



11th World Spice Congress

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The Westin Pune Koregaon Park, Pune, Maharashtra

"Sustainability & food Safety - Global initiatives"

SESSION – II

CONTAMINANTS ISSUES ON GLOBAL HARMONISATION OF STANDARDS

PESTICIDES RESIDUES

esa

European
Spice
Association



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A) DEFINITION (glossary of terms)

"Pesticide" means any substance intended for preventing, destroying, attracting, repelling, or controlling any pest including unwanted species of plants or animals during the production, storage, transport, distribution, and processing of food, agricultural commodities, or animal feeds or which may be administered to animals for the control of ectoparasites. [...]

"Pesticide residue" means any specified substances in food, agricultural commodities, or animal feed resulting from the use of a pesticide.

Pesticides functional classes are:

[Acaricide](#) , [Aphicide](#) , [Fumigant](#) , [Fungicide](#) , [Generic](#) , [Herbicide](#) , [Insect growth regulator](#) , [Insecticide](#) , [Nematocide](#) , [Plant growth regulator](#) , [Scald control agent](#) , [Storage scald preventer](#) , [Synergist](#)



A) DEFINITION (glossary of terms)- continued

"Limit of determination" LOD (as referred to in Reg. 396/2005) Limit of determination (LOD) means the validated lowest residue concentration which can be quantified and reported by routine monitoring with validated control methods;

"Limit of quantitation" LOQ – means the lowest concentration or mass of the analyte that has been validated with acceptable accuracy by applying the complete analytical method.

"MRL" Maximum Residue Limit is the maximum concentration of a pesticide residue (expressed as mg/kg), recommended by the Codex Alimentarius Commission to be legally permitted in or in food commodities and animal feeds. (MRLs are based on GAP data and foods derived from commodities that comply with the respective MRLs are intended to be toxicologically acceptable).



B) CURRENT STANDARD SITUATION

EXAMPLES:

- 1) USA SCENARIO
- 2) JAPAN SCENARIO
- 3) AUSTRALIAN SCENARIO
- 4) EUROPEAN SCENARIO

TARGET FOR ALL COUNTRIES:

INCREASE THE SAFETY FOR THE FINAL
CONSUMER!



1-USA

The responsibility for ensuring that residues of pesticides in foods are not present at levels that will pose a danger to health is shared by FDA, EPA (Environmental Protection Agency) and the Food Safety and Inspection Service of the U.S. Department of Agriculture.

Tolerances for the maximum pesticides residue that may be legally present in or on a raw agricultural commodity are established by EPA under Section 408(b)(4) of the FFDCA **“Tolerances and Exemptions for Pesticide Chemical Residues”**

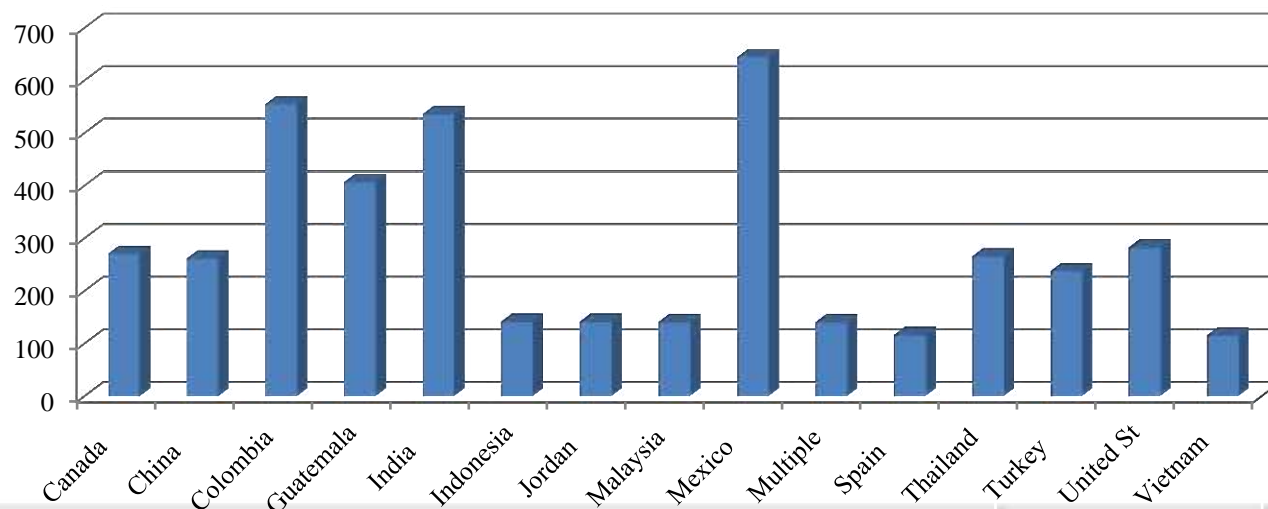
[FrequentlyAskedQuestionsPesticideImportTolerances.pdf](#)



1-USA - continued

* Figures from EPA websites Check programm

TOTAL PESTICIDES POSITIVE RESULTS*



EXTRACT Appendix B - Results of FY 2008 Import Samples by Commodity Group – FDA

Commodity Group ^a	Total Samples Analyzed	Samples Without Residues %	Samples Violative %	Over Tolerance Violations #	No Tolerance Violations #
Basil	8	37,5	50	0	4
Capsicums	10	30	50	0	5
Spices, other	31	80,6	6,5	0	2



2-JAPAN

On May 29, 2006 the Ministry of Health, Labour and Welfare (MHLW) introduced the positive list system for agricultural chemicals remaining in foods-the system to prohibit the distribution of foods that contain agricultural chemicals above a certain level if maximum residue limits (MRLs) have not been established.

Pesticides not listed in the positive list have a default level of 0.01 mg / kg (ppm) (*)

(*) Source Japan Health Authority web site



3-AUSTRALIA

The Australian Pesticides and Veterinary Medicines Authority (APVMA) sets maximum residue limits (MRLs) for agricultural and veterinary chemicals in agricultural produce, particularly produce entering the food chain.

National programs such as the [Food Standards Australia New Zealand's Australian Total Diet Survey \(external site\)](#) and the [Department of Agriculture, Fisheries and Forestry - Australia National Residue Survey \(external site\)](#) monitor the residues found in food destined for human consumption within Australia or for export.



4- EUROPE

- Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 **on maximum residue levels of pesticides in or on food and feed of plant and animal origin** and amending Council Directive 91/414/EEC Text with EEA relevance.
- Regulation (EC) No 178/2006 of 1 February 2006 establishing Annex I **listing the food and feed products to which maximum levels for pesticide residues apply.**
- Regulation (EC) No 149/2008 of 29 January 2008 **establishing Annexes II, III and IV setting maximum residue levels for products covered by Annex I.**



4- EUROPE (continued)

- Regulation (EC) No260/2008 of 18 March2008 establishing Annex VII **listing active substance and / or product combinations covered by a derogation, with regards to post harvest treatments with a fumigant.**

Pesticide not listed in any annex have a default levelof 0.01 mg / kg (ppm)

Very important point: The dehydration factor!

ESA has published a dehydration factor list for herbs and spices and is working to ensure that this principle is incoperated into the legislation.

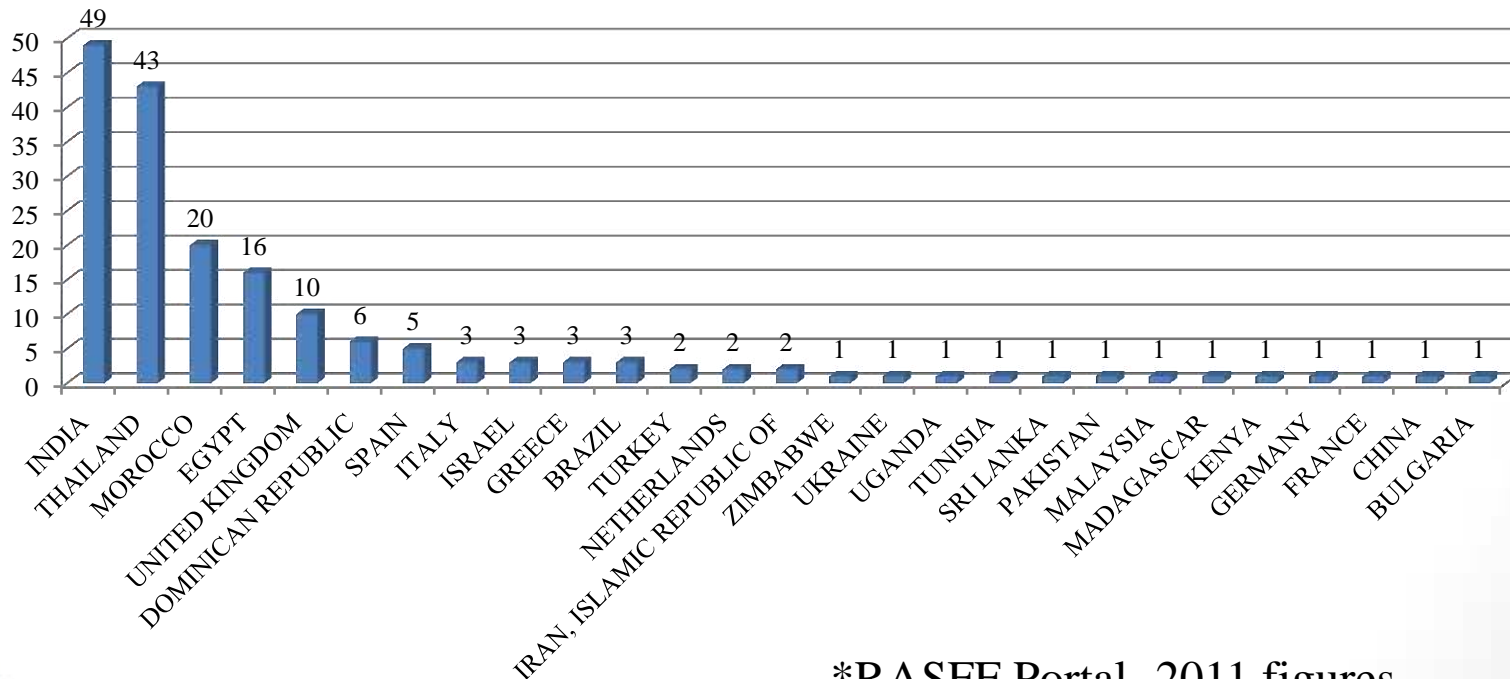


4- EUROPE (continued)

European Control Program: FROM FARK TO FORK

All the States inside the EU use the Rapid Alert System for Food and Feed (RASFF), to communicate the non conformity product discovered at the “ points of entry”.

PESTICIDES VIOLATIVE SAMPLES 2011*



*RASFF Portal- 2011 figures
Total 180 NC samples



C) ANALYTICAL METHOD

Which are the Frequently Asked Questions (FAQs) related to the pesticide residues argument?

A) Is it possible a standardization of the method ?

B) Which is the best method that we can use?

C) Why for the same product we can have a variance in results between two labs?

Useful guidelines to evaluate if the method that some one suggest you or that you are using match the minimum requests of an analytical method.



3) ANALYTICAL METHOD- (continued)

The keypoints are:

- Ensure the quality and comparability of analytical results (LOQ and LOD comparable with others methods)- RING TEST
- Ensure that acceptable accuracy is achieved
- Ensure that false positives or false negatives are avoided (very difficult with our substrates rich in V.O. and natural colors)
- The method must be in compliance with the ISO/IEC 17025 – Accreditation standard (The method not the Lab!)
- Confirm the value with the Mass spectrometry (GC/MS) coupled to chromatography (GC or LC/MS/MS or HPLC)
- Introduce an Accurate Sampling procedure : the sample must be representative of the batch.



3) ANALYTICAL METHOD- (continued)

- The DGSANCO just out (01.01.2012) document N° SANCO/12495/2011 that supersedes Document No. SANCO/10684/2009 .

“Method validation and quality control procedure for the pesticides residues analysis in Food and Feed.”

- **EN 15662:2008 (E)** Foods of plant origin - Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE -QuEChERS-method



3) ANALYTICAL METHOD- (continued)

In our internal lab we validated a method based on the Quechers system, with some change in the cleaning steps of the matrix.

COUNTRY	NEGATIVE RESULT	POSITIVE RESULT	TOT	PERCENTAGE
BRASIL	1		1	0
CHINA	9	9	18	50
EGYPT	21	22	43	51,2
INDIA	13	40	53	75,5
MOROCCO	6		6	0
PERU		3	3	100
TURKEY	6	4	10	40
VIETNAM	1		1	0
TOTAL	57	78	135	58

D) GLOBAL REGULATORY INITIATIVES

Codex Alimentarius :

- Establishes MRLs for Use in International Trade
- Collaboration with JMPR (Joint Meeting on Pesticide Residues):
 - Risk assessment work by FAO/WHO expert groups
 - Make recommendations to the CCPR (Codex Committee on Pesticide Residues)
- Alimentarius Commission (CAC) for establishment of Codex MRLs

<http://www.fao.org/agriculture/crops> Pesticide Management

<http://www.codexalimentarius.org/standards/pesticide-mrls/en/>



E) CONCLUSION

- Evaluate your analytical method with international standard
- Use Accurate Sampling procedure: ISO standards and General Guidelines on Sampling by **Codex Alimentarius** .
- An implemented GAP and a complete and real risk assesment are the building blocks to manage the pesticides residues (and not only) issue.
- Verify the possible cross contamination condition as surrounding crop, water, substrates of your treatment product.
- Know your product. Visit the supplier and the crops.

IF YOU KNOW THE RISK YOU CAN MANAGE IT.
THE KEY IS TO MANAGE THE RISK



THANKS FOR LISTENING

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DROGHERIA E ALIMENTARI

