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ESTABLISHMENT OF A PILOT PLANT
FOR PESTICIDE FORMULATION

DP/MYA/80/011

UNION OF MYANMAR

Technical report: Findings and recommendations*

Prepared for the Government of the Union of Myanmar
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Hadi Taufik Rahaju,
consultant in pesticides packaging

Backstopping officer: B. Sugavanam,
Chemical Industries Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

VISIT REPORT : DP/MYA/80/011/11-55/J 13426

DUTY STATION : YANGON / MYANMAR

PERIOD : 26.08.90 - 01.09.90

I. INTRODUCTION

According to the Job Description received by Unido, the Packaging consultant will advise the project authorities of Pilot Formulation Plant of Pesticides, the requirements for liquid pesticide packaging the international standards test is to be carried out, labelling instruction and the size of suitable containers

II. BACKGROUND INFORMATION

The problem of containers for the finished products was discussed and it was agreed that in the absence of aluminium, tin or plastic containers, use of limited sized glass bottles had been agreed. Was also agreed that a suitable bottle should be designed for transportation to different parts of the country.

The glass bottles will be made by the ceramic Industries Corporation and the formulation plant will be run by the Pharmaceutical Industries Corporation (PIC) who are the Government Counterparts.

It is expected that in the first mission the consultant will be providing an advising role and in the follow up mission will monitor progress and suggest any modifications needed to improve safety aspects.

III. PRESENT STATUS

III. 1 Packaging Materials

- Glass bottles

 - Volume : 500 ml
 - Colour : Dark brown

- Caps

 - Innercaps : plastic
 - Screw caps : plastic

- label

 - see enclosure 1
 - same label is used for glass bottles and Master boxes

- Master box

 - corrugated master box (double wall) incl. partition
 - 3 x 4 (double wall) and 2 layer for upper/bottom
 - sign on Master box (see enclosure 2)

There are no checking carried out by the Quality Control in regard to the Quality of Packaging Materials.

III. 2 Packaging Process

Liquid Formulated Insecticides is filled by 4 - nozzle automatic Filling Machine (not underlevel Filling System) Volume 500 ml, accuracy + 1 %, by passs the capping machine came to labelling machine (Wet Glue). inner caps is put to the bottles by manual pressing entering the collecting table where the screw caps applied by manually.

Kraft tape mask is applied on top of Screw Caps as "Security Seal" (requested by MAS)

12 Filled bottles (Due to the uncorrect size of Master box and partition many labels which still wet was coming up/damaged during placing the bottles into the Master box) are now put into the corrugated Master box (Master box was prepared/bottom closed). The Master box is then closed by using Hand taping plastic tape and collected into a wooden pallet Size 1,20 x 0,80 m by stacking up to 50 box per pallet.

IV. MODIFICATIONS NEEDED

IV. 1 - Glass bottles

5 set Moulds for new glass bottles of 500 ml which was sent by air parcel received already by the Plant Authorities. The Ceramic Industries need 7 set of Mould to enable them to product the samples of the new glass bottle.

The new glass bottles design for using the Roll on Pilfer Proff Caps (R.O.P.P.) dia. 28 mm.

A Visit to the ceramic Industries Corporation was not possible due to appointment of 3 days before.

- R.O.P.P. Caps

M.A.C. requested urgently to use the R.O.P.P. Caps for closing of the glass bottles.

Based on the information received, there are many Home Industries producing R.O.P.P. Aluminium Caps in Yangon.

To prevent "Falsification", Project Authorities is requested to put logo/name of Company on the R.O.P.P. AI - Caps.

- R.O.P.P. Capping machine

- Present capping machine is not suitable for R.O.P.P. Caps. Modification is urgently required.

It was discussed with Messrs. A. Izzo/Sicplant and U WIN KYI, that as soon as the samples of new glass bottle is ready. Project Authorities will go to the R.O.P.P. - Caps Manufacturer in Yangon to have the right measurement of Standard R.O.P.P. Caps based to the Standard Glass bottle neck (see enclosure 3). There after the project authorities is kindly requested to sent A.S.A.P. Samples of Glass bottles together with R.O.P.P.- Caps to Sicplant in order enable them to suggest modification needed.

- L a b e l

- Registration number of Pesticides should be printed on the label as soon as the regulation enforced.
- Advice of intoxiciation cases/First aid procedure, Antidot.
- Correct classification of dangerous/poison of finished product (see product safety Data Sheet.)
- Active Ingredient contents declared in g/l
- Propose new label design (see enclosure 4)

- Corrugated Master box (CMB)

As soon as the samples of the new glass bottles/R.O.P.F. Caps ready, Project Authorities have to provide 12 Glass bottles to the Manufacturer of CMB with following information :

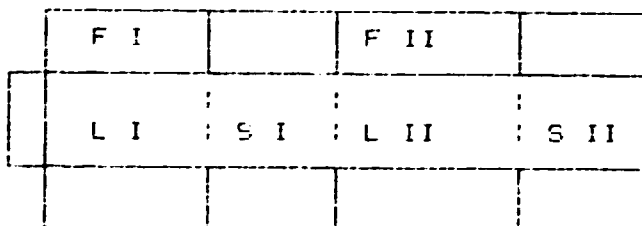
- total gross weight of 12 filled bottles
- lay out 3 : 4
- stacking height.

to enable them to supply a correct measurement and Quality of CMB needed by the Project Authorities.

There afters following parameter should be kept between Project Authorities and CMB - manufacturer : (see enclosure 5)

- measurement of CMB/Layer/Partition
- qualities of material (Substance/Kraft paper) for CMB/Layer/partition
- Stacking strength
- Bursting strenght

Lay-out of Master box



- L I = L II : - Product name
- Warning Sign i.e. "Fragile" "This Side Up"
 - Declaration of Contents (12 x 500 ml)
 - Logo/name of Manufacturer

- S I / S II - Distribution/name of Manufacturer
- F I - Warning Sentence i.e.
This packing Materials is used for packing of
Dangeros/Poison good. Donot Re-use and throwaway
safely
- F II - Do Not Drop/"Fragile Sign"

P O I S O N

O T H E R S

Following document were handed over to Project Authorities

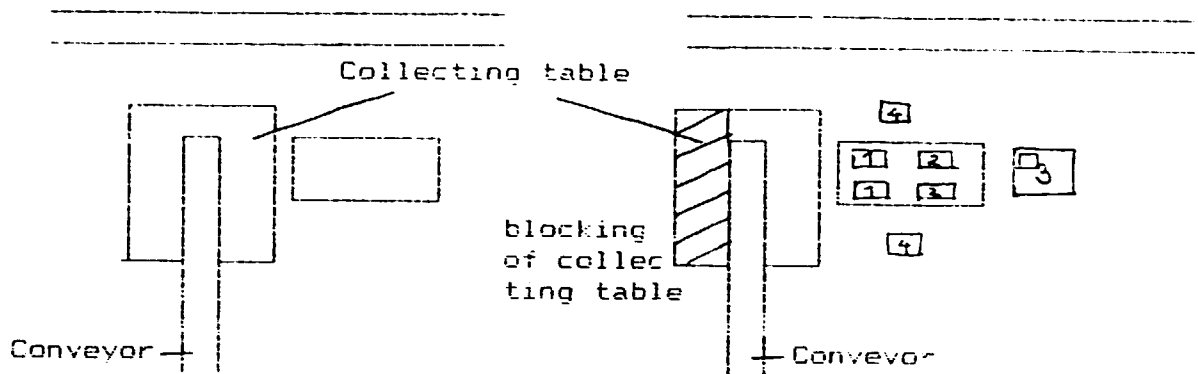
- Guidelines for the Safe handling of Pesticides during their
formulation, packing, storage and tranport (Gifap)
- Guidelines for the Safe and effective use of Pestisides (Gifap)
- Guidelines for personel protection when using pesticides in hot
climats (Gifap)
- International Code of Conduct on the Distribution and Use of
Pesticides.

1. Due to present Road Condition, the project Authorities is advice to add PVC - Straping band on the Master box or to replace the plastic tape with metal stapler by using Hand Stapling machine.
2. To use only standard wooden Fallet of 1,20 x 1,20 m for Finished product/Raw materials.
3. Due to the Safety Aspects in the Filling/Capping line, it was suggested to keep the whole line under Acrylic tunnel and Collecting dirt trays (using galvanized plate thickness 0,8 mm) with connecting to scrubber (see enclosure 6).
4. The collecting table is on the left and right of the Conveyor. Due to the present work mecanism, the filled glass bottles collected from the right side of the conveyor, there fore it was suggested to the project authorities to block the left side of the collecting table by using Stainless Steel rod.
5. Due to the fact that there is no proper Inner Seal for R.O.P.F. caps, enclosed please find samples and specification of Innerseal for R.O.P.F. Caps manufactured by P.T. INDOKO BUMI PERMATA JAKARTA/ INDONESIA. (see enclosure 7)
6. In order to get more in details regarding checking of Packaging material and Safety of the Plant it is suggested that the Project Manager and the Head of Quality Control could come for training in the Factory of the packaging Consultant in Jakarta for ± 3 - 4 days as soon as possible.
7. It was also agreed that the 2nd mission of the Packlaging Consultant will be done after All the modification/Advice have been done by the Project Authorities.

The 2nd Mission function is to supervise the Modification in regard to the safety aspects of The Packaging materials/lines, duration 7 - 8 days, plan for mid. December.

Present

Proposed




1. Placing of Filled bottle to CMB
2. Closing of CMB
3. Stacking CMB on the Pallet
4. Empty CMB


Person met during mission

<u>N a m e</u>	<u>Authorities</u>
Mr. HTIN AUNG	UNDP / Programm Officer
Mr. WIN KYI	Project Director
Mr. MYINT SWE	Project Manager
Mr. SAW WIN	Head of Production
Mr. SAW MOOLA	Head of Quality Control
Mr. NAN TUNG KYAN	Head of Planning
Mr. NYO LAY	Head of Maintenance
Mr. A. IZZO	Sicplant
Mr. J. CARBONE	Sicplant

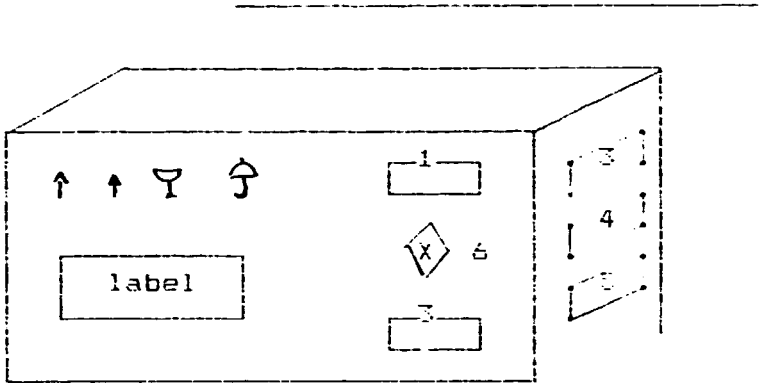
Jakarta, 10.09.90

(Hadi Taufik)

<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>အန္တရာယ်</p>  <p>ပိုးသတ်ဆေး</p> </div>	သုံးစွဲရန်ညွှန်ကြားချက်		
	အ.နံ	ဈေးကွက်	တစ်ကေမှန်း
	ပ.၀၁	လီးလုံးတောက်ပိုး၊ ဖျားပင်ကုန်းပိုး၊ ရွက်စားပိုး	၆၀၀ မီလီလီတာမှ ၈၀၀ မီလီလီတာထိ
	ပ.၀၂	မြှုပ်ပိုး၊ ဆန်ပိုး	၆၀၀ မီလီလီတာမှ ၈၀၀ မီလီလီတာထိ
	ပ.၀၃	ရွက်စားပိုး	၆၀၀ မီလီလီတာမှ ၈၀၀ မီလီလီတာထိ
	ပ.၀၄	အဖူးစားပိုး	၆၀၀ မီလီလီတာမှ ၈၀၀ မီလီလီတာထိ
	ပ.၀၅	သီးထိုးပိုး၊ ရွက်စားပိုး	၆၀၀ မီလီလီတာမှ ၈၀၀ မီလီလီတာထိ
<p>အင်ဒိုဆူဖန် (ENDOSULFAN) ရေချော်ဆေးရည် ၃၅-အီး.စီ</p>	<p>ကျင့်ထုတ်လုပ်မှုနည်းစာ ရက်စွဲ အသားတင်ထုထည်ပမာဏ ၅၀၀ မီလီလီတာ</p> <p style="text-align: center;">ပိုသက်ဆေးရေငံဖြန့်ဝေရုံ မြန်မာ့အေးစိန်နှင့်ကုန်ပစ္စည်းကုမ္ပဏီ မှ ဖော်ပြထားပါသည်။</p>		
<p>သတိပြုရန်</p> <ul style="list-style-type: none"> • ကလေးများ လက်လှမ်းမီရာတွင်ထားပါ။ • အစားအစာနှင့် နီးကပ်သို့မဟုတ် ဆေးခြင်းမပြုရ။ • ဖျိုရုမိရုံအဆိပ်သင့်ပါက အာရုံစူးစိုက်စားသုံးပါ။ ဆေးရည်တိုက်ပါ။ • နီးစပ်ရာ ဆရာဝန်ထံမှ ကြိုတင်ပြသပါ။ • ရောင်စွန်းစိုက်စိုက်မှုများအား တွင်သုံးစွဲခြင်းကို ရှောင်ကြဉ်ပါ။ 			

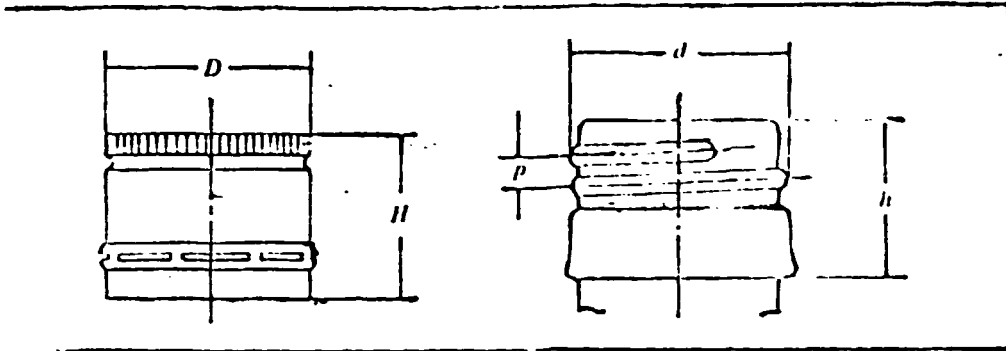
<p>P O I S O N</p>  <p>Insecticide</p>	DIRECTION FOR USE :		
	Crop :	Insects :	Qty per acre
	Cotton		600 to 800 ml
	Paddy		600 to 800 ml
<p>ENDOSULFAN</p> <p>35 EC</p>	Vegetables		600 to 800 ml
	Corn		600 to 800 ml
	Fruit trees		600 to 800 ml
<p>Warning :</p> <ul style="list-style-type: none"> - keep out of reach of children - store away from foodstuffs - induce vomiting if poisoned by swallowing. Give magnesium sulphate solution - send for nearest doctor to make immediate action - keep out of creek, stream & ponds 	<p>Batch No. Date Volume 500 ml</p> <p style="text-align: center;">Formulated & produced by PILOT PLANT FOR PESTICIDE FORMULATION MYANMA PHARMACEUTICAL INDUSTRIES</p>		

Lay out Present Corrugated Master box



1. Poison
2. Insecticides
3. Danger
4. Handle With Care
5. Fragile
6. Sign of Dangerous good

The standard sizes of the P.P.cap and bottle finish



type	cap			bottle finish		
	size	dia meter D (mm)	height H (mm)	thread dia d (mm)	height h (mm)	thread pitch p (mm)
s t a n d a r d	22	22.4 / 22.7	15.1 / 15.2	21.45	12.75	2.54
	25	25.6	16.8	24.4	14.05	3.175
	28	28.4	18.3 / 18.4	27.1	15.4	3.63
	31,5	31.4	18.3	30.2	15.4	3.63
	38	38.3	18.35	37.1	15.4	3.63
	46	46.0	18.1	44.75	15.4	
s h o w	53	53.3	18.1	52.0	15.4	3.63
	38	38.4	16.0	37.1	13.45	3.175
	43	43.0	16.1	41.65	13.45	3.175
	46	46.0	16.0	44.75	13.45	3.175

Label of Pesticides

E	A	C
	B	

- A : Product Name/Insecticides etc
Active Ingredient declaration in g/l
Registration No.
- B : Specific information of Product
Net Volume :
Warning sign i.e. skull and cross bones for toxic materials
- C : Safety Precautions
First Aid
Medical treatment incl. information of Antidot
Formulator Name
Distributor Name
- D : Batch No :
Manufacturing Date :
- E : Direction for Use
- Crops
- Type of Insects
- Dosage
- Spraying time/number

Specification of Corrugated box

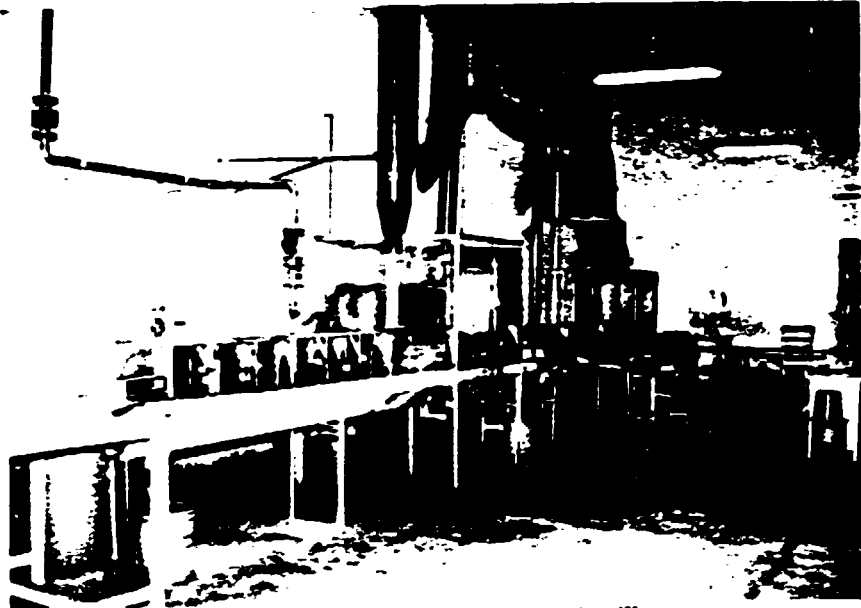
A. Single Wall corrugated box (SH)

G (gr/m ²)	Description	Bursting test	E C T	M (kg)	D (mm)
250	125 / 125	7,5	3,1	8,0	900
275	150 / 125	8,0	3,3	9,0	1.050
300	150 / 150	9,0	3,5	14,0	1.200
325	200 / 125	10,0	3,7	15,0	1.300
350	200 / 150	11,0	4,0	16,0	1.350
400	200 / 200	12,0	4,4	18,0	1.500
500	300 / 200	14,5	5,3	30,5	1.950
600	300 / 300	17,0	5,9	36,0	2.200

B. Double Wall Corrugated box

G (gr/m ²)	Description	Bursting test	E C T	M (kg)	D (mm)
375	125/125/125	12,0	5,0	18,0	1.500
400	150/125/125	12,5	5,2	22,5	1.650
425	150/125/150	13,0	5,4	25,5	1.750
450	200/125/125	14,0	5,8	29,5	1.900
475	200/125/150	15,0	6,2	31,5	2.000
525	200/125/200	17,0	7,0	36,0	2.200
625	300/125/200	18,0	7,4	38,0	2.300
725	300/125/300	20,0	8,0	42,5	2.400

- Notes :
- G. = Total grammature of liner (for DW corrugated box: inside liner inclusive)
 - ECT = Edd Crush Tester
 - M = Maximum of Weight of corrugated box: and its content
 - D = Maximum of inside dimension of corrugated box: (length + width + height)



enclosure 6

Technical specification

Foamed Poly Ethylene Cap Liners

1. Composition :

- Poly Ethylene (PE)
- Blowing Agent
- Zinc Stearat
- Titanium

2. Description :

- * Appearance : - colour : snowy white
- surface : smooth
- * Has no smell and no toxic.
- * Resistant to alcohol, acid, and other chemicals
- * Leak proof
- * Resistant to humid condition.

3. Test Result :

Items of tests	! Result of tests
Density, gr/cm ³	! 0.462
Hardness, Duro A	! 70 - 72
Weight, gr/cm ²	! 892
Tensile strength, kg/cm ²	! 34,7 - 36,7
Yield strength, kg/cm ²	! 26,3 - 28,0
Elongation, %	! 212 - 232
Compression Deflection at 115 - 130 kg/cm ² , %	! 13 - 14
Compression set Under Constant, deflection, %	! 12

4. Application :

- Cosmetics
- Pesticide
- Pharmaceutical
- Oil, etc.