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**CURRENT STATUS OF PESTICIDES RESIDUE ANALYSIS OF FOOD IN RELATION
WITH FOOD SAFETY**

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1. INTRODUCTION

Being a developing agricultural country at least in a foreseeable future, Myanmar is inevitable the use of pesticides in agriculture food production although other parallel efforts of non-chemical nature are being endeavoured in pest control strategies. Although there is a low pesticide consumption rate in Myanmar, the present data indicates the urgent need of a cautious control in the use through coordination and cooperation of various government agencies and the people themselves. In addition, agricultural pesticides use in the country is expected to be increased with the abrupt change of cropping pattern for high rice production and extension of various crops grown areas.

The use of agro-chemical on food crops is estimated about 80% of the total. At that time the use of organo-chlorine insecticides (oc's) is decreasing but the percentage of those pesticides is total (about 10%) is still high. The use of pyrethroids is increasing.

2. LAW ENFORCEMENT

Pesticide Law being enacted in 1990 and procedures relating to the law been adopted. the law will provide for the control of pesticide use on food and environment. It will also monitor the quality of pesticide in use and the control of residues in food and environment. Pesticide Analytical Laboratory (PAL) being set up to support legislative requirement.

3. FOOD ADMINISTRATION IN MYANMAR

The first ever legislation in relation with food control in Myanmar was the food drug act (1928). This act being replaced with Public Health Law in 1972, so as to exercise food control in the country. In Food quality Control Laboratories being established as a division under National Health Laboratory of Department of Health.

In 1992 National Drug Law had been promulgated with the aim of safe and quality of food and drug for public. The National Health Laboratory had been upgraded to separate Food and Drug Administration (FDA) Department under the Department of Health at 1995. In 1997, National Food Law had been promulgated with the aim of implement effectively and comprehensively for the safe food.

4. PESTICIDE RESIDUES DETECTED IN FOOD DURING 1989-2000

In Myanmar, in early 90's the country had some trade problems relating to pesticide residues in food. The residues detected were mainly Organo chlorine. The violation of residue limits for food commodities is presented in table 1

Table –1 Residues survey in food commodities and violation of MRL's (1989-1999)

Year	No. of sample analysed (food)	Sample violating Codex Limits	Sample violating National MRLs	Detected Residue Level
1989-90	190	44 (23%)	44 (23%)	∑DDT Aldrin+Dieldrin
1990-91	244	45 (18%)	45 (18%)	∑DDT Aldrin+Dieldrin
1991-92	51	0	0	0
1992-93	49	3 (6%)	3 (6%)	∑DDT Aldrin+Dieldrin
1993-94	115	15 (13%)	20 (17%)	∑DDT Aldrin+Dieldrin
1994-95	44	7 (16%)	7 (16%)	∑DDT Aldrin+Dieldrin
1995-96	60	0	0	0
1996-97	40	2 (5%)	2 (5%)	∑DDT Aldrin+Dieldrin
1997-98	36	0	0	OCI detected < LD
1998-99	159	0	0	OCI detected < LD
1999-2000 (Nov.)	31	0	0	0

It may be noted that in the early 90's the violation of MRL's (National & Codex) were due to Organo chlorine pesticide residues.

With the enactment of Pesticide Law, the use and import of ,many Organo chlorine Pesticides has been banned or restricted in this country.

Currently, the pesticides used for there crops are mainly fast degrading OP's and Synthetic pyrethroids consequently the residues in food crop produced in this country well below the MRL's established by the joint WHO/FAO Codex Alimentarius Commission.

Another area through not related to pesticide, but which is a serious concern in food safety is aflatoxin (*Aspergillus flavus*) Contamination. Analysis data presented in table-2, carried out by PAL for 6 years, 1994 to 1999, indicated the importance of this natural toxin contamination, lies in crops. Peanut, Chilli and Maize.

Table -2 Aflatoxin contamination in food crops (1994 to 1999)

No.	Commodity	Years							Aflatoxin detected No. (%)	Detected Level (ppb = µg/kg)	
		1994-95	1995-96	1996-97	1997-98	1998-99	1999 Nov.	Total		B1	B2
1	Peanut	1	45	6	1	5	1	59	33 (56%)	10-2400	15
2	Maize	-	43	3	1	35	-	82	26 (32%)	5-250	<5-10
3	Chilli	10	44	-	2	5	6	67	15 (22%)	<15-200	-
4	Peanut snack	-	2	3	-	-	-	5	1 (20%)	<5-15	-
5	Sesame snack	-	3	-	-	-	-	3	-	<5	-
6	Chilli sauce	-	-	-	2	1	2	5	-	<6	-
7	Tomato sauce	-	-	-	8	1	-	6	-	<6	-
8	Peanut oil	-	1	-	-	-	-	1	-	<10	-
9	Sesame	-	12	3	3	2	-	20	-	<5-<10	-
10	Rice	-	11	1	1	-	3	16	-	<6	-
11	Bamboo shoot	5	-	-	-	-	-	5	-	<5	-
12	Tamarind	-	-	-	-	-	2	2	-	<6	-
13	Sunflower seeds	-	-	-	-	-	1	1	-	<6	-
14	Black maple	-	-	-	-	-	3	3	-	<6	-
15	Pigeon Pea	-	-	-	-	-	2	2	-	<6	-
16	Green Marpe	-	-	-	-	-	1	1	-	<6	-
Total		16	161	16	15	49	21	278	75		

Violation to national tolerance levels is presneted in table-3.

Table -3 Aflatoxin in food crops and violation to National Limits

No.	Year	No. of Samples				Sample violating national tolerance level (B1)				
		analysed	detected	Aflatoxin (µg/kg)	Japan <10 ppb	Thailand Hong Kong <20 ppb	India <30 ppb	Malaysia <35 ppb	Taiwan China <50 ppb	
1	1994-95	16	11	9-20	10 (90%)	-	-	-	-	
2	1995-96	161	56	5-2400	45 (80%)	41 (73%)	37 (66%)	36 (64%)	33 (39%)	
3	1996-97	16	4	5-15	1 (25%)	-	-	-	-	
4	1997-98	15	1	156	1 (100%)	-	-	-	-	
5	1998-99	49	4	31-744	4 (100%)	4 (100%)	4 (100%)	3 (75%)	2 (50%)	
6	1999 Nov.	21	-	-	-	-	-	-	-	
Total		278	76	-	61 (80%)	45 (59%)	41 (54%)	39 (51%)	35 (46%)	

It should be noted that WTO SPS agreement also requires proper control of pesticide residues and aflatoxins in food commodities. In order to facilitate international trade in agriculture commodities, it is very important that an agro-economic based country, like Myanmar, observe their international trade agreements regarding food safety standards.

5. CONCLUSION

Myanmar Agriculture Service will be facilitated the establish the use pattern and to do the analysis in accordance with Good Laboratory Practices (GLP) in 1994 although technical consultancy and financial assistance from external organization might be required some extent for extended work program.

After measurement of the residue level, the official MRL should be set in cooperation with Health Department taking into consideration of toxicological aspect for each pesticide.

In obtain monitoring samples for residue survey and market survey Plant Protection and Health Inspectors should be cooperated with Municipal. Trade and other authorities concerned as necessary.

The establishment of National MRL's and a proper control will lead to food safety in the domestic consumption and also for the food importing countries facilitating the international trade.

With coming into force of the National Food Law in early 1997, the FDA, under Ministry of Health carries the responsibilities to ensure safely of food an manufactures export/import and sale. The training of PAL; FDA personnel, upgrading of existing PAL and FDA facilities might be enable to accomplish comprehensive food safely control as well as harmony with international trade as well.