

ENVIRONMENTAL CODES OF PRACTICE



Transport of Insecticides for IRS Activities

LIST OF ABBREVIATIONS

DMO	District Malaria Officer
DDT	Dichloro Diphenyl Trichloroethane
EC	Emulsion concentrate
HIL	Hindusthan Insecticides Limited
IRS	Insecticide Residual Spray
KTS	Kala Azar Technical Support
MOIC	Medical Officer Incharge
MS	Metal Sheet
MSDS	Material Safety Data Sheet
MTS	Malaria Technical Support
NVBDCP	National Vector Borne Disease Control Programme
PHC	Primary Health Center
PVC	Poly Vinyl Chloride
VBD	Vector Borne Diseases
WP	Wettable powder

ENVIRONMENTAL CODES OF PRACTICE -1

TRANSPORTATION OF INSECTICIDES FOR

IRS ACTIVITIES

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Document Distribution List

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ECOP 1 - TRANSPORTATION OF INSECTICIDES FOR IRS ACTIVITIES

1 INTRODUCTION

The procurement of insecticides for Indoor Residual Spraying (IRS) is done both centrally, by the National Directorate, as well as by the respective State Directorate.

Thus, transportation of the chemical for IRS involves three different phases –

- Bulk transportation (from manufacturing units to the district)
- Small content transportation (from district to the PHCs)
- Local transport (from PHC to the field during spraying).

The following table shows the procurement of different insecticides that are procured under the programme.

TABLE1. PROCUREMENT OF DIFFERENT INSECTICIDES UNDER NVBDCP

Sl. No.	Chemical	Packaging Weight/Type	Remarks
Organochlorides			
1	DDT	50 kg (Gunny bags/HDPE bags)	50% WP for IRS
Organophosphates			
2	Malathion	200 kg (MS drum)	25%WP for IRS
3	Malathion Technical	200 kg (MS drum)	95% (Tec) Liquid formulation
4	Pyrethrum	MS drums	2% Extract liquid formulation
5	Temephos	50 kg and 200 kg poly lined MS drums	50% EC for larvicides Shelf life: Two years for 50% EC.
6	Temephos	1 kg bottle (Aluminium bottles)	2% Granular formulation
Synthetic Pyrethroids			
7	Deltamethrin	25 kg Fibre board drums/Gl. drums with LDPE liner.	2.5% WP/SC for IRS/Bed Net Impregnated
8	Alpha Cypermethrin	5 kg (MS drum/Fibre board drums)	5% WP for IRS
9	Lambdacyhalothrin	5 kg(MS drum/Fibre board drums)	10% WP for IRS
10	Cyfluthrin	5 kg (MS drum)	10% WP for IRS
11	Lambdacyhalothrin	25 Fibre board drums/Gl. drums with LDPE liner.	10% WP
	Bio Larvicide		
12	Bti AS	1 litre bottle (Aluminium bottles)	Bio larvicide to curb mosquito breeding
13	Bti WP	1 kg packet	Bio larvicide to curb mosquito breeding

Source: NVBDCP Directorate

During the handling of the insecticides (loading and unloading, and transport), the personnel are directly exposed to these insecticides as well as to their hazards.

The aim of this Code is to ensure that transportation of insecticides is undertaken in a safe manner in accordance to the statutory provisions. It provides guidance to personnel involved in loading, unloading and transport of insecticides. This would ensure minimization of hazards at different stages of the operations.

2 PUPROSE AND SCOPE

The Codes of Practice has been defined to ensure that loading, unloading and transportation of pesticides are carried out in an environmentally safe manner. The Code also addresses the Occupational Health Safety Aspects associated with loading and unloading. It also tries to ensure that the community which might be accidentally exposed during the transportation, loading or unloading processes is not adversely affected.

3 STATUS OF THIS CODE

The transportation of hazardous substance in India is governed by the Central Motor Vehicles Act 1989 and the rules under it. The safety codes defined in this Act and the Rules should be adhered to while transporting insecticides under the programme.

Further, the Environmental Management Plan adopted under this programme also lays emphasis on the safety of the people who would be exposed to the insecticides.

4 DUTIES AND RESPONSIBILITIES

For proper transportation of the insecticides, the Consignor have to ensure that all the provision of the Codes with respect to training of the drivers, loading of the consignment and selection of the vehicles for insecticide transporting are adhered to. The Consignor would also be responsible for ensuring that the transporter is contractually committed to the guidelines and adheres to it. The Consignor would ensure that the provisions detailed in these guidelines are followed at the loading point. The DMO/VBD Consultant is responsible for implementing these guidelines at the district level, and the KTS/MTS/MOIC will have to take charge of ensuring these guidelines.

5 GUIDANCE NOTES FOR THE TRNASPORTATION, LOADING AND UNLOADING

This Code of Practice describes the guidelines for both bulk transportation and small content transportation as well as for loading and unloading activities. The Guidance Notes for:

- Bulk transportation guidelines are described in Section I,
- Transportation of small quantities is specified in Section II; and
- Transportation from PHC to field is specified in Section III.

5.1 SECTION I: GUIDELINES FOR BULK TRANSPORT OF PESTICIDES

Bulk transportation of the insecticides takes place in trucks to the districts directly. The safeguards which would be adopted for bulk transport are presented as Annexure I.

5.2 SECTION II: GUIDELINES FOR SMALL QUANTITIES TRANSPORTATION OF PESTICIDES

The insecticides are distributed from the district store to the PHC just before the start of the IRS. The safeguards which would be adopted for small quantities transport are as follows:

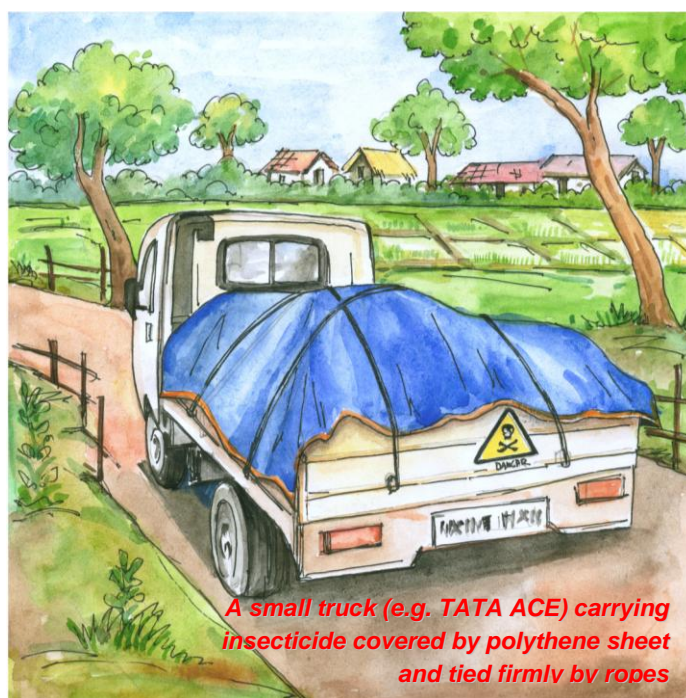
5.2.1 RESPONSIBILITY FOR IMPLEMENTATION

The District Malaria Officer is responsible for the vector control programme in the district and also for procurement and transportation of the insecticides to the villages. The District Malaria Officer is also responsible for ensuring that the safeguards for transportation are implemented. However, for functional aspects, it is the responsibility of the personnel involved in these activities.

5.2.2 PLANNING OF TRANSPORT

- The District Malaria Officer should take the responsibility of distributing the insecticide to the PHC/ Sub-Centre by transport exclusively meant for this purpose. The transport can be any vehicle of the Health Department or hired commercial vehicles. In case a vehicle is being hired, the District Malaria Officer/ Storekeeper/Official-in-charge should ensure that the vehicle used for transportation adheres to the provisions.

FIGURE 1. SMALL QUANTITY TRANSPORT IN TRUCKS



A small truck (e.g. TATA ACE) carrying insecticide covered by polythene sheet and tied firmly by ropes

- Vehicles used for the transportation of the insecticides should be equipped with a fire extinguisher (in case it is required as per the MSDS) and first-aid kit
- The vehicles should be provided with a cover and should have provision for securely fixing the load with ropes.

- Ensure that the driver of the vehicle holds a valid Driving License¹.
- The vehicle should not be loaded over the freeboard.

5.2.3 INSTRUCTION FOR DRIVERS

The Storekeeper/Officer in-charge of loading should ensure that the driver of the vehicle is intimated about:

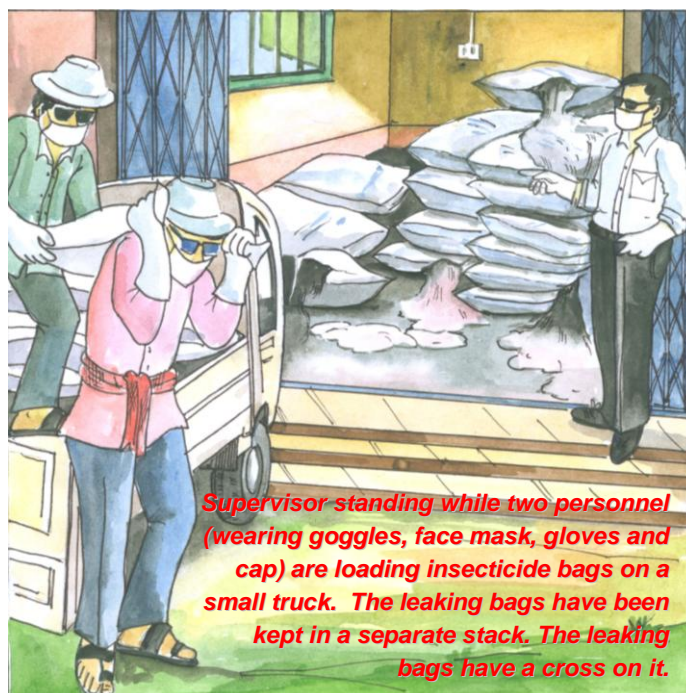
- Insecticides being transported,
- The contact numbers of officials (e.g. District Malaria Officer/Storekeeper/Officer-in-charge of transportation) to be contacted during an emergency, and
- The precautions to be undertaken during emergencies

5.2.4 INSECTICIDES LOADING AND UNLOADING

In addition to the provisions mentioned in Section 0, the Storekeeper/Officer-in-charge of loading/unloading should adhere to the following:

- Ensure that leaking bags and containers are not loaded for transportation.
- Provide Personal Protective Equipment (PPEs)² to the crew for loading and unloading. Used protective gear should be washed, dried and returned to the storekeeper.
- Insecticide bags/containers must not be loaded over the board of the truck and the cargo must be covered (by tarpaulin sheet) and securely fixed.
- Hooks should not be used for loading and unloading the gunny bags/polyethylene bags.
- Proper ramps should be used for the loading and unloading of MS/PVC/Fibre drums.
- After the completion of the unloading of the insecticides at the sub-district store, the MTS/KTS/Store-in-charge or his representative should ensure that the vehicle

FIGURE 2. LOADING OF INTACT BAGS



Supervisor standing while two personnel (wearing goggles, face mask, gloves and cap) are loading insecticide bags on a small truck. The leaking bags have been kept in a separate stack. The leaking bags have a cross on it.

¹ as per provisions of Rule 9 of the Central Motor Vehicle Rules

² This should consist of gloves, mask, coverall (full shirts and pants), goggles and shoes.

is cleaned by dry dusting and the leakage/spill contents collected in an empty bag/container before the vehicle is released. This should be stored separately and used later. The personnel involved in cleaning should use personnel protective equipment.²

- During loading/unloading of the insecticide children, onlookers and livestock should not be allowed near the loading/unloading site.

FIGURE 3. LOADING OF DRUMS AND CONTAINERS USING RAMPS

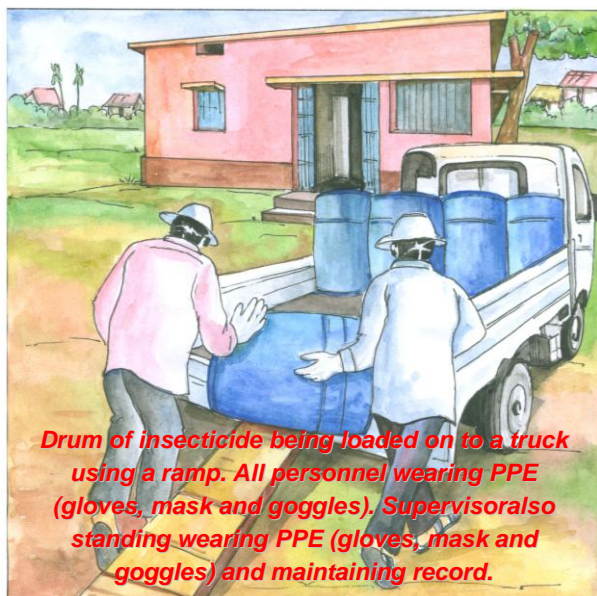


FIGURE 4. ONLOOKERS NOT ALLOWED DURING LOADING OR UNLOADING



5.2.5 HANDLING OF EMERGENCIES

In case there is an emergency:

- The Driver of the vehicle should intimate the designated officer (e.g. District Malaria Officer/Storekeeper/Officer-in-charge of transportation) about the accident.
- Driver/crew handling the spill management should ensure that onlookers and bystanders are not allowed to approach the accident site.
- The crew involved in cleaning of spills should have proper protective gear comprising of gloves, mask/cotton towel on their face, coverall (full shirts and pants), goggles and shoes while cleaning spills.
- In case the entire consignment spills, any bag/container left intact should first be retrieved and stored in a secured location (away from water body, drinking water source, bus stand/crowded areas, waterlogged area) and covered by tarpaulin.
- The collectable contents of damaged bags/containers which have spilled should be collected at one place and transferred into other bags/containers.
- The left-over material at the spill site should be covered with earth/sand and should not be washed with water.

- If the crew come in contact with the insecticides, they should immediately remove their contaminated clothes and wash (with soap and water) the insecticide off their skin.

5.3 SECTION III: GUIDELINES FOR LOCAL TRANSPORT – TRANSPORT TO VILLAGES FROM PHC

The insecticides are stored at the PHC just before the start of the IRS. Only a week's requirement of insecticide is provided to the squad. The squad is responsible for carrying the insecticide from the PHC to the village where it is being sprayed.

5.3.1 RESPONSIBILITY FOR IMPLEMENTATION

The Squad Leader/MPW would be responsible for ensuring that the guidelines specified for transportation are adhered to.

5.3.2 SAFEGUARDS FOR TRANSPORTATION

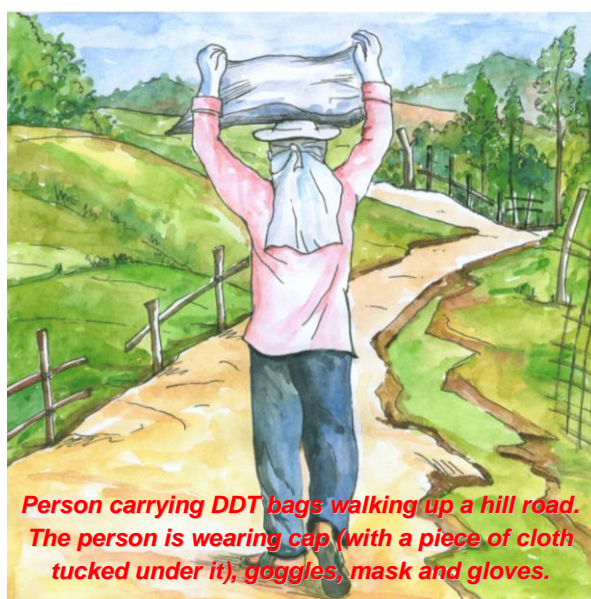
During the transport of insecticides the following issues need to be looked into:

- For transportation of weekly consumption of insecticides, van rickshaw/auto rickshaw/cycle rickshaw/bicycle should be used. The van rickshaw/auto rickshaw/cycle rickshaw/bicycle used should be exclusively dedicated for insecticide transport at that time, i.e. no other material/person should be transported along with the insecticides.
- The bags/containers should be properly covered up with polythene sheets and tied up properly such that the load is securely fixed. This would avoid any spillage, especially where roads are irregular /un-metalled.
- The vehicle should not be overloaded such that it affects the stability of the vehicle and also becomes difficult for the crew to load and unload the insecticides.
- The members of the spraying squad who are involved in loading/unloading and handling of the insecticide should use the PPEs provided to them during the loading/ unloading/handling processes.
- In places where it is not possible to carry the load of insecticide even on a bicycle or through any other mode of transport due to difficult terrain, the load may be carried as head load/back load. In case the insecticide is carried as head load, the porter should be provided cap/load-carrying helmet, goggles, gloves and face mask.

FIGURE 5. DDT BAGS CARRIED ON BACK OF BICYCLE



FIGURE 6: PORTER CARRYING DDT BAGS ON HEAD LOAD WEARING PPE



6 REFERENCES

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- President's Malaria Initiative BMP Manual, USAID, (2010), *Best Management Practices (BMP) for Indoor Residual Spraying (IRS) in vector control interventions*, available at www.fightingmalaria.gov/technical/pest/bmp_manual_aug10.pdf (accessed on 15.07.11)

ANNEXURE I

RESPONSIBILITY FOR IMPLEMENTATION

The Consignee would ensure that these guidelines are being followed. In case of bulk transport, the insecticide manufacturer (Consignor) would be responsible for implementation.

SELECTION OF VEHICLES FOR INSECTICIDES TRANSPORT

- Covered container trucks are preferred for transportation of the insecticides rather than open trucks.
- Vehicles should have a certification of road-worthiness from competent authority.
- Vehicles used for transportation of the insecticides should be equipped with a fire extinguisher and first-aid kit.
- Ensure that the driver of the vehicle holds a valid Driving Licence.³
- A photocopy of the roadworthiness certificate and the Driving Licence should be attached along with the Invoice/Challan sent to the district along with the vehicle.
- The driver should have the ability to read and write at least one Indian language specified in VII Schedule of the Constitution and also English language.¹
- It is essential for every carrier engaged in transporting hazardous material to display correctly the emergency information panel (Annexure II). Class Labels (Annex III) to be prominently displayed outside the container. The vehicles should also be properly labelled (in accordance to the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989). According to this rule, the labels attached to the vehicle should include the physical, chemical and toxicological data. Along with this, the Hazchem No. and the C.A.S. No. (Chemical Abstracts Service) with proper chemical name of the insecticides should also be present.

INSTRUCTION FOR DRIVERS

Prior to long-distance transportation of insecticides, Consignor should inform the drivers about:

- Insecticides that are being transported,
- The material safety data sheet (MSDS), and
- Handling emergency situations (e.g. road accidents) as per the provisions of the Emergency Management Plan developed by NVBDCP Directorate.

Briefing for Emergency Management for long-distance transport should include:

- Communication Protocol (people who should be informed) to be followed in time of emergency.
- First response during the handling of an accident or emergency.
- Preventive measures which needs to be adopted during an emergency.

³ As per provisions of Rule 9 of the Central Motor Vehicle Rules

- Handling of contamination-related situation.

INSECTICIDE LOADING/UNLOADING AND TRANSPORTATION

While loading/unloading and transporting the insecticides to the District Malaria Office, the following guidelines need to be taken care of:

- Manufacturer/Consignor should ensure that leaking bags and containers are not loaded for transportation.
- Crew engaged in loading and unloading should be provided with personal protective equipment.⁴ (In case of non-availability, at least a piece of cloth should be wrapped around the mouth and nose).
- Used protective gear should be washed, dried and returned.
- The Manufacturer should ensure that the insecticide bags/containers should not be loaded over the board of the truck and the cargo must be covered (by tarpaulin sheet) and securely fixed.
- While loading and unloading the gunny bags, hooks should not be used. In case it is essential to use hooks, the area at the end of the gunny bags should be used for this purpose.
- Proper ramps should be used for the loading and unloading of MS/PVC/Fibre drums
- After the completion of the unloading of the insecticides at the district store, the District Malaria Officer or his representative should ensure that the vehicle is cleaned by dry dusting and the leakage/spill contents collected in an empty bag/container before the vehicle is released. This should be stored separately and used later. The personnel involved in cleaning should use personal protective equipment.²

HANDLING OF EMERGENCIES

- In case of accident:
 - Driver must inform the Manufacturer or the appropriate agency designated by the Manufacturer about the accident.
 - Driver/crew handling the spill management should ensure that onlookers and bystanders are not allowed to approach the accident site.
 - The crew involved in cleaning of spills should have proper protective gear comprising of gloves, mask/cotton towel on their face, coverall (full shirts and pants), goggles and shoes while cleaning the spills.
 - In case the entire consignment spills, the bags/containers left intact should first be retrieved and stored in a secured location (away from water body,

⁴ This should consist of gloves, mask, coverall (full shirts and pants), goggles and shoes.

drinking water source, bus stand/crowded areas, waterlogged area) and covered by tarpaulin.

- The collectable contents of damaged bags/containers which have spilled should be collected at one place and transferred into other bags/containers.
- The leftover material at the spill site should be covered with earth/sand and should not be washed with water.
- If the crew has come in contact with the insecticides, they should immediately remove the contaminated clothes and wash (with soap and water) the insecticide off their skin.

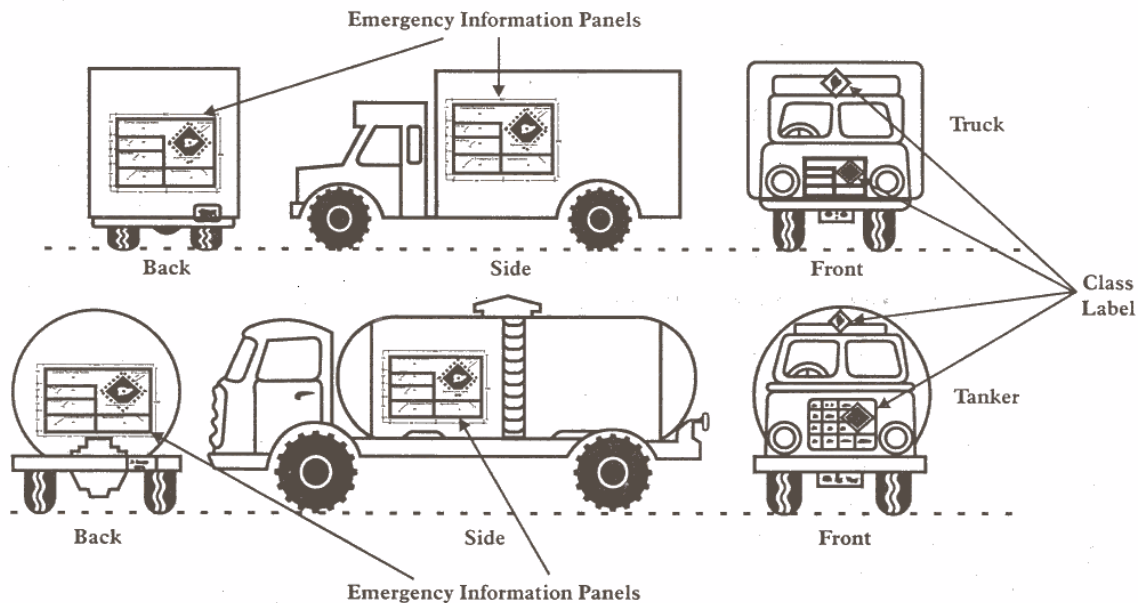
ANNEXURE II: EMERGENCY INFORMATION PANEL

It is essential for every hazardous material carrier to display correctly the emergency information panel.

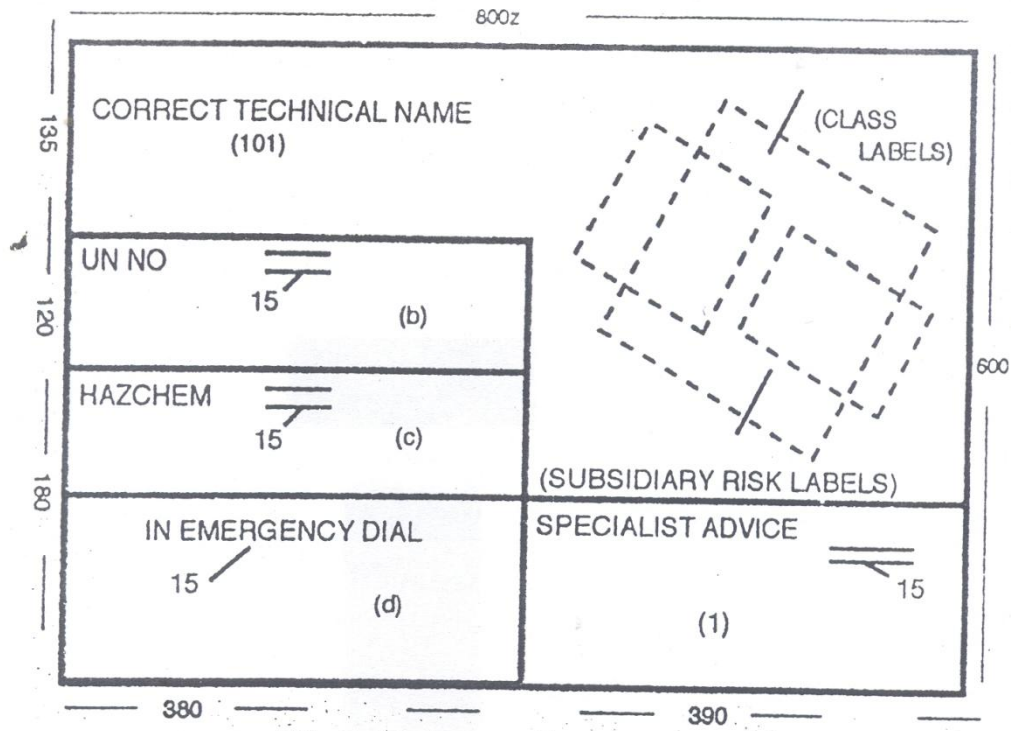
Emergency information panels should be legibly and conspicuously marked in each of the three places specified. The emergency information panels should face each side of the carriage and also to its rear, and such panel shall contain the following information:

- The correct technical name of the dangerous or hazardous goods in letters not less than 50mm high.
- The United Nations class number for the dangerous goods in letters not less than 100mm high.
- The class label of the dangerous or hazardous goods in the size of not less than 250mm square.
- The name and telephone number of the emergency services to be contacted in the event of fire or any other accident in letters and numerals that are not less than 50mm high and the name and telephone number of the Consignor of the dangerous or hazardous goods or of some other person from whom expert information and advice can be obtained concerning the measures that should be taken in the event of an emergency.



LOCATION OF THE EMERGENCY PANEL



DIMENSION OF EMERGENCY PANEL



ANNEXURE III: HAZARD CLASS LABEL

UN Class No.	Classification of goods	Class Label
(1)	(2)	(3)
6.	Poisonous (toxic) substances and infectious substances.	.
6.1.	Poisonous (toxic) substances	
6.2.	Harmful substances	

The ECoP series also Contain:

2. Storage and Management of Insecticides Stock
3. Community Responsibility During IRS
4. Use and Maintenance of Personal Protective Equipment (PPE)
5. Indoor Residual Spraying (IRS)
6. Disposal of waste water, empty bags/ Containers and bio-medical wastes



National Vector Borne Disease Control Programme (NVBDCP)

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Ministry of Health & Family Welfare

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