

# Pesticide Residues in Food Regulation

**Dr Stephanie MA**  
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# Outline

- ✿ Background
- ✿ The Regulation
- ✿ Follow-up tasks

# Background

# Background

## ✿ Objectives:

- ✦ Better protect public health;
- ✦ Facilitate effective regulation of pesticide residues in food; and
- ✦ Promote harmonisation between local and international standards

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

- ✦ Passed by LegCo in June 2012
- ✦ Will come into operation on 1 August 2014, after a grace period of about two years

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

# 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
    - when there is no MRL/EMRL specified 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

- ✿ 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 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

# 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 risk assessment.

# Follow-up Tasks

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- ✿ Update of Schedule 1 before implementation on 1 August 2014
- ✿ Online searchable database on MRL/EMRL
- ✿ Preparation of guidelines
- ✿ Arrangement of briefing sessions

# Update of Schedule 1

- ✿ Before implementation on 1 Aug 2014
- ✿ With reference to the latest Codex standards and further proposal received from the trade

# Online Searchable Database

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

# Preparation of Guidelines

✿ Guidelines under preparation, in consultation with food trade via technical meetings –

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



# Briefing Sessions

- ✿ CFS will provide briefings and training for different sectors to prepare them for the commencement of the Regulation.

# End

# 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 by conducting laboratory analysis

⇒ water content of fresh carrot = 89%

⇒ water content of dehydrated carrot = 10%

3. Compute the adjusted MRL of carbendazim in dehydrated carrot:

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

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

$$= 8.2 \times 0.2$$

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

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

## Example 2 – Propargite in Concentrated (Ten times (10X)) Orange Juice

1. Search the MRL of propargite in orange juice specified in Schedule 1  
⇒ 0.3mg/kg (item 277.14)
2. Obtain the concentration factor from the food manufacturer/supplier  
⇒ 10X (this example)
3. Compute the adjusted MRL of propargite in concentrated (10X) orange juice:  
⇒  $0.3\text{mg/kg} \times 10 = \underline{3\text{mg/kg}}$

*The adjusted MRL for propargite in the concentrated (10X) orange juice is calculated to be 3mg/kg*

## Example 3 – 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

## Example 4 – Peanut oil, edible

- ✿ Edible peanut oil is further refined from crude peanut oil, which is derived from peanut.
- ✿ When MRL for “peanut oil, edible” is not available, MRL for its raw ingredient, “peanut oil, crude” will be applicable to edible peanut oil.
  - ✦ MRL for propargite in “peanut oil, crude” specified in Schedule 1, i.e., 0.3mg/kg (item 277.26), is applicable to the edible peanut oil product.
- ✿ When MRLs for both “peanut oil, edible” and “peanut oil, crude” are not available, MRL for its primary food commodity, peanut, will be applicable to edible peanut oil.
  - ✦ MRL for deltamethrin in peanut specified in Schedule 1, i.e., 0.01mg/kg (item 86.54), is applicable to its peanut oil product.

# Example 5 – 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*

## Example 6 – Pirimicarb in Mixed Salad

1. Look up the recipe of the concerned food product –
  - ⊕ Assuming that a 100g sample of mixed salad contains 30g of tomato (i.e. 30% of the mixed salad by weight), 50g of lettuce (i.e., 50% of the mix salad by weight) and 20g of sweet corn kernels (i.e., 20% of the mixed salad by weight)
2. Search the MRL of pirimicarb for each ingredient specified in Schedule 1, i.e.,
  - ⊕ MRL of pirimicarb in tomato (i.e. fruiting vegetables, other than cucurbits) = 0.5mg/kg (item 265.29)
  - ⊕ MRL of pirimicarb in “Lettuce, Head” = 5mg/kg (item 265.27)
  - ⊕ MRL of pirimicarb in “Sweet corn (kernels)” = 0.05mg/kg (item 265.30)
3. Compute the adjusted MRL of pirimicarb in mixed salad
$$\begin{aligned} &= (\text{MRL of pirimicarb in tomato}) \times [\% \text{ of tomato in mixed salad (by weight)}] + (\text{MRL of} \\ &\quad \text{pirimicarb in lettuce}) \times [\% \text{ of lettuce in mixed salad (by weight)}] + (\text{MRL of} \\ &\quad \text{pirimicarb in sweet corn kernel}) \times [\% \text{ of sweet corn kernels in mixed salad (by} \\ &\quad \text{weight)}] \\ &= 0.5\text{mg/kg} \times 30\% + 5\text{mg/kg} \times 50\% + 0.05\text{mg/kg} \times 20\% \\ &= \underline{2.7\text{mg/kg}} \end{aligned}$$

*The maximum permitted residue level of pirimicarb in the mixed salad sample is calculated to be 2.7mg/kg*



Column 1	Column 2	Column 3	Column 4	Column 5
Item	Pesticide	Residue definition	Description of food	Maximum residue limit (MRL) (mg/kg)
78.29	Cyfluthrin	Cyfluthrin (sum of isomers)	Milks (F)	0.04
78.30	Cyfluthrin	Cyfluthrin (sum of isomers)	Meat (from mammals other than marine mammals) (Fat)	1
78.31	Cyfluthrin	Cyfluthrin (sum of isomers)	Kidney of cattle, goats, pigs and sheep	0.05
78.32	Cyfluthrin	Cyfluthrin (sum of isomers)	Liver of cattle, goats, pigs and sheep	0.05
78.33	Cyfluthrin	Cyfluthrin (sum of isomers)	Edible offal of cattle, except kidney and liver	0.1

Schedule 1—Part 1

Pesticide Residues in Food Regulation

L.N. 73 of 2012  
B3429

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	

# To dovetail with registration of pesticides for use on local food crops

- ✿ To introduce suitable measures to ensure that a newly registered pesticide for use on local food crops under Cap. 133 would be properly regulated under the Regulation.
- ✿ Registration of a pesticides intended for use on local food crops –
  - ✦ If no MRL(s) related to the pesticide concerned could be found in Schedule 1 to the Regulation and it is not an exempted pesticide in Schedule 2 to the Regulation, the application under Cap. 133 would not be accepted by DAFC.
  - ✦ The applicant may make a proposal to DFEH for including the relevant MRL(s) in Schedule 1 or including the pesticide in Schedule 2 to the Regulation in the next updating exercise, and wait for the same to become effective before he could submit the application to DAFC under Section 5 of Cap. 133.

# Statutory defences (1)

- ✿ Section 71 of Cap. 132 stipulates conditions under which warranty may be pleaded by the defendant as defence in any proceedings for an offence under the relevant part of the Ordinance.
- ✿ Applicable to the offences under the Regulation.
  - ✦ e.g., a vendor charged under the Regulation may produce evidence such as invoices to demonstrate that the food concerned is in the original state as obtained from the supplier without any further treatment and the supplier's earlier confirmation of safe food supply.

## Statutory defences (2)

- ✿ Section 70 of Cap. 132 provides that if the defendant could prove that the contravention was due to the act or default of some other person, and that he has exercised all due diligence to secure that the provisions in question were complied with, he may plead this as a defence.
  - ✦ Applicable to offences under the Regulation.