

# codex alimentarius commission

FOOD AND AGRICULTURE  
ORGANIZATION  
OF THE UNITED NATIONS

WORLD HEALTH  
ORGANIZATION

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**Agenda Item 9**

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## **JOINT FAO/WHO FOOD STANDARDS PROGRAMME**

### **CODEX COMMITTEE ON PESTICIDE RESIDUES**

#### **Thirty-Second Session**

**The Hague, The Netherlands, 1 - 8 May 2000**

## **PROBLEMS RELATIVE TO PESTICIDE RESIDUES IN FOOD IN DEVELOPING COUNTRIES**

### **CONCERN OF DEVELOPING COUNTRIES FOR THE LACK OF MRLS AND EMRLS FOR POTENTIAL PESTICIDE RESIDUES IN/ON SPICES**

(Submitted by India)

## **INTRODUCTION**

1. Trade in spices throughout the world has been going on even before the beginning of recorded history. Spices have been so valued that they spawned the exploration of the world and the discovery of the Americas. Spices have been valued primarily for their ability to make food taste better and, sometimes, for a perceived ability to make people feel better and fight disease. Spices are even more important today, as around the globe, there is a clamor for tastier and “spicier” foods. It is essential that countries are able to continue to trade in spices.

2. Spices (including tropical spices such as black and white pepper, seeds such as fennel and anise, and herbs such as basil and oregano) are often the currency of the developing world. The primary producers of spices include India (by far the largest producer and exporter), Egypt, China, Indonesia, Malaysia, Mexico, Guatemala, Turkey, Brazil, etc. Since spices are always in demand in the industrialized world (which have limited production), the exporting of these basic agricultural commodities can be relied upon to bring in much needed cash to the developing world.

3. Spices have been exported in spite of wars (Yugoslavia), uprisings (Indonesia) or other natural disasters (Turkey). Because of the need for this economic resource to these countries, it is important that these items are not hampered in trade by the lack of standards allowing for the legitimate use of pesticides in these countries. Many of the pesticides used in the production of spices may not be registered nor have MRLs in the importing country for the specific spice they are used on. Further, there are no Codex MRLs at present for spices. While spices are important to the flavor of food, they are a very small percentage of the food intake so dietary risks will always be very small. Because of this relatively minor use for pesticides, MRLs have never been requested.

4. However, as authorities in importing countries have become more concerned and stepped up their surveillance on pesticide residues on exported commodities, the incidences of trade violations for pesticide residues on spices and herbs have escalated. These result in considerable financial losses to the country of export.

5. It has become essential that standards are set for spices that are consistent with dietary risks. The 31st Session of the Codex Committee on Pesticide Residues (April, 1999) recognized the problem for developing countries. The Working Group on Pesticide Residue Problems in Developing Countries

underscored the need to establish Codex MRLs for pesticide residues on commodities that are key exports from developing countries. These commodities, which are mainly minor crops, frequently encountered international trade violations because of the lack of Codex MRLs.

6. The Working Group analyzed the data from the GEMS/Food Programme and prepared a long list of pesticides-commodity combinations that had frequent trade violations for minor crops of importance to developing countries. Spices are among the commodities in the list. The pesticide-commodity combinations for spices and herbs are summarized from this report in Appendix 1.

7. The Working Group requested the CCPR to explore the possibility of establishing MRLs for minor crops. This paper supports this recommendation and stresses the need for Codex MRLs for spices.

## **INTERNATIONAL TRADE**

8. International trade in spices continues to grow as global diets and usage of spices increase. An estimated 500,000 metric ton of spices valued at US \$ 1.5 billion are now imported globally every year (Indian Spices Board, 1999). The main importers are the US, Europe, and Japan. The major exporters are developing countries in Asia, Latin America, and Africa.

9. Americans use 50% more spices today than a decade ago. In 1998, The US imported about 292,000 metric tons of spices, representing 60% of its supply of spices. The bulk of the imports were black, red, and white pepper (22%), mustard seeds (22%), and cinnamon (7%). The suppliers are India, Indonesia, China, Mexico, Guatemala, Egypt, and Turkey (American Spice Trade Statistics, 1998).

10. The European spice market is estimated to be about \$US 2 billion, with Germany being the major importer. The largest spice-trading partner is Indonesia, which supplies black and white pepper, nutmegs, and cinnamon. Other major European importers are France, UK, Netherlands, and Scandinavia. The third largest spice importer is Japan, which imports more than 75% of its spice supply.

## **SPICE-PRODUCING COUNTRIES**

11. Globally, India is the largest exporter of spices, accounting for 46% of the total exports. Exports of spices from India reached \$US 420 million, an increase of 210% in quantity and 622% in value from 1990 (Indian Spice Board, 1999). The main spices exported by India are shown in Appendix 2. In 1998, India exported 88 million pounds (40,188 metric tons) of black pepper, red pepper, cumin seed, turmeric, celery seed, and fennel seed to the US, valued at approximately \$US 53 million.

12. Egypt is the main source of basil, anise, and fennel, while Brazil supplies peppers and cloves. Oregano and cumin come mostly from Turkey. The other major exporters of spices and the types of spices exported are summarized in Appendix 3.

13. Indonesia exported about 84 million pounds (38,226 metric tons) of black pepper, cinnamon, white pepper, nutmeg, and vanilla to the US, amounting to \$US 50 million. China's exports of about \$US 40 million consisted of 67 million pounds (30,420 metric tons) of garlic, red pepper, and ginger. Mexico exported 45 million pounds (20,590 metric tons) of sesame seed, red pepper, and oregano, amounting to a total of \$US 27 million dollars. Guatemala exported 33 million pounds (14,761 metric tons) of sesame seed and cardamom seed for a total of approximately \$US 20 million.

## **SPICE GROWING & SHIPPING CONDITIONS**

14. Spices grow in both tropical and temperate climates. The tropical spices include black and white pepper, cinnamon, ginger, turmeric, nutmeg and mace, cloves, and allspice, which can only be grown  $\pm 20^\circ$  latitude of the equator. Chilies, seed and herb crops, have a broader growing area. All of these items (except for mustard seed) are grown in the developing world because of their use in their own cuisine; e.g., curry in India. Virtually none of these, except for a small portion of black pepper, are grown on large cultivated farms. Because spices are literally used as currency by small farmers, it is typical that a farmer would have a small backyard plot with several pepper vines, nutmeg trees, banana trees, tapioca bushes and cotton plants. The spices will be dried on the ground and then kept in storage

by the farmer until he needs money. He will then take his spices to a nearby collecting station where a collector buys the farmer's few bags. These few bags are then commingled with all of the other farmers' materials and eventually sent to a processor/shipper in a coastal town. Here it will be further commingled with all other growers' materials, cleaned of debris and prepared for final shipment to the United States, Europe, Japan and other industrialized countries. The amount of small farmers in a growing region can number in the thousands.

15. Another source of spices is simply the gathering of spices that grow wild. This is especially true of some of the herbs like rosemary, thyme, oregano and sage. Villagers will go up into the mountains to gather the year's crop and again take their gatherings to a collection station for sale. There it is again commingled and cleaned/processed for export.

16. In most of these countries, the older organochlorine pesticides have been used for insect vector control for 50 years. Even if these pesticides are no longer used, their residues in the soil will result in plant residues for 50 more years. Sometimes, especially in the small plots, a pesticide used for one plant (e.g., cotton) will drift to the spice plants too. In general, these farmers are doing the best they can to feed their families. Pesticide standards will help them better understand how and when to use pesticides.

#### **PESTICIDE USAGE AND REGULATIONS IN MAJOR SPICE-PRODUCING COUNTRIES**

17. India is the largest exporter of spices in the world; therefore, this section will focus on the problems associated with pesticide use and exports from India. India is a tropical country and is beset with a variety of infestations during the growing season. There are 180 pesticides approved for use on various crops in India. Of these, it is estimated that at least 60 are not registered in the US or in Europe. There are no MRLs established in the US, Europe, Japan, or Codex for residue levels on spices. Therefore, any pesticide residue found on any spice would render the shipment illegal.

18. Because of the importance of the industry to its economy, the Government of India organized the Spices Board under the Ministry of Commerce, to oversee the production, quality and exports of spices. The Spices Board is the apex body for the export promotion of Indian spices. Established in 1987, the Board is the catalyst of all spice activities in India. The Board plays a far reaching and influential role as a developmental, regulatory and promotional agency for Indian spices. The Spices Board monitors the usage of pesticides on spices and provides guidance to farmers when they have questions.

19. From the nature of the spice industry and the production system as explained above, even if pesticides are not used directly on the spices, residues are sometimes detected. Spices are produced in small farms where other crops may be grown. It is possible that even when not applied directly to the spices, pesticide residues could be detected because of drift from application to neighboring crops. Therefore, in areas where cotton is grown next to spices, it is very possible that whatever pesticide is applied to cotton would be detected also in the spices grown nearby.

20. Further, the persistent nature of organochlorines (e.g. BHC, DDT, lindane) make any crop, including spices, vulnerable to traces of residues especially if grown in areas where these pesticides were previously used. Thus, even if banned in the country, it is highly possible that residues of these persistent pesticides will be detected. In addition, it should also be noted that in developing countries, cases of malaria and dengue are still prevalent. The pesticides most commonly used for vector control purposes are DDT and BHC.

21. Because of the concern for spice exports, developing countries, India, included, have instituted monitoring programs aimed at monitoring levels of persistent pesticides on these commodities. Importing countries have done the same. That is why there are extensive databases available globally on residues of DDT, BHC, lindane and other pesticides, which can be used as basis to establish appropriate residue levels.

## **IMPACT OF LACK OF CODEX MRLS ON INTERNATIONAL TRADE OF SPICES**

22. All countries require that imports of commodities comply with national standards of food safety. In the case of pesticide residues in food, if no national standards have been set, then a Codex MRL is acceptable as the standard for trade purposes. The lack of Codex MRLs therefore creates a major problem in international trade of spices.

23. Annually, the exporting countries lose millions of dollars worth of spice shipments to the US and Europe, to violations resulting from residues of illegal pesticides, i.e., pesticides with no Codex or national MRLs. Considering the producers are small farm holders in developing countries that rely mainly on the trade for subsistence, the importance of establishing residue levels for pesticides used on spices cannot be overemphasized.

## **SAFETY CONSIDERATIONS**

24. While issues of world trade are important, Codex standards must always be based on consumer safety and health.

25. The American Spice Trade Association has done some preliminary work with safety assessment and has confirmed that, even using very conservative exposure estimates, there is no health concern. In light of this and the issues for world trade of important commodities for developing countries, it is essential that residue levels be established.

## **SUMMARY OF THE PROBLEM**

26. The lack of standard residue levels which allow the trade of spices throughout the world, need to be addressed. The reason that these limits do not exist is that spices are grown in developing countries and exported to developed countries. Typically, the pesticide regulations address pesticide usage in that country on crops of major significance. Many pesticides needed in tropical countries would not be needed in the temperate climate of the developed world and, so, would not even be registered for use in the temperate countries. This does not reflect the safety of the pesticide, only that it is not needed. Spices are not grown in these developed countries and if they are, they are a very minor crop and a minor part of the food supply. Chemical companies, who usually develop data to support MRLs, have no interest in spending the time or money to pursue these levels in minor crops. It is up to the international community to seek permitted residues. Because the problem is a global one most affecting the developing world, the issue belongs in a global standard-setting body; i.e., Codex Alimentarius.

## **PROPOSALS**

27. The purpose of this initiative is to identify and standardize residue levels on spices that are manageable by the farmers and that are safe for consumers. Because of the farming/gathering patterns for spice production, it is not feasible or practical to do field trials. However, actual residue data has been collected in several areas of the world so that a standard reflective of actual practice can be set. Once this is accomplished, the spice trade can work with farmers to identify best practices to reduce residues wherever possible. The international spice trade is committed to managing this problem, but maximum levels must be set that are achievable, realistic and safe given the farming and consumption patterns around the world.

28. Some persistent pesticides that have already been banned for use in agriculture and are therefore not used on spices, still continue to be detected in shipments globally. For these pesticides, like BHC and DDT, the establishment of EMRLs would be very helpful. As stated above, residue monitoring data from different countries has been collected and can be made available to JMPR.

29. In line with the above, the Indian government requests other exporting countries to help generate data required by the JMPR to expedite the process of establishing MRLs or EMRLs for spices, as the case may be.

*Appendix 1*

**Examples of Pesticide Residue Problems Related to the Trade of Spices**

Pesticide	Commodity	No. Lots	National MRLs <sup>1</sup>	Codex MRLs <sup>1</sup>	Exporting Region
Chlorpyrifos	Green peppercorn	1	N	N	Asia
Dicofol	Spice	1	N	N	Asia
Ethion	Indian chilies	10	X	N	Asia
Lindane	Spice	1	N	N	Asia
Monocrotophos	Peppers, hot	1	N	X (0.2)	Latin America
Chlorothalonil	Peppers, hot	1	N	N	Latin America
Cypermethrin	Red pepper powder	1	N	OK (0.5, peppers)	Asia
Cypermethrin	Green peppercorn	1	N	N	Asia
Quinalphos	Chili, red	10	N	N	Asia
Quinalphos	Chilies, Indian	10	N	N	Asia

<sup>1</sup> Whether a national MRL (or Codex MRL) or permitted level exists for this pesticide-commodity combination in the importing country; if one exists, the levels of residue in violation in relation to that MRL,  
 N = No MRL or permitted level exists  
 A = Residue exceeds permitted level for environmentally persistent pesticide that is no longer in use  
 X = Residue exceeds MRL or permitted level  
 OK = level under MRL.

*Appendix 2*

**Export of Spices from India**

	1994-1995		1995 -1996		1996 - 1997		1997 - 1998		1998 - 1999(P)	
	Q	V	Q	V	Q	V	Q	V	Q	V
Pepper	37,264	2.48	26,244	1.88	47,893	2.26	35,907	2.15	34,864	2.31
Cardamom (Small)	75.51	2,029	58.92	2,594	116.25	4,850	133.48	12,368	152.33	5,279
Cardamom (Large)	257	1.86	527	2.26	226	5.04	307	9.63	475	3.67
Chili	2.43	7,956	3.89	15,138	2.45	8,891	3.41	6,006	6.02	10,082
Ginger	1,293	3.91	1,677	5.6	1,628	3.4	1,648	2.65	1,424	4.57
Turmeric	2.59	2,338	3.67	2,493	3.41	3,059	3.4	4,056	2.84	2,001
Coriander	20,096	1.55	56,165	1.56	50,051	2.38	51,779	2.51	61,253	1.79
Cumin	18.22	633	58.66	3,935	56.79	4,889	42.73	3,975	51.71	4,068
Celery	12,022	0.39	18,483	1.47	29,737	2.25	28,268	2.15	8,778	1.77
Fennel	5.34	16,523	11.68	23,492	16.7	18,955	19.53	14,918	9.71	19,077
Fenugreek	28,286	9.43	27,050	11.97	23,019	12.49	28,875	14.97	36,522	18.29
Other Seeds (1)	14.42	4,135	13.87	4,246	16.48	4,639	22.34	5,132	29.73	5,210
Garlic	10,702	4.61	11,541	5.27	12,574	5.8	23,734	7.99	20,685	8.59
Other Spices (2)	5.72	1,583	6.73	1,352	8.84	2,371	17.3	3,018	10.95	4,207
Curry Powder	5,618	13.9	3,871	14.26	6,375	37.92	16,281	26.07	10,723	29.25
Mint Oil	7.82	1,672	5.22	1,912	9.69	2,358	21.88	2,419	14.35	2,750
Spice Oil and Oleoresins	2,601	27.68	2,678	34.52	3,780	44.82	3,317	62.26	3,991	71.8
Grand Total	155,008	197.86	203,398	241.43	225,295	346.97	242,071	394.45	231,389	419.68

Q = Quantity in metric tons

V = Value in million US dollars

(P) Provisional

(1) Include Bishop's Weed, Dill seed, Poppy seed, Aniseed, Mustard, etc.

(2) Include Tamarind, Asafoetida, Cinnamon, Cassia, Tejpat, Kokam, Saffron, etc.

Source : Indian Spices Board from DGCI & S., Calcutta/Shipping Bills/Exporters' Returns.

*Appendix 3*

**Major Spice Supplying Nations**

**1998**

<b>Supplier</b>	<b>Spices</b>	<b>Volume (Metric tons)</b>	<b>Estimated Value (Million US \$)<sup>1</sup></b>
India	Black pepper, red pepper, cumin seed, turmeric, celery seed, fennel seed	40,188	53
Indonesia	Black pepper, cinnamon, white pepper, nutmeg, vanilla	38,226	50
China	Garlic, red pepper, ginger	30,420	40
Mexico	Sesame seed, red pepper, oregano	20,590	27
Guatemala	Sesame seed, cardamom seed	14,761	20

<sup>1</sup> Various spices range in value from \$US 0.50 to \$US 1.50 or more. For these calculations, an estimated average value of \$US 0.60 per pound of spices was used.