

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

## ~ Draft User Guidelines

Technical Meeting  
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# Introduction

# Introduction

- ✿ Purpose of the Guidelines
- ✿ Key Features of the Regulation
- ✿ Disclaimers
- ✿ Definitions

# Purpose

- ✿ To assist the trade in having a better understanding of the Regulation
- ✿ To answer some of the frequently asked questions

# Key Features of the Regulation (1)

- ✿ Defines “pesticide” and other related terms in a way consistent with Codex
- ✿ Adopts the Codex classification of foods
- ✿ Schedule 1 sets out a list of MRLs/EMRLs for specified pesticide-food pairs
- ✿ Principles for determining MRLs/EMRLs of pesticide residues in a food in dried, dehydrated or concentrated form, in other types of processed food, and in compounded food, have been laid down in Sections 5 and 6
- ✿ Schedule 2 sets out a list of exempted pesticides
  - ✿ Exempted from the requirement of having a MRL in food under the Regulation

# Key Features of the Regulation (2)

- ✿ If a food is found to contain pesticide residues without specified MRLs/EMRLs –
  - ✦ Except for exempted pesticides, the import and sale of the concerned food is only allowed if DFEH is satisfied that the detected level of pesticide residues will not be dangerous or prejudicial to health
  - ✦ In deciding whether the consumption of the food concerned is dangerous or prejudicial to health, DFEH will conduct risk assessment taking into account the local food consumption patterns and other factors

# Disclaimer

The Guidelines :

- ✿ Should be read in conjunction with the Regulation and is intended for use as a general reference only
- ✿ Does not have the force of the law and should not be interpreted in any manner which would override the provision of the Regulation
- ✿ Subject to periodic review by DFEH and may be amended or supplemented as necessary from time to time



# Definitions

- ✿ Key terms extracted from the Regulation :
  - ✿ Section 2 – Interpretation; and
  - ✿ Part 3 of Schedule 1 – Interpretation of Schedule 1
- ✿ Other technical terms related to interpretation of the Regulation
  - ✿ e.g., safety reference values, acceptable daily intake, etc.

# Interpretation of MRLs/EMRLs for Pesticide-Food Pairs Listed in Schedule 1

# How to read Schedule 1

## Part 1

### Maximum Residue Limit (MRL)

Column 1	Column 2	Column 3	Column 4	Column 5
Item	Pesticide	Residue definition	Description of food	Maximum residue limit (MRL) (mg/kg)
1.1	1-Naphthaleneacetic acid	Sum of 1-naphthaleneacetic acid and its conjugates, expressed as 1-naphthaleneacetic acid	Orange, Sweet	0.1
1.2	1-Naphthaleneacetic acid	Sum of 1-naphthaleneacetic acid and its conjugates, expressed as 1-naphthaleneacetic acid	Tangerine	0.1

# Interpretation of MRLs/EMRLs for Processed Food and Compounded Food

- ✿ General rule – Codex MRLs/EMRLs are established for raw agricultural commodities of both plant and animal origins
- ✿ Where it is considered necessary for consumer protection and facilitation of trade, MRLs/EMRLs are also established for certain processed foods on a case-by-case basis

# Food in a dried, dehydrated or concentrated form (1)

## ✿ Section 5(2) of the Regulation –

“If a food in a dried, dehydrated or concentrated form, the MRL or EMRL is to be adjusted proportionately by reference to the ration between the following—

- a) the weight of the food in such form; and
- b) the weight of the food after dilution or reconstitution (as the case required).”

# 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*

# Food in a dried, dehydrated or concentrated form (2)

- ✿ Water content of the primary food commodity and food in its dried, dehydrated or concentrated form can be derived from:
  - ✿ laboratory test results of water content of a food sample before and after drying, dehydration or concentration; and / or
  - ✿ generally accepted data (e.g., food composition database) regarding the water content of the processed food and its unprocessed counterparts



# Food in a dried, dehydrated or concentrated form (3)

- ✿ Water content of a food sample before and after drying or dehydration may vary with a number of factors including species, seasons, geographical locations, processing requirements, etc.
  - ✦ Direct laboratory analysis of the water content of food sample before and after processing would provide a better estimate of the “conversion factor”
  - ✦ If generally accepted data is used, the trade should ensure that the data sources are accurate and reputable

# Food in other processed forms (other than compounded food)

- ✿ Section 5(1) of the Regulation –

“If—

- a) a food (other than compounded food) contains pesticide residues of a pesticide listed in Schedule 1 but the food is not specified in that Schedule opposite to the pesticide; and
- b) a MRL or EMRL is specified for the residue definition of the pesticide in respect of a food that is the primary food commodity from which the food described in paragraph (a) is derived,

subject to **subsection (2)**, that MRL or EMRL is to apply to the food described in paragraph (a).”

- ✿ **Subsection (2)** explained the interpretation of MRL/EMRL for foods in dried, dehydrated or concentrated form

# Example 1 – 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 2 – Deltamethrin in “Peanut oil, edible”

- ✿ Edible peanut oil is derived from peanut. When MRL for “peanut oil, edible” is not available, MRL for 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

# Compounded food (1)

- ✿ Section 6 to the Regulation –  
“...in relation to the compounded food, the MRL or EMRL for the residue definition of the pesticide is the aggregated sum of the pro-rata MRL or EMRL for the residue definition of the pesticide in respect of each of the ingredients of the compounded food (*aggregated MRL or EMRL*)”; whereas “*pro-rata MRL or EMRL* means the percentage of the MRL or EMRL for the residue definition of the pesticide in respect of an ingredient that equals the percentage of the ingredient in the compounded food.”

# Compounded food (2)

- ✿ The above principles will apply when—
  - a) the ingredient is a food in respect of which a MRL or EMRL is specified for the residue definition of the pesticide; or
  - b) by virtue of section 5 of the Regulation, a MRL or EMRL for the residue definition of the pesticide is applicable to the ingredient

# Example 1 – 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
  - = (MRL for abamectin of strawberry) × [% of strawberry in strawberry milk shake (by weight)] + (MRL of abamectin in milk) × [% of milk in strawberry milk shake (by weight)]
  - = 0.02mg/kg × 10% + 0.005mg/kg × 90%
  - = 0.007mg/kg

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

## Example 2 – 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 mixed 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
  - = (MRL of pirimicarb in tomato) × [% of tomato in mixed salad (by weight)] + (MRL of pirimicarb in lettuce) × [% of lettuce in mixed salad (by weight)] + (MRL of pirimicarb in sweet corn kernel) × [% of sweet corn kernels in mixed salad (by weight)]
  - = 0.5mg/kg × 30% + 5mg/kg × 50% + 0.05mg/kg × 20%
  - = 2.7mg/kg

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



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

- ✿ 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)

## ✿ 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)
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

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

## ✿ 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 cyfluthrin in skimmed milk (<2% fat) will be “0.04mg/kg (MRL for milk specified in Column 5) divided by 2”, i.e., 0.02mg/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 cyfluthrin in butter (>2% fat) will be “25\*0.04mg/kg, expressed on a fat basis”, i.e., 1.0mg cyfluthrin residues per kg fat content of butter

# Interpretation of Exempted Pesticides Listed in Schedule 2

# Criteria for Inclusion in the List of Exempted Pesticides

- ✿ DFEH will take into account relevant factors including the following –
  - ⊕ 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.

# Major Types of Exempted Pesticides

- Inorganic chemicals
- Organic chemicals
- Plant materials or derivatives
- Pheromones
- Bacteria
- Fungi
- Protozoans
- Viruses

# Frequently Asked Questions



# Frequently Asked Questions

- ✿ Food surveillance and enforcement
- ✿ Interpretation of MRLs/EMRLs
- ✿ Laboratory analysis
- ✿ Risk Assessment

# Way Forward

- ✿ The draft guidelines can be downloaded from the website of CFS:

[http://www.cfs.gov.hk/english/whatsnew/whatsnew\\_fstr/whatsnew\\_fstr\\_21\\_Pesticide.html](http://www.cfs.gov.hk/english/whatsnew/whatsnew_fstr/whatsnew_fstr_21_Pesticide.html)

- ✿ Please send your comments/suggestion on the draft guidelines are welcome before 31 January 2013

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