

**Regional Workshop on
"International Code of Conduct on the Distribution and Use of Pesticides
Implementation, Monitoring and Observance**

Myanmar Country Report

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Introduction

Myanmar, Pesticide Law in line with the FAO guidelines has been enacted in 1990. In exercise of the powers conferred under section 50 (a) of the Pesticide Law, the Ministry of Agriculture & Irrigation with the approval of the government, has prescribed the procedures relating to the Pesticide Law, in 1991. The government of the Union of Myanmar, formed the Pesticide Registration Board (PRB) constituted with (10) competent authorities from Ministry of Agriculture, Ministry of Health, Ministry of Forest, Ministry of Livestock Breeding & Veterinary and Ministry of Trade, in 1992.

The first meeting of PRB was held in 1992 and so far 13 PRB meetings have been convened with the support of the Technical Committee, formed with technical personals of the relevant ministries. The office of the PRB was opened at the Plant Protection Division of Myanma Agriculture Service the premise where the secretary of PRB and most of Technical members attend their offices.

The management and control activities being carried out by the PRB are as follow:

(1) Registration of Pesticides

The registration of pesticides is considered on product basis. According to the Law the pesticides to be used in the country or to be exported must have one of the following registration or use permit.

- (a) Experimental registration
- (b) Provisional registration
- (c) Full registration
- (d) Special use permit

Experimental registration is meant to pesticides those require detail observation before permitting a provisional registration, and only allowed for specified application on a limited area for a maximum period of two years.

The pesticides which have been using in the country, from the time of Law enactment and measured to be acceptable in bio-efficacy and toxicology aspects could have Provisional Registration and reach a marketable stage. More practical and detail evaluation undergo being the 5 year period of provisional registration.

Full registration is to be permitted for 10 year after provisional periods studies are satisfactory.

Special use permit is issued for emergency use considered inevitable for the control and prevention of unanticipated pest incidence.

Amendment of registration means alteration of the original registration for any of the followings with respect to the registered pesticides:-

- change of formulation
- Expanding the field of application
- formulation and production under a new name by a third person using the active ingredient contained in a pesticide registered by a manufacturer with the consent of the manufacturer.

Up to the year 2004, products have been scrutinized for their efficacy, toxicity, quality and other necessary parameters and granted the registration type mentioned below.

<u>Type of registration</u>	<u>No. of product</u>
Experimental registration	101
Provisional registration	581
Amended	50

	732
Full registration	28 (from provisional)

Total	861

A. Pest and Pesticide Management

IPM for sustainable agriculture

To support sustainable development in agriculture control method compatible to IPM strategy has been emphasized among other plant protection measures. The pesticide should be used judiciously as a last resort in IPM strategy. Many IPM supporting activities are being carried out by PPD, MAS and listed below.

i. Biological control measures

The Development of Integrated Pest Management (IPM) Practice with strong emphasis on Biological control works as a part of Integrated Pest Management program is being carried out for the following pests and diseases:

<u>Name of Beneficial Organism</u>	<u>Target Pest</u>
Green Lacewing <i>Chrysoptera spp</i>	Aphids, mealy bugs
<i>Eocanthecona farcellata</i>	American Bollworm <i>Helicoverpa armigera</i> on Cotton
<i>Campoletis chlordiae</i>	American Bollworm <i>Helicoverpa armigera</i> on Cotton
<i>Metarhizium anisopliae</i>	Cabbage Heart caterpillar (Helulla Spp) on cabbage
<i>Trichoderma</i> (fungus)	for control of phytophthora disease in Durian.

ii. Use of biological pesticides

Neem pesticides	(Azadirachtin)
B.T	(Bacillus thurengiensis)

B. Testing, Quality Control and Effects in the Field**Quality control**Parameters examined

- safety of packaging
- ai. content
- emulsion stability / suspension stability
- wet sieve test / dry sieve test
- pH
- storage stability

The quality control programme carried out by the Pesticide Analytical Laboratory, PPD, MAS, indicated that number of products in line with FAO specification has significantly increased since the enforcement of the Law. On the other hand, only illegal products coming in through border areas remain to be controlled.

<u>Year</u>	<u>No. of samples Analyzed</u>	<u>Samples in line with required specification</u>	<u>% qualified</u>
1996-97	115	111	96.5
1997-98	148	144	97.3
1998-99	209	175	83.7
1999-2000	122	110	90.2
2000-2001	231	202	87.4
2001-2002	129	100	77.52
2002-2003	67	58	86.57
2003-2004	195	193	98
2004-2005	108	100	92

C. Health and Environmental Information

In 2003 general survey was conducted in 16 states and divisions hospitals. The data of the collection on poisoning status of the hospitalized cases is as follows.

Distribution of the Acute Pesticide Poisoning Cases by Type in 2003

Type	ICD 10 Code No;	Cases	Death
Organophosphates	X 68	216	23
Cypermethrin (Pyrethroid)	X 68	9	2
Insecticide (unsp)	X 68	89	9
Rodenticide(unsp)	X 68	82	6
Pesticide (unsp)	X 68	9	3
Herbicide (unsp)	X 68	3	-
Endosulfan (Organochlorine)	X 68	3	-
Carbamate (unsp)	X 68	1	-
Metadelphene(Repito)	X 68	1	-
Total		413	43
%		32.8	86.3

Distribution of the Acute Organophosphorus Pesticide Poisoning Cases by Category in 2003

Type	ICD 10 Code No:	Cases	Death
Malathion	X 68	132	12
Fenitrothion	X 68	4	1
Monocrptophos	X 68	2	-
Organophosphorous (Unsp)	X 68	78	10
Total		216	23
%		17.3	36.5

Where;

Unsp stands for unspecified poisoning

Plant Protection Division , Pesticide Analytical Laboratory(PAL) is monitoring the Maximum Residue Limits (MRL'S) in marketing crops; cabbage, tomato and pulses. National Food Law was enacted in 1997 and also monitoring for food safety and standardization has just started under the ministry of Health.

Residues survey in food commodities and violation of MRL's (1989 - 2005)

Year	No. of sample Analyzed (Food)	Sample violating Codex Limits %	Detected Residue Level	
1989-90	190	44 (23%)	Σ DDT	0.3-0.4
			Aldrin + Dieldrin	0.1-0.2
1990-91	244	45 (18%)	Σ DDT	0.2-1.0
			Aldrin + Dieldrin	0.2-1.3
1991-92	51	0	0	
1992-93	49	3 (6%)	Σ DDT	0.03-0.2
			Aldrin + Dieldrin	0.01-0.06
1993-94	115	15 (13%)	Σ DDT	0.01-0.05
			Aldrin + Dieldrin	0.01-0.05
1994-95	44	7 (16%)	Σ DDT	0.15-0.2
			Aldrin + Dieldrin	0.01-0.02
1995-96	60	0	0	
1996-97	40	2 (5%)	Σ DDT	0.05
			Aldrin + Dieldrin	0.03
1997-98	36	0	OCI detected < LD	
1998-99	159	0	OCI detected < LD	
1999-2000	66	0	0	
2000-2001	83	0	0	
2001-2002	81	0	0	
2002-2003	27	0	0	
2003-2004	49	0	0	
2004-2005	46	0	0	

* LD = Limit of detection

D. Trends in Pesticide Manufacture, use and Trade

Pesticide Production

There are three pesticide formulation plants in Myanmar. Two are neem formulation plants in Paleik and Pakokku another one is pilot pesticide formulation plant in Hmawbi established by UNIDO Aid in 1990. Registered Technical Grades are imported and formulated in that plant.

Pesticide Formulation in Hmawbi Pesticide Formulation Plant.

<u>No.</u>	<u>Name of Insecticide</u>	<u>1995-96</u> Actual Liter	<u>1996-97</u> Actual Liter	<u>1997-98</u> Actual Liter	<u>1998-99</u> Actual Liter	<u>1999-2000</u> Actual Liter
1.	Fenitrothion 50%EC	110150	101812	16930	130000	155000
2.	Phenthoate 50 %EC	40182	90011	87620	100000	95000
3.	Endosulfan 35%EC	39155	51470	52720	100000	105000
4.	Cypermethrin10%EC	138458	82135	54040	150000	150000
5.	Diazinon 40%EC	71992	80485	58780	100000	150000
6.	Deltamethrin 2.5%EC	-	20560	-	-	10000
7.	Permethrin 20 %EC	-	14400	-	-	-
8.	Sumialpha 5%EC	-	55210	47210	50000	35000
9.	Malthion 50%EC	-	-	-	70000	-
	Total	399937	496083	281300	700000	700000

After year 2000, pesticide production is stopped due to lack of mechanical failure.

Neem Pesticide Production in Myanmar

<u>No.</u>	<u>Year</u>	<u>Production of formulation (Liter)</u> 0.75%SC(Suspension Concentrate)
1.	1994-95	6189
2.	1995-96	11745
3.	1996-97	15931
4.	1997-98	11647
5.	1998-99	16000
6.	1999-2000	24000
7.	2000-01	47301.9
8.	2001-02	26344.36
9.	2002-03	3765.8
10.	2003-04	7808

The import of pesticides is shown in table below.

Pesticide import to Myanmar during (1992-93 to 2003 – 2004)

Year	Types of Pesticides	Government Sector		Private Sector		Total
		Metric Ton	Yearly Total	Metric Ton	Yearly Total	Metric Ton
1992-93	Insecticide	327.03	346.47	-	-	346.47
	Fungicide	6.59				
	Herbicide	9.78				
	Fumigant	-				
	Other	3.07				
1993- 94	Insecticide	420.63	448.83	0.04	2.52	451.35
	Fungicide	21.38		-		
	Herbicide	13.77		-		
	Fumigant	-		2.48		
	Other	3.05		-		
1994-95	Insecticide	584.26	645	12	76	721
	Fungicide	29.33		-		
	Herbicide	11.39		-		
	Fumigant	-		64		
	Other	20.02		-		
1995-96	Insecticide	794.42	837	21.60	55.20	892.2
	Fungicide	26.58		8.20		
	Herbicide	6.25		9.40		
	Fumigant	-		16.00		
	Other	9.75		-		
1996-97	Insecticide	469.48	542	462.67	554.45	1096.45
	Fungicide	10.77		10.78		
	Herbicide	28.51		28.50		
	Fumigant	-		52.50		
	Other	33.24		-		
1997-98	Insecticide	536.26	591	290.98	394.86	985.86
	Fungicide	6.08		81.00		
	Herbicide	25.66		22.88		
	Fumigant	15.00				
	Other	8.00				
1999-2000	Insecticide	146.96	146.96	2597.75	2980.59	3127.55
	Fungicide	-		262.12		
	Herbicide	-		120.72		
	Fumigant	-		-		
	Other	-		-		
2000-2001	Insecticide	850	880	1350.11	1845.35	2725.35
	Fungicide	30		213.9		
	Herbicide			157.0		
	Fumigant			32.0		
	Rodenticide			10.0		
	Other			82.34		

2001-2002	Insecticide Fungicide Herbicide Fumigant Rodenticide PGR Other	316.475	316.457	1851.12 427.9 152.0 15.22 20.00 160.75 63.15	2690.14	3006.615
2002-2003	Insecticide Fungicide Herbicide Fumigant Rodenticide PGR Other	257.229	257.229	1668.09 544.0 120.0 79.08 - 145.10 62.20	2617.47	2874.699
2003-2004	Insecticides Fungicides Herbicides Other (PGR and fumigant)			2004.10 633.45 142.57 250.00		

Data of pesticide consumption in Myanmar points out that the pesticide consumption is very low compared to many neighbouring countries. The agriculture use contributes to 90 % of total amount.

Many years ago, OC pesticides such as aldrin, endrin, BHC (especially r BHC, Lindane) DDT were used for agriculture and public health and now we are planning to ban the endosulfan, last Organo-chlorine compound being used in Myanmar.

E. Selected Standards

Hazard classification of pesticides to be allowed for registration in Myanmar based on the WHO recommended guide lines. (1993 – 2004)

Sr. No.	Pesticide	WHO Toxicity Class					Total
		Ia	Ib	II	III	Class IV	
1.	Insecticide	-	27	127	77	14	245
2.	Insecticide TG	-	3	49	5	3	60
3.	Insecticide/ Acaricide	-	9	31	13	-	53
4.	Acaricide	-	-	-	2	-	2
5.	Rodenticide	7	2	-	2	-	11
6.	Herbicide	-	2	17	53	45	117

7.	Fungicide	-	-	12	43	49	104
8.	Fungicide/Bactericide	-	-	-	2	-	2
9.	Insecticide/ Fungicide	-	-	1	1	-	2
10.	Insecticide/ Nematicide	-	2	12	3	-	17
11.	Insecticide/ Molluscicide	-	-	-	1	-	1
12.	Bio-insecticide	-	-	-	-	3	3
13.	Stored Pest Control	8	1	-	-	-	9
14.	Public Health	-	-	11	22	63	96
15.	Others	-	-	-	-	1	1
16.	Plant Growth Regulator	-	-	-	3	7	10
	Total	15	46	260	227	185	733

Licenses under the legislation

<u>Type</u>	<u>No.</u>	<u>Controlled by</u>
Formulation Licence	46	Chairman of PRB
Repacking Licence	-	not allowed by PRB
Fumigation Licence	25	by PRB
Retailers Licence	1655	Township Manager

Certified Pesticide Applicator Training (1993 to date)

<u>State/ Div</u>	<u>No. of Times</u>	<u>Trainees (Private + Government)</u>
Yangon	12	837
Mandalay	13	945
Sagaing	5	384
Bago	11	719
Magwe	5	323
Shan	6	310
Ayeyarwady	7	545
Mon + other	2	95
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Total	61	415

Existing laws relating to control of toxic chemicals

1. The Government of Myanmar has enacted the Pesticide law in 1990. The Law monitors and controls the selection, storage, transportation and use of pesticides to protect people crops, other biological entities and the environment.
2. The Factories Act 1951 controls factories involved with chemical, particularly hazardous or toxic chemicals.
3. The Union of Myanmar Public Health Law, 1972 also controls the toxic substances used as consumer products and some purposes for human health.
4. The National Food Law, 1997 controls the food safety and food quality to protect consumers' health. (Food and Drug Administration, Ministry of Health)

In line with the Stockholm convention, Myanmar has banned 9 pesticides out of 12 POPs.

Existing national legislation on POPs (Pesticides) in Myanmar

<u>No</u>	<u>Pesticide</u>	<u>Category</u>	<u>National Legislations</u>	<u>Stockpile</u>
1.	Aldrin	I	bans for all use	nil
2.	Chlordane	I	not used. no registration	no use
3.	Dieldrin	I	bans for all use	nil
4.	DDT	I	restricts to malaria control	25% EC 169 litres 75% WP 523 kg
5.	Endrin	I	bans for all use	nil
6.	HCB	F	not used, no registration	no use
7.	Heptachlor	I	not used, no registration	no use
8.	Mirex	I	not used, no registration	no use
9.	Toxaphene	I	ban for all use	no use

Myanmar is having access to the Rotterdam Convention to implement PIC procedure. Director General of Department of Agricultural Planning was designated as DNA but Plant Protection Division is carrying out notification of final regulatory action and importing country response. Status of control management for 26 pesticides subject to PIC list in Myanmar is as below.

List of Restricted Pesticides (by notification no: 1/94 of Pesticide Registration Board, 23rd March 1994)

<u>No.</u>	<u>Pesticide</u>	<u>Remarks</u>
1.	Methyl Bromide	Fumigant to be handled only by CPA holders.
2.	Phosphine	Fumigant to be handled only by CPA holders.
3.	Bromadiolone	Rodenticide ai. to be handled only by certified formulator.
4.	Zinc Phosphide	Rodenticide ai. to be handled only by certified formulator
5.	Brodifacoum	Rodenticide ai. to be handled only by certified formulator
6.	Fenthion	Restricted to vector control.
7.	DDT	Restricted to vector control for malaria.

List of Banned Pesticides in Myanmar (by notification no: 1/96 of Pesticide Registration Board, 1st August 1996)

No.	Pesticides	Group	
1.	Aldrin	organochlorine	POPs
2.	BHC	organochlorine	PIC list
3.	Captafol	Phthalimide	PIC list
4.	Chlordane	organochlorine	POPs
5.	Chlordimeform	Formamidine	No use in the country
6.	Cyhexatin	Organotin	No use in the country
7.	Dieldrin	organochlorine	POPs
8.	EDB (Ethylene Dibromide)	Fumigant	Very highly toxic
9.	Endrin	organochlorine	POPs
10.	EPN	Organophosphorus	Very highly toxic
11.	Inorganic mercury compound	Inorganic	PIC list
12.	Organic mercury compound	Organic	PIC list
13.	Parathion ethyl	Organophosphorus	Very highly toxic
14.	Strobane		Obsolete
15.	2,4,5-T	Phenoxy herbicide	PIC list
16.	Toxaphene	Organochlorine	POPs
17.	Dinoseb	Dinitrophenol	Reproductive effect
18.	Monocrotophos	Organophosphorus	very highly toxic
19.	Methamidiphos	Organophosphorus	very highly toxic

Conclusions and Comments

Myanmar ,being as agriculture country, it is deemed that the pesticide cannot be abandoned for agriculture production for a foreseeable future IPM packages by crops have been developed in cotton, rice, pulses and some vegetable with strong emphasis on less use of pesticides.

On the other hand, pesticide can cause not only human health and environmental problem but also can have negative impact on the economy of an agriculture exporting country (e.g. trade interception due to legal limits of pesticides content in food.

Though the acute poisoning of these chemicals are fairly observed , the chronic aspect seems to be less knowledge and current awareness service is urgent needed for both producers and consumers in food safety aspect..

PRB of Myanmar recognizes the depth and wideness of the scope of the subject, Pesticide Management and calls for better co-operation with farmers for the sound and effective use of pesticides for clean and green agriculture.