \times 90\%$$
$$= \underline{0.007\text{mg/kg}}$$

*The maximum permitted residue level of abamectin in the strawberry milk shake sample is calculated to be 0.007mg/kg*

# Advice to Trade

- ✿ to adopt the control-at-source approach for ensuring food safety
- ✿ should understand the origin of the food for sale and the use of pesticide on these food products, conduct relevant laboratory testing according to the needs
- ✿ choose reputable food suppliers who can provide the necessary documentary evidence, and keep the relevant records

# End