

Pesticide Residues in Food – Codex's Recommendations

21 January 2011

Codex Alimentarius Commission (Codex)

- ✿ Background
- ✿ Codex standards for pesticide residues in food
- ✿ Food classification

Background

Codex Alimentarius Commission (Codex)

- ✿ Established by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) of the United Nations in 1960s
- ✿ The single most important international reference point in developing food associated standards

Background

Codex Alimentarius Commission (Codex)

- ✿ Establish various Committees / Task Forces for different subjects
- ✿ The Codex Committee on Pesticide Residues (CCPR) is charged to develop standards for pesticides in foods and feeds
 - ✦ The Joint FAO/WHO Meeting on Pesticide Residues (JMPR)
- ✿ Mainland China as host country of CCPR

Codex Standards for Pesticide Residues in Food

- ✿ Maximum residue limits (MRLs)
 - ✦ Maximum concentration of a pesticide residue (expressed as mg/kg) to be legally permitted in or on food commodities and animal feeds
 - ✦ Examples of pesticide with Codex MRLs
 - acephate, cypermethrin, chlorpyrifos, pyrethrins, etc.

Codex Standards for Pesticide Residues in Food

- ✿ Extraneous maximum residue limits (EMRLs)
 - ✦ Maximum permitted limit of residues of compounds, which were used as pesticides but not any more registered as pesticides, arising from environmental contamination (including former agricultural use of pesticides) or uses of these compounds other than agricultural uses
 - ✦ Examples of pesticide with Codex EMRLs
 - DDT, lindane, aldrin & dieldrin, chlordane, heptachlor, etc.

Codex Standards for Pesticide Residues in Food

- ✿ Established for raw agricultural commodities (both plants and animals) in general
 - ✿ Animal commodities – such as meat (e.g. cattle and pig meat), offal (e.g. cattle liver, pig kidney), milk, eggs
 - ✿ Plant commodities – such as fruits (e.g. apple, orange), vegetables (Chinese cabbage, eggplant)
- ✿ Codex established ~3200 standards for some 150 pesticides

Codex Standards for Pesticide Residues in Food

- ✿ Also established for certain processed foods on a case-by-case basis
 - ✿ Necessary for consumer protection and facilitation of trade
 - ✿ Taking into consideration the effect of processing on residues
 - ✿ Examples of processed food with Codex MRLs – dried fruits and vegetables (e.g. raisins), processed cereal products (e.g. wheat flour)
- ✿ Codex standards will be updated or revoked periodically and new ones are established from time to time

Codex Standards for Pesticide Residues in Food

- ✿ Food complying with Codex MRLs should be safe for human consumption
- ✿ Derived base on residue data from supervised field trials reflecting national good agricultural practices (GAP)
- ✿ Taking into consideration the toxicological assessment of pesticide

Good Agricultural Practice in the Use of Pesticide (GAP)

The nationally authorised safe uses of pesticides under actual conditions necessary for effective and reliable pest control.

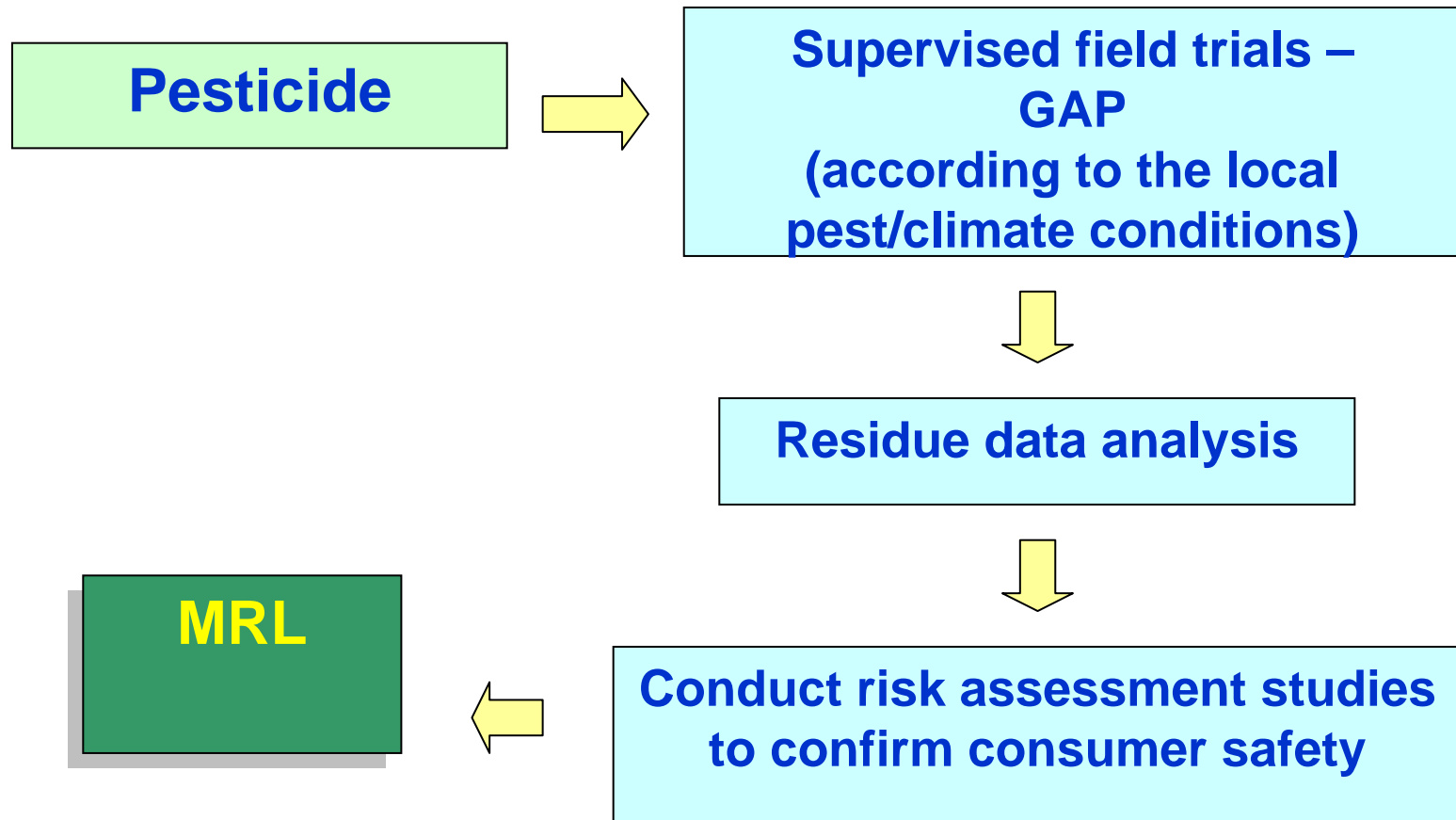
It encompasses a range of levels of pesticide applications up to the highest authorised use, applied in a manner which leaves a residue which is the smallest amount practicable.

Authorised safe uses are determined at the national level and include nationally registered or recommended uses, which take into account public and occupational health and environmental safety considerations.

Actual conditions include any stage in the production, storage, transport, distribution and processing of food commodities and animal feed.

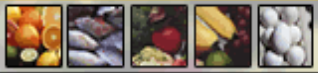
Codex Procedural Manual



How MRLs are established



Example of Codex standard for pesticide residues in food

FAO/WHO Food Standards ENGLISH | FRANÇAIS | ESPAÑOL

CODEX alimentarius 

ABOUT CODEX MEETINGS AND EVENTS OFFICIAL STANDARDS  

Pesticide Residues in Food

Maximum Residue Limits; Extraneous Maximum Residue Limits

41 Records

CYPERMETHRIN			
<i>Commodity</i>	<i>MRL (mg/kg)</i>	<i>Symbols</i>	<i>Footnote</i>
Alfalfa forage (green)	5		dry wt
Barley	0.5		
Beans, Shelled	0.05 (*)		
Berries and other small fruits	0.5		
Brassica vegetables	1		
Cherries	1		
Citrus fruits	2		
Coffee beans	0.05 (*)		
Common bean (pods and/or immature seeds)	0.5		
Cucumber	0.2		
Edible offal (mammalian)	0.05 (*)		The MRL accommodates external animal treatment

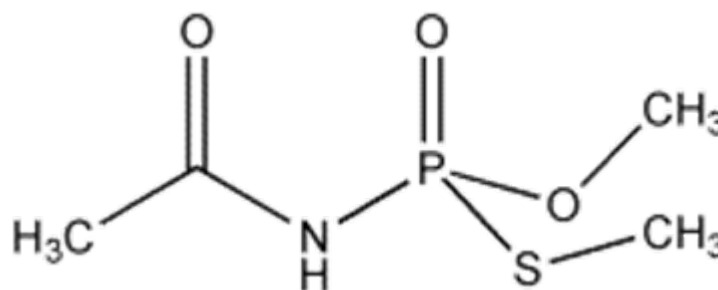
Codex Standards for Pesticide Residues in Food

- ✿ Codex residue definition for pesticide residues in food
 - ✿ The combination of the pesticide and its metabolites, derivatives and related compounds to which the MRL applies
 - ✿ Needs to be a simple residue definition suitable for practical routine monitoring and enforcement of the MRL at a reasonable cost
 - ✿ Residue definition adopted by Codex might be different from other countries

Example of different residue definitions

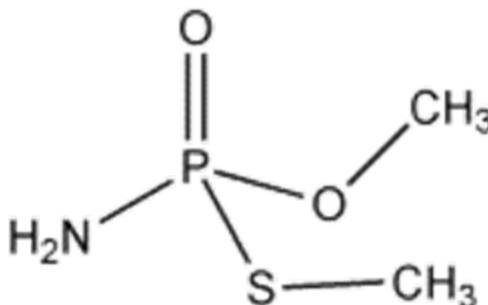
Acephate

Codex



Acephate

+



Metabolite, O,S-dimethylphosphoramidothioate

USA

Codex Standards for Pesticide Residues in Food

Food classification

- ✿ Codex developed a “Codex Classification of Foods and Animal Feeds”
 - ✿ To ensure the use of uniform nomenclature
 - ✿ To classify foods into groups and/or sub-groups for the purpose of establishing group MRLs for commodities with similar characteristics and residue potential

Examples of Codex group MRLs

Codex group MRLs for citrus fruits

Pesticide Residues in Food and Feed					
COMMODITY DETAILS					
FC 1 – Citrus fruits					
<ul style="list-style-type: none"> ○ Class Primary Food Commodities of Plant Origin ○ Type Fruits ○ Category Citrus Fruits 					
Maximum Residue Limits for Citrus fruits					
Pesticide	MRL	Year of Adoption	Symbols	Note	
Heptachlor	0.01 mg/Kg				
Abamectin	0.01 mg/Kg	2001	(*)		
Deltamethrin	0.02 mg/Kg	2004			
Paraquat	0.02 mg/Kg	2006			
Aldrin and Dieldrin	0.05 mg/Kg	1997			
Pyrethrins	0.05 mg/Kg	2003			
Haloxyfop	0.05 mg/Kg	2001	(*)		
Glufosinate-Ammonium	0.1 mg/Kg	1997			
Aldicarb	0.2 mg/Kg	1991			
Cyhalothrin (includes lambda-cyhalothrin)	0.2 mg/Kg	2009			
Spinozad	0.3 mg/Kg	2003			
Cyfluthrin/beta-cyfluthrin	0.3 mg/Kg	2008			
Diflubenzuron	0.5 mg/Kg	2004			
Trifloxystrobin	0.5 mg/Kg	2006			

Examples of Codex group MRLs

Codex group MRLs for leafy vegetables

VL 53 – Leafy vegetables

- Class
Primary Food Commodities of Plant Origin
- Type
Vegetables
- Category
Leafy Vegetables (Including Brassica Leafy Vegetables)

Maximum Residue Limits for Leafy vegetables

Pesticide	MRL	Year of Adoption	Symbols	Note
Aldrin and Dieldrin	0.05 mg/Kg	1997		
Paraquat	0.07 mg/Kg	2006		
Cypermethrins (including alpha- and zeta- cypermeth)	0.7 mg/Kg	2009		
Deltamethrin	2 mg/Kg			
Spirotetramate	7 mg/Kg	2009		
Tebufenozide	10 mg/Kg	2004		
Spinozad	10 mg/Kg	2004		
Chlorantraniliprole	20 mg/Kg	2009		
Mandipropamid	25 mg/Kg	2009		

Codex Classification of Foods and Animal Feeds

Food classification

- ✿ Food items classified in a hierarchy and structural system
 - ✿ Five classes → 19 types
 - ✿ Each type → commodity groups → subgroups → individual commodities
- ✿ Each commodity / subgroup / group assigned with an code number

Codex Classification of Foods and Animal Feeds

Food classification

- ✿ Five classes:
 - ✦ Class A Primary Food Commodities of Plant Origin
 - ✦ Class B Primary Food Commodities of Animal Origin
 - ✦ Class C Primary Animal Feed Commodities
 - ✦ Class D Processed Foods of Plant Origin
 - ✦ Class E Processed Foods of Animal Origin

Class A Primary Food Commodities of Plant Origin

Type	No.	Group	Group Letter Code
01 Fruits	001	Citrus fruits	FC
	002	Pome fruits	FP
	003	Stone fruits	FS
	004	Berries and other small fruits	FB
	005	Assorted tropical and sub-tropical fruits – edible peel	FT
	006	Assorted tropical and sub-tropical fruits – inedible peel	FI
02 Vegetables	009	Bulb vegetables	VA
	010	Brassica (cole or cabbage) vegetables, Head cabbages, Flowerhead cabbages	VB
	011	Fruiting vegetables, Cucurbits	VC
	012	Fruiting vegetables, other than Cucurbits	VO
	013	Leafy vegetables (including Brassica leafy vegetables)	VL
	014	Legume vegetables	VP
	015	Pulses	VD
	016	Root and tuber vegetables	VR
	017	Stalk and stem vegetables	VS
03 Grasses	020	Cereal grains	GC
	021	Grasses, for sugar or syrup production	GS
04 Nuts and Seeds	022	Tree nuts	TN
	023	Oilseed	SO
	024	Seed for beverages and sweets	SB
05 Herbs and Spices	027	Herbs	HH
	028	Spices	HS

Class A**Type 2****Vegetables****Group 013****Group Letter Code VL**

Group 013 Leafy vegetables are foods derived from the leaves of a wide variety of edible plants, usually annuals or biennials. They are characterized by high surface : weight ratio. The leaves are fully exposed to pesticides applied during the growing season.

The entire leaf may be consumed, either fresh or after processing or household cooking.

Portion of the commodity to which the MRL applies (and which is analysed): **Whole commodity as usually marketed, after removal of obviously decomposed or withered leaves.**

Group 013 Leafy vegetables (including Brassica leafy vegetables)**Code No.****Commodity**

VL 0053

Leafy vegetables

VL 0054

Brassica leafy vegetables

Brassica spp.

VL 0460

Amaranthamong others *Amaranthus dubius* Mart. ex Thell.; *A. cruentus* L.; *A. tricolor* L., several var.

VL 4313

Amsoi, see Indian Mustard

VL 4315

Arrugula, see Rucola

VL 0421

Balsam pear leaves*Momordica charantia* L.

Thank you