

# **Standard Operating Procedure (SOP) for responding to Terrorist attacks using CHEMICAL WEAPONS**

**Standard Operating Procedure (SOP) for responding to**

**Terrorist attacks using Chemical Weapons**

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Recovery & Restoration Phase

## **Standard Operating Procedure (SOP) for responding to**

### **Terrorist attacks using Chemical Weapons**

#### **CHAPTER – I**

##### **General**

1.1 This SOP lays down the sequence of action of actions to be taken by different agencies of

the Government in response to a terrorist attack using Chemical Weapons (C W). The

SOP also lays down an institutional mechanism in unambiguous terms with the

Central/State/ District administration functioning on a trigger mechanism basis.

1.2 The SOP encompasses four phases of activity levels as under :-

(A) Notification Phase

During this phase the incident is identified and relevant agencies are notified.

(B) Response Phase

In this phase the capabilities available with the Government at avarious levels are put

into effect for controlling the situations.

#### (C) Recovery Phase

The setbacks suffered as a result of the CW attack are restored.

#### (D) Restoration Phase

The confirmation of the site sanitization and resumption of normal activity.

1.3 When a CW attack is launched by a terrorist group, it is likely to focus on densely populated cities/ targets at sensitive places. These could be metros, economic nerve centres, entertainment, religious venues and sources of drinking water supply etc.

1.4 While it is difficult to predict the sites likely to be attacked, it will make sense to focus only on locations/ sites which meet the above criteria because covering the whole country will be unacceptably costly.

1.5 The Objective of the operations under this SOP is to reduce the casualties to the minimum extent possible rescue, relief and medical services and to mitigate, as far as possible, the destructive effects of a CW attack on the morale of the affected population.

1.6 The terrorists are likely to use agents which are easily disseminated, rapid inaction, highly toxic, easy to prepare/ procure and difficult to recognize. These agents could be nerve agents (e.g. Sarin), choking agents (eg. Chlorine, Phosgene), and blood agents (eg. Hydrogen cyanide). The likelihood of use of blistering agents (eg. Sulphur Mustard) which acts late can also not be ruled out.

1.7 The agents mentioned in para 1.6 may be disseminated as vapours or aerosols.

## **CHAPTER – II**

### **Command And Control**

The command and control structure is given at Annexure VII

District level /City level, the Command and Control functions will be with the Unified

Commander who may be Collector/ Deputy Commissioner/ District Magistrate/ Commissioner of Police, as designated by the State Government. All departments/agencies of the Central and State Governments in the District/City will work in accordance with the directions of the Unified Commander. The State Government/ District Magistrate/ Commissioner of Police will constitute the Incident Command Teams under officers of appropriate seniority to be designated as Incident Commanders.

### **Flow of Information**

As soon as the incident is confirmed as a terrorist attack using chemical weapons, the unified Commander will inform the Chairperson of State Emergency Management Authority (SEMA) who will in turn inform the chairperson of Crisis Management Group (CMG) in the Ministry of Home Affairs, New Delhi.

The Chairperson of CMG of MHA will inform the National Crisis Management Committee (NCMC).

It is clarified that all decisions regarding response to the incident at the site will be taken by the Incident Commander acting under the broad policy guidelines given by the Unified Commander. CMG of MHA/ SDMA/ SEMA will convey their policy guidelines to the Incident Commander only through the Unified Commander. These guidelines will not be in areas pertaining to operational and tactical decision making.

## **CHAPTER – III**

### **Preparedness Stage**

The preparedness stage will include following actions to be taken by the concerned Ministry/ Departments and organizations of the Central and State Governments.

#### **3.1**

Identification/ Annual review of potential targets.

#### **3.2**

Formation and training of Specialist Response Teams both at the Central and State.

### 3.3

The structure of the Specialist Response Teams is given at Annexure – IV. The Specialist Response Team will report to and function under the directions of the Incident Commander.

### 3.4

Fire services at metros and State capitals are to be trained and equipped to respond to all hazards including NBC. These will be re-designated as Emergency and Fire Services Units.

### 3.5

Awareness generation among the public in vulnerable areas has to be undertaken as a part of awareness generation for disaster management. Information suitable for the public domain will be identified from this SOP as well as the SOPs to be formulated by individual Ministries/ Departments/ Agencies/ State Governments/ UT Administrations and should be made available through suitable means of information dissemination and awareness generation.

### 3.6

The State Police will be the first responder to any incident. It will, therefore be necessary to ensure that they are appropriately trained in the do's and don'ts, of a chemical weapon attack. Training capsules should be developed and integrated into the training programme.

### 3.7

The list of equipment for detection, protection, decontamination and medical treatment has been identified and placed at Annexure-V and needs to be procured and made

available to the Specialist Response Team. Each Specialist Response Team shall be provided with a complement of vehicle which will include one mini bus, one mini truck, one multi – stretcher ambulance, one decontamination vehicle, one portable generator set mounted vehicle and one jeep to facilitate effective response during operational deployments.

### 3.8

Suitable software for prediction of hazard zones after a chemical attack will be developed with inputs in terms of wind parameters viz. speed, direction, concentration and other properties of chemical agents.

### 3.9

The SOP envisages Incident Command teams with officers designated as incident Commanders under whose supervision the Specialist Response Teams will function.

The incident Command teams will be trained in the technical aspects of NBC.

3.10 The Incident Command Teams will function under the overall guidelines/ directions of the District Magistrate of the Commissioner of Police. All Agencies of the Government will make available resources as required by the District Magistrate/ Commissioner of Police. The District Magistrate/ Commissioner of Police will be designated as the Unified Commander by the State Government.

3.11 Hospital preparedness by the State Governments to handle victims of a chemical symptoms and antidotes for various chemical weapons/ agents used. Adequate stocks of antidotes will require to be maintained as well as arrangements for in each of the six metros- Delhi, Chennai, Kolkata, Mumbai, Bangalore and Hyderabad and at least two in each State Capital and other identified probable targets cities. These identified hospitals will be prepared and equipped for handling victims of a chemical attack.

3.12 The Ministry of Health will identify institutions which will conduct in-service training for

doctors and paramedical staff in responding to chemical attacks. The capsules for this in-service training will be developed by DRDO and the training of the trainers will also be conducted by them. The training being conducted by MOD will continue as hitherto. MOD and MOH will coordinate/ assist each other in organizing such training.

3.13 Each identified hospital will maintain adequate stocks of medicines, including essential antidotes such as atropine, PAM chloride, amyl nitrate, sodium nitrate and sodium

thiosulphate to cater for a minimum of 100 casualties. A list of medicines including the five essential antidotes has been identified by the Ministry of Health.

**[Response Phase]**

4.3.1 The Head of the Specialist Response Team will mobilize his team including the medical unit at the hospital and reach the site of incident and report to the Incident Commander.

4.3.2 The Incident Commander will take decisions regarding management of situation/ deployment of manpower. All relevant agencies including Quick Response Teams (QRTs)/ Quick Medical Response Team (QMRTs) to MoD will provide manpower and material resources as required to the Incident Commander.

The Incident Commander will :-

i)

Cordon off the area and restrict entry into the cordoned area except the designated response personnel.

ii)

Arrange to provide directions and instructions to the population on the public address system.

iii)

Use the Detection Team to identify all hazardous substances and the conditions prevailing.

iv)

Designate a staging area where all resources will report.

v)

Designate sites for setting up of decontamination centres.

vi)

Designate locations for triage and emergency treatment.

4.5 The detection/ assessment team of SRTs will enter the area and determine the sources/ types of chemicals, mark contaminated areas, designate hot, warm and cold zones and will monitor the entire decontamination process.

4.6 The rescue and evacuation team of SRTs will evacuate the affected people.

4.7 Decontamination sites will be set up on the periphery of the cordoned area.

4.8 The medical units will set up triage and emergency treatment centres.

4.9 Those affected will be taken to the triage area. Those requiring immediate medical assistance will be rushed at once to the hospital without waiting for decontamination.

Those patients who can be decontaminated before being sent to hospitals will be decontaminated. The third category will be those who can be allowed to leave for the safe area after decontamination.

4.10 The responsibilities and procedures to be followed by the Incident Commander is at Annexure – II.

4.11 The Specific procedures for Specialist Response Teams in emergency response is at Annexure – III.



4.12 The response worksheet for Incident Commander and Specialist Response Teams is at Annexure – VI.

**[Recovery Phase]**

4.13 The Incident Commander will take steps to :-

i)

Decontaminate the area, equipment, vehicles and dispose off left over contaminants,

ii)

Removal of dead bodies from the sites to pre-designated sites/ mortuaries,

iii)

Handover evidence to concerned police authorities.

**[Recovery Phase]**

4.14 The Incident Commander will confirm to the District/State Administration/ Government through Unified Commander that the site of attack has been sanitized and normal activity may resume in the affected area.

4.15 Feedback/after action reports will be given by the following agencies to CMG of MHA through the State Government :-

i)

Unified Commander

ii)

Incident Commander

iii)

Police

iv)

Ministry of Health

**LIST OF ANTIDOTES/ DRUGS AND RESUSCITATION ITEMS/ DECONTAMINATIONS/****SUPPORTIVE EQUIPMENTS****ANTIDOTES**

1.

Inj. Atropin

2.

Inj. PAM – 20 ml.

3.

Inj. BAL

4.

Inj. Sodium Nitrite

5.

Sodium Thisulphate

6.

Inj. Amyl Nitrite

**DRUGS AND RESUSCIATION ITEMS**

1.

Potassium Chloride Oral

2.

Inj. Soda Bicarb

3.

Oxygen Cylinder

4.

Ambus Bag 250/500 ml.

5.

Tab. Paracetamol

6.

Tab. Ibuprofen 400

7.

Ciprofloxacin Eye Drops/ Oint.

8.

ORS Powder

9.

Diazepam

## **DECONTAMINANTS**

1.

Sodium Hypochlorite Solution – (Storage stability limited, not more than a month)\*

2.

Bleaching Powder – (Storage stability limited, not more than a month)\*\*

3.

Potassium Permanganate

4.

Charcoal Powder

5.

Caustic Soda

6.

Soap, detergent and water

7.

Fuller earth

\* To be replaced every month.

\*\*To be replaced every 3 months.

## **SUPPORTIVE EQUIPMENTS**

1.

Public address systems.

2.

Torch or emergency lights.

3.

Stretchers.

4.

Recovery/ refuse bin.

5.

Earth digging equipments.

6.

Fire fighting extinguishers.

7.

Water hoses.

## **SPECIFIC PROCEDURES TO BE FOLLOWED BY AN INCIDENT COMMANDER FOR EMERGENCY RESPONSE**

### **ASSUME COMMAND**

Assign responsibilities to each member of the team, coordinate communications of the team.

### **SIZE-UP AND EVALUATE THE SITUATION AS PER THE WORKSHEET**

-

Cordon off the area in consultation with the safety officer and

restrict entry to the affected area.

-

Arrange to provide directions and instructions to the population on the public address system.

-

To the extent possible, simultaneously identify all hazardous substances or conditions present.

### **SET UP THE COMMAND POST AND STAGING AREA**

Command post is a location where persons having the authority to command and persons necessary to support the process, are brought together and provided with necessary facilities.

An information officer should also be stationed at the command post. Shifting wind direction, new information, requirement for better facilities, problems with communications, need for additional space, or inability to provide security for the command post initially selected could all be reasons for relocation for the command post.

A staging area is often near to but separate from the command post. It is a marked area where responding personnel report with their equipment or apparatus to await direction. Specialist teams, fire, police, medical or other personnel are directed to the staging area.

The person in charge of a particular team will report to the command post to make his or her equipment and expertise known, provide information, or standby for instructions.

### **SITE SECURITY AND CONTROL**

- Limit the number of emergency response personnel at the site to those who are actively performing emergency operations.

- Designate, hot, warm and cold zones and accordingly identify:-

(a) Evacuation routes and procedures

(b) Places for decontamination corridors/station, if required.

(c) Place for rapid treatment centre.

(d) Level of protection required for the responders.

## **RESCUE OPERATIONS**

-

Evacuate victims and arrange immediate first-aid.

-

Decontaminate the victims, if required, using the appropriate dry/wet method.

-

Isolate casualties, prioritize treatment as per triage level.

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-

A back up team shall standby with equipment ready to provide assistance of rescue.

-

Transport casualties to designated hospitals.

-

Request additional assets if required.

## **CONTAMINATION CONTROL**

-

Identify the need and suitable protocol for the decontamination of personnel, equipment and area.

-

Monitor for the completeness of the decontamination process.

-

Re-designate the hot, warm and cold zones if required.

-

Neutralize the source of contamination.

## **RECOVER AND RESTORE**

-

Remove dead bodies, left over items.

-

Complete contamination survey.

-

Hand over evidence to police.

## **TRANSITION BRIEFING**

-

Prepare briefing for the unified command.

The emergency response team will work in appropriate protective gear as advised by the Safety Officer.

## **CERTAIN SPECIFIC PROCEDURES FOR SPECIALIST RESPONSE ITEMS IN EMERGENCY RESPONSE**

The teams shall adhere to all safety norms while carrying out their role. Proper protective gear as advised by the safety officer should be donned. The duration for which the protective clothing is to be worn will be determined by the physiological status of the wearer. In case of unbearable thermal stress, the wearer should be advised to retreat to the cold zone. The team in protective gear should be preferably rotated. The canister should be replaced if there is any resistance in breathing and gas mask should be checked for face seal before entering the contaminated area.

The role of the specialists and certain other specific procedures are enumerated below :-

1.

#### Detection Team

Mainly responsible for the hazard identification and confirmation, neutralization of the source of contamination and an other tasks assigned by the Incident Commander. Certain specific procedures to be observed by the team are as follows :-

-

The team should recognize any unusual smell, pools or puddles of liquids or droplets on water surfaces, dead animal or birds, munitions or their debris; and locate the source of contamination.

-

On site detection methods using detection devices detailed in the list of equipment should be resorted to.

-

Off-site laboratory analysis using instrumental methods can be requested in case of ambiguities in detection.

-

The samples (soil, water, air, contaminated belongings etc.) should be preserved and handed over for crime investigation at a later stage.

2.

#### Decontamination Team

Contamination control, decontamination of personnel, equipment and area and any other tasks assigned by the Incident Commander. The responsibilities/ procedures to be followed by this



team are :-

-

Setting up of decon corridors and stations for decon of victims

should be rapid.

-

Equipment and area decon is not time-constrained and

accorded second priority.

-

The run-off water used for decontamination should be monitored

for completeness of decon and preferably lead to a sewerage.

-

The contamination survey should be carried out prior to

restoring the site for normal operations.

3.

Rescue and Evacuation Team

Mainly responsible for rescuing and evacuating the victims and any other tasks assigned by the

Incident Commander. The responsibilities/ procedures to be observed by the team are as

follows :-

-

Provide directions to the public through the information officer to

control panic.

-

Warn them from walking into hot zone.

-

Guide the public to the exit route/ treatment/ decon centre, as appropriate.

-

Evacuate any trapped casualties.

-

Transport casualties to designated hospitals.

-

Assist the medical team

4.

Medical Team

The team shall be responsible for providing first aid and treatment to the extent possible to the victims at the incident site. The antidotes that may be used are listed in Appendix – I. If required the team shall also assist the doctors in the designated hospitals where the victims are transported. Certain specific procedures for the team are as listed below :-

-

Develop treatment plans for ambulatory and non-ambulatory victims.

-

Ascertain the triage level of the victim with respect to respiration, pulse and neurological status.

-

Decide dry/ wet decontamination procedures for the victim.

-

Set-up treatment centre for providing first aid and treatment to the extent.

-

Reassure and relocate the psychological casualties.

-

Help in preservation of evidence.

#### **ANNEXURE – IV**

### **ORGANISATION STRUCTURE OF SEARCH AND RESCUE TEAM FOR NBC**

#### **EMERGENCIES**

#### **ANNEXURE – V**

### **List of Equipment for detection, protection and decontamination**

Sr. No. Component of Emergency Kits

1

Detector Paper (Three Colour Detector Paper)

2

Residual Vapour Detection Kit (Detector Tube)

3

CAM

4

AP2C

5

NBC Suit permeable with hand gloves and boot

6

Casualty Bag Full

7

Casualty Bag Half

8

Gas Mask (Respirator) with disposable Filters

9

Integrated Hood Mask

10

Vsmodyrt

11

NBC Suit Impermeable (ensemble)

12

Auto Injector (Atropine PAM)

13

Resuscitator

14

Leak Tester for Mask

15

Medical Kit (First Aid Kit Type B)

16

Personal Decontamination Kit

17

Portable Decontamination apparatus

18

Decdontamination Solution & decontaminants (Appendix-1)

19

Water Poison Detection Kit (Detect Cyanide, Arsenic, Mercury, Nerve agents in water)

## RESPONSE WORKSHEET FOR THE INCIDENT COMMANDER AND SPECIALISED TEAM

Every Incident Commander and his specialized team should perform a size-up or incident evaluation soon after arriving at the incident scene. Such an evaluation must be a spontaneous response by trained and experienced responders. The following worksheet provides items for consideration.

### Incident Commander

-

Identification of rescue requirements.

-

Evacuation requirements.

-

Run-off considerations

-

Air-monitoring requirements

-

Placement of arriving emergency forces

(a) Staging area

---

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(b) Remote standby

(c) Commitment as needed

(d) Upwind and upgrade

(e) Use natural barriers for protection

(f) Protect equipment from run-off, vapours, sprays residues etc.

-

Access Control

(a) Roadblocks, barriers, traffic control

(b) Evacuation routes, shelter-in place

(c) Police guards

(d) Use of public address system

-

Environmental considerations

(a) Streams, lakes, ponds, rivers

(b) Sewers, drains.

(c) Groundwater, wells and other drinking water sources.

(d) Crops, vegetation and cattle.

-

Command post operations.

-

Maintaining incident vigilance and discipline.

-

Identification of additional resources.

(a) Sorbent materials, decontaminants

(b) Equipment, water hoses, generator sets.

(c) Empty containers, refuse bins, recovery bins.

(d) Ambulance, stretchers, transport

(e) Manpower.

-

Communication

-

Control and containment\

- (a) Limit the area involved
- (b) Decontaminate
- (c) Cover equipment
- (d) Safe distance.

### **Detection Team**

#### **1. Identification of the hazard :**

- (a) Smell, cloud persistency, solid/liquid/gas, reactivity, toxic etc=
- (b) Site, Dissemination device, configuration, labels etc.
- (c) Relative humidity
- (d) Rain, Snow or other moisture
- (e) Barometric pressure

#### **2. Identification of primary and secondary exposures :**

- (a) High residency dwellings (schools, nursing homes, hospitals, apartments, shopping complexes, entertainment venues).
- (b) Power lines, sewers, pipelines etc.
- (c) Industrial occupancies, gas stations, petrol bunks etc.

- (d) Storage areas for chemicals, gases, flammable liquids etc.

### **Safety Officer**

#### **Personal Protection**

- (a) Briefing
- (b) Impermeable/ permeable clothing
- (c) Gas masks (Full/ Half/ Facelet)
- (d) Vapour Vs. Liquid hazard
- (e) Exit route

- (f) Recognizable signal for retreat
- (g) Buddy system/ constant back up
- (h) Zone definition (cold/ warm/ hot) and adjustment

### **Decontamination Team**

#### **Decontamination considerations**

- (i) Dry/ wet.
- (ii) Wash down.
- (iii) Discard clothing
- (iv) Chemicals, equipment, apparatus

#### **Extinguishing agents**

- (a) Water (strainght streams, fog, spray, mist)
- (b) Dry Chemical
- (c) Foam
- (d) CO<sub>2</sub>
- (e) Sand, tarpaulins and other smothering agents
- (f) Clean up
- (g) Disposal of chemicals and hazardous waste

#### **Critique (Lessons learnt)**

### **Annexure- VII**

#### **Structure of Command and Control**

National Crisis Management Comitee

Crisis Management Group of Ministry to Home Affairs

SDMA/ SEMA/ State Crisis Management Comitee

Unified Commander



Incident Commander

Specialist Response Team

Standard Operating Procedure (SOPs) for responding

To

TERRORIST ATTACKS INVOLVING USE OF RADIOACTIVE MATERIALS

## **ACRONYMS**

ACE

Atomic Energy Commission

AERB

Atomic Energy Regulatory Board

ARC

Aviation Research Centre

BARC

Bhabha Atomic Research Centre

CD

Civil Defence

CP

Commissioner of Police

CPMF

Central Para Military Forces

DAE

Department of Atomic Energy

DGCD

Director General Civil Defence

DIA

Defence Intelligence Agency

DM

District Magistrate

DRDO

Defence Research and Development Organisation

ERC

Emergency Response Centres

SRT

Specialist Response Team

IB

Intelligence Bureau

I&B

Information & Broadcasting

IC

Incident Commander

IO

Information Officer

MHA

Ministry of Home Affairs

MOD

Ministry of Defence

MEA

Ministry of External Affairs

MOHFW

Ministry of Health & Family Welfare

NDMA

National Disaster Management Authority

NSC

National Security Council

R&AW

Research & Analysis Wing

RDD

Radiological Dispersal Device

RSO

Radiological Safety Officer

SAP

State Armed Police

SDDM

State Department of Disaster Management

SDMA

State Disaster Management Authority

SEMA

State Emergency Management Authority

SG

State Government

SOP

Standard Operating Procedure

Standard Operating Procedure (SOPs) for responding

To

## CHAPTER – I

### INTRODUCTION

#### 1.1

The Standard Operating Procedures (SOP) lays down in concise form the steps required to be taken to respond effectively to a terrorist attack using biological agents.

The SOP lays down the sequence of action to be taken by different agencies in response to usage of biological agents by terrorist groups.

#### 1.2

The SOP also lays down an institutional mechanism in unambiguous terms for the worst-case scenario with the Central/ State/ District administrations functioning on a trigger mechanism basis.

#### 1.3

The concerned Central Ministries/ Departments/ Organizations/ Agencies will draw up detailed individual Sops on aspects identified in this SOP as within their sphere of responsibility within a period of one year so as to translate each action point into a number of steps required to be taken by each of them. The State Government/ UT Administrations will also draw up individual SOPs on aspects falling within their sphere of responsibility within a period of one year.

#### 1.4

The Ministries/ Departments/ Organizations concerned with the SOP at the National level will be as under :-

(i)

National Disaster Management Authority

(ii)

Ministry of Home Affairs

(iii)

Ministry of Health and Family Welfare

(iv)

Ministry of External Affairs

(v)

Department of Bio-Technology

(vi)

Ministry of Defense

(vii)

Ministry of Information & Broadcasting

(viii) Department of Drinking water supply

(ix)

Ministry of Agriculture

(x)

Department of Animal Husbandry Dairying

(xi)

Technical Agencies – DGHS, AFMS, ICMR, NICD,

DRDE, DRDO, DCGI

1.5

The organization concerned at the State level will be as under :-

(i)

State Department of Disaster Management (SDDM/ State Disaster Management

Authority (SDMA)/ State Emergency Management Authority (SEMA)

(ii) District Magistrate/ Commissioner of Police/ Superintendent of Police.

(iii) Health services.

(iv) Public Health Engineering Department.

(v) Transport Services.

(vi) Director, Agriculture

(vii) Director, Animal Husbandry & Dairying

1.6

The National Disaster Management Authority may lay down policies and guidelines from time to time to be followed by different Ministries/ Departments/ Organizations/

Technical Agencies of the Government of India and the State Governments for preparedness and response to a terrorist attack using Biological Agents.

1.7

The SOP encompasses five phase of activity as under :-

(a)

**Preparedness Phase :-** This will include all actions that have to be taken by various agencies to ensure the required state of preparedness. This will include documentation; having required equipments in place, exercises/ drills, training programs, awareness generation programs, communication strategy, establishment of command and control system, and storage of emergency medicines/ vaccines/ diagnostic agents etc.

(b)

**Early Warning Phase :-** As a majority of the bio-terrorism agents have an incubation phase before onset, the early warning mechanism in the surveillance system will play an important role. Activities like case

definition, notification, compilation and interpretation of epidemiological data are important aspects and need to be strengthened in the existing surveillance system for developing the early warning signals related to bio-terrorism.

(c)

Notification Phase :- It would be mandatory to report any unusual syndrome or incidence of a usual syndrome in unusual numbers. The Central/ State/ Local Authorities, to make such events notifiable, would enact necessary legal provisions. The activities in this phase include rapid epidemiological investigation, quick laboratory support for confirming the diagnosis, quarantine, isolation, keeping health facilities geared up for impending casualty management and evolving public health strategies for control.

(d)

Response Phase :- The Capabilities available with the Government at various levels for handling the attack are put into effect. The activities include rapid epidemiological investigation, quick laboratory support, mass casualty management and initiation of preventive, curative and specific control measures for containing the further spread of the disease.

(e)

Recovery Phase :- The setbacks suffered as a result of the biological attack are restored and lesson learnt in this phase are incorporated in the future preparedness plan(s).

## **COMMAND AND CONTROL**

### **National level**

#### **2.1**

At the National level, the Command, Control and Coordination of the emergency response will be overseen by the National Crisis Management Committee (NCMC) under the Cabinet Secretary. NCMC will issue guidelines from time to time as required for effective response to a terrorist attack using Biological Agents. All Ministries/ Departments/ Organizations/ Technical Agencies at the National level shall comply with the instructions of NCMC.

#### **2.2**

The NCMC will be assisted by a Bio-terrorism Management Committee comprising of the following members :

i.

Secretaty, Ministry of Health and Family Wlfare - Chairman

ii.

DGHS

- Member

iii.

DG (AFMS)

- Member

iv.

DG (ICMR)

- Member

v.

Director (DRDE)



- Member

vi.

Director (NICD)

- Member

vii.

Drug Controller General of India

- Member

viii.

DAdvisor, DBT, New Delhi

- Member

ix.

Commissioner (Agriculture)

- Member

x.

Commissioner (Animal Husbandry)

- Member

xi.

Any other co-opted member(s)

- Member

xii.

Director (EMR)

- Member- Secretary

2.3

The role and functions of the Committee will be as under :-

i.

Reviewing the preparedness measures, identifying gaps and giving directions for

meeting the deficiencies, issuing policy directions/

approving plans for putting requisite capabilities in place.

ii.

Managing outbreak response.

iii.

The Committee will review the list of biological agents and available control strategies.

iv.

Assess International Scenario on emerging diseases with Bio-Terrorist potential.

v.

Any other technical matter.

The Committee will meet at least twice a year to review the preparedness measures and on the report of an outbreak, will meet as often as is necessary.

2.4

A Technical Committee headed by the DGHS will be responsible for overseeing epidemiological investigations and for issuing guidelines for case management. This

Sub-Committee will comprise of :-

i.

DGHS

- Chairman

ii.

DG, ICMR

iii.

DG, AFMS

iv.

Director, AIIMS

v.

Director, NICD

vi.

Director, DRDE

vii.

Director, IVRI

viii. Microbiologist (ICAR)

ix.

Any other co-opted member (s)

x.

Director, EMR

- Member- Secretary

In an emergency (when there is an imminent threat or after an attack) it will assess the situation

and issue guidelines for response/ case management.

State Level

2.5

The Command, Control and Coordination of the emergency response at the State level

will be with the State Department of Disaster Management/ State Disaster

Management Authority/ State Emergency Management Authority (SDDM/ SDMA/

SEMA), as the case may be. Where SDDM/ SDMA/ SEMA is not headed by the Chief

Minister, it will function under the directions of the Chief Minister to be conveyed through the Chief Secretary.

## 2.6

At the State level, the response to bio-terrorism will be coordinated by the State Department of Disaster Management Authority. The coordinating authority will be assisted by a State Technical Advisory Committee comprising of the following members.

i.

Secretary, In-charge of Health Services

- Chairman

ii.

Specialist, Public Health

- Member

iii.

Microbiologist

- Member

iv.

Clinician

- Member

v.

Entomologist

- Member

vi.

Director (Agriculture)

- Member

vii.

Director (Animal Husbandry)

- Member

viii. Any other co-opted member

ix.

Director, Health Services

- Member Secretary

## **CHAPTER – 2**

### **National Level**

#### **2.1**

At the National level, the Command, Control and Coordination of the emergency response will be overseen by the National Crisis Management Committee (NCMC) under the Cabinet Secretary. NCMC will issue guidelines from time to time as required for effective response to a terrorist attack using Biological Agents. All Ministries/ Departments/ Organizations/ Technical Agencies at the National level shall comply with the instructions of NCMC.

#### **2.2**

The NCMC will be assisted by a Bio-terrorism Management Committee comprising of the following members :

i.

Secretary, Ministry of Health and Family Welfare -

Chairman

ii.

DGHS

-

Member

iii.

DG (AFMS)

-

Member

iv.

DG (ICMR)

-

Member

v.

Director (DRDE)

-

Member

vi.

Director (NICD)

-

Member

vii.

Drug Controller General of India

-

Member

viii. Advisor, DBT, New Delhi

-

Member

ix.

Commissioner (Agriculture)

-

Member

x.

Commissioner (Animal Husbandry)

-

Member

xi.

Any other co-opted member (s)

xii.

Director (EMR)

-

Member- Secretary

2.3

The role and functions of the Committee will be as under :-

i.

Reviewing the preparedness measures, identifying gaps and giving directions for meeting the deficiencies, issuing policy directions/ approving plans for putting requisite capabilities in place.

ii.

Managing outbreak response.

iii.

The Committee will review the list of biological agents and available control strategies.

iv.

Assess International Scenario on emerging diseases with Bio-Terrorist potential.

v.

Any other technical matter.

The Committee will meet at least twice a year to review the preparedness measures and on the report of an outbreak, will meet as often as is necessary.

## 2.4

A Technical Committee headed by the DGHS will be responsible for overseeing epidemiological investigations and for issuing guidelines for case management. This Sub-Committee will comprise of :-

i.

DGHS

-

Chairman

ii.

DG, ICMR

iii.

DG, AFMS

iv.

Director, AIIMS

v.

Director, NICD

vi.

Director, DRDE

vii.

Director, IVRI



viii. Microbiologist (ICAR)

ix.

Any other co-opted member (s)

x.

Director, EMR

--

Member- Secretary

In an emergency (when there is an imminent threat or after an attack) it will assess the situation and issue guidelines for response/ case management.

### **State Level**

2.5 The Command, Control and Coordination of the emergency response at the State level will be with the State Department of Disaster Management/ State Disaster Management Authority/ State Emergency Management Authority (SDDM/ SDMA/ SEMA), as the case may be. Where SDDM/ SDMA/ SEMA is not headed by Chief Minister, it will function under the directions of the Chief Minister to be conveyed through the Chief Secretary.

2.6 At the State level, the response to bio-terrorism will be coordinated by the State Department of Disaster Management/ State Disaster Management Authority/ State Emergency Management Authority. The Coordinating authority will be assisted by a State Technical Advisory Committee comprising of the following members :

i.

Secretary, In-charge of Health Services

- Chairman

ii.

Specialist, Public Health

- Member

iii.

Microbiologist

- Member

iv.

Clinician

- Member

v.

Entomologist

- Member

vi.

Director (Agriculture)

- Member

vii.

Director (Animal Husbandry)

- Member

viii. Any other co-opted member

ix.

Director, Health Services

- Member Secretary

2.7 The role and functions of the State Technical Advisory Committee will be under :-

i.

The expert group will meet twice in a year/ as when required to review the preparedness measures. During an imminent threat/ attack, the group will meet on a daily basis to monitor the situation and give directions for response. The Committee will report to SDMA and the Bio-terrorism Management Committee of the Department

of Health.

ii.

The group will review the functioning of the existing disease surveillance network including laboratory support system.

iii.

Review the available control strategies.

iv.

Review the logistic availability at the State and District levels.

v.

Review the outbreak response system of Rapid Response Teams (RRTs) and identify the weak points and suggest suitable remedial actions.

vi.

Discuss on any other technical matter.

### **District Level**

2.8 The Command and Control at the district/ city level will vest in the District Magistrate/

Commissioner of Police as the case may be.

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2.9 The District Magistrate/ Commissioner of Police will be advised on technical aspects by CMO.

2.10 In metropolitan cities/ capital cities, the command and control shall vest with State Health Secretary. In technical matters, he will be assisted by the Director, Health Services.\

The Command and Control structure is given at **Annexure – XII**

## **CHAPTER – 3**

### **CONCEPTS/ PARAMETERS AND STRATETGY**

3.1

Bio-terrorism is the intentional use of biological agents to cause disease or death through

dissemination of micro-organisms or toxins in food or water or insect vector or by aerosol to harm human population, food crops and livestock.

### 3.2

The effect of bio-terrorism imposes heavy demands on the National health care system and it will be the public health system that will be called upon to handle the consequences. An effective public health system with the component of a strong disease surveillance mechanism, facilities for rapid epidemiological and laboratory investigation, efficient medical management and information, education and communication (IEC) are essential capabilities for countering bio-terrorism.

### **Potential agents in biological warfare**

### 3.3

The potential agents which may be used by terrorists could range from pathogens like Bacillus Anthracis (anthrax), Yersinia Pestis (plague) etc to organisms such as Variola (small - pox) that have been certified as globally eradicated. Biological toxins or genetically modified pathogens could also be used. Terrorists might use new agents, or use organisms such as drug resistant or genetically engineered pathogens. A list of potential agents is given in **Annexure- I**. Details regarding symptoms etc. of agents likely to be used for bio-terrorism are given in **Annexure I A**.

Target population and mode of attack

### 3.4

Instituting preparedness measures in the whole country will be prohibitively costly and will not be the optimal use of resources. A terrorist attack is likely to focus on areas/cities to cause maximum panic, disruption/damage and public attention. Big metropolitan cities, urban conglomerations and districts having international borders could be the likely targets. A list of potential targets will be drawn up and the preparedness measures will focus on these target

areas.

### 3.5

The mode of attack would depend upon the type of agents used. In order to infect or affect a large population, it is possible that the aerosol mechanism would be used in closed, confined areas where a large number of people assemble eg. Shopping complexes, metros, cinema halls etc. Another modality could be by contamination of food and water with toxins and pathogens. Deliberate infiltration of infected animals, pests or vectors through the borders could also be another modality of attack. Pest/ toxins/ micro-organism on plants could also be used to inflict economic damage.

#### **Distinguishing between a natural outbreak of disease and bio-terrorist attack**

### 3.6

With a covert biological attack, the most likely first indicator of an event would be an increased number of patients with common clinical features caused by the disseminated agents reporting to hospitals and dispensaries in the locality.

### 3.7

A sound epidemiological investigation of a disease outbreak will help identify the pathogen(s), institute the appropriate medical interventions and public health response. Diseases caused by genetically modified pathogens may present non-specific clinical features that could be difficult to diagnose. The disease pattern that develops will be an important factor in differentiating between a natural outbreak of disease and a bio-terrorism attack. Though this may give some clues, naturally occurring epidemics can have one or more of these characteristics and biological attack may have none. The points for differentiation between a natural outbreak of disease and a bio-terrorist attack are given in Annexure II.

Differentiating between biological and chemical attack

### 3.8

In release of a chemical or biological agents, the nature and degree of hazard will depend on a multitude of factors, including, among other things, the agents and the amount released, the method by which the agent is disseminated, factors that influence its toxicity, infectivity or virulence both during and after its release, its movement and dilution in the atmosphere, and the state of protection and immediate consequences whereas most biological agents will have an incubation period. The points to be considered for differentiation between a biological and a chemical attack are given at Annexure III.

Preparedness and Response strategy :

### 3.9

While attacks with biological agents may have some special features, they do not necessarily require the formation of completely new and independent response systems. A well designed public health and emergency-response system is quite capable of responding to a limited biological attack and can take the measures necessary to mitigate its effects. The Union Ministry of Health & Family Welfare is expected to review the preparedness, identify gaps in the existing system and issue guidelines on disease surveillance, emerging diseases, laboratory facilities, outbreak investigations and managements. The State Governments are required to act on the guidelines, specially in vulnerable areas and take measures for strengthening the above aspect wherever necessary.

3.10 The response mechanism will be on the same lines as that of the infection control strategies applied during any disease outbreak. However, in order to meet the challenge of bio-terrorism successfully, a multi-faceted strategy is necessary. The key counter-measures for bio-terrorism would include :-

- a. Deterrence i.e. certainty of being punished for the act perpetrated.
- b. Prevention i.e. by reducing the opportunity by enhanced intelligence.

- c. Surveillance and assessment i.e. by early detection or awareness by epidemiological methods.
- d. Notification.
- e. Quarantine/ isolation.
- f. Laboratory investigation for diagnosis and Characterization/ sensitivity of the biological organism.

- g. Medical management.
  - h. Dissemination i.e. through public safety and law enforcing agencies.
- 3.11 The present SOP does not cover deterrence and prevention; for which separate arrangements (legal provisions, intelligence network) are in place.

## **CHAPTER – 4**

### **PREPAREDNESS STAGE**

#### **General**

##### **4.1**

Various actions/ steps that are required to be taken by the concerned Ministries/ Departments/ Organizations/ Technical Agencies at the preparedness stage for mounting an efficient emergency response is given in the succeeding paragraphs.

#### **Identification of Biological Agents**

##### **4.2**

The Ministry of Home Affairs will identify in conjunction with the Ministry of Health & Family Welfare and Intelligence Agencies the potential biological agents that may be used for bio-terrorism. An indicative list of potential biological agents is given in Annexure – I.

##### **4.3**

The points to be considered for differentiation between a natural disease outbreak and a bio-terrorist attack is given in Annexure – II.

#### 4.4

The points to be considered for differentiation between a biological and chemical attack are given Annexure – III.

### **Potential Target Areas**

#### 4.5

An assessment will be carried out of the potential target areas. The preparedness measures will focus on these target cities/ areas.

### **Surveillance**

#### 4.6

A system for collecting, maintaining and characterizing information and samples concerning naturally occurring organism capable of being used as biological agents with or without genetic modifications will be put in place. A Plan of Action will be drawn up to assess the requirements, the strategy and steps for putting the System in place.

4.6.1 The Integrated Diseases Surveillance program (IDSP) will cover the identified cities/ target areas in the first phase.

4.6.2 The ISDP and existing network of laboratories will be used for sample collection and characterizations of agents of identified diseases during suspected outbreaks.

4.6.3 A decentralized State based system of surveillance will be established with the following

objectives :

(i) To establish a decentralized State based system of surveillance for communicable and non-communicable diseases so that timely and effective public health actions



can be initiated in response to health challenges in the country at the State and National level.

(ii) To improve the efficiency of the existing surveillance activities of disease control programs and facilitate sharing of relevant information with the health administration, community and other stakeholders so as to detect disease trends over time and evaluate control strategies.

(iii) Upgrading laboratories at the same level in order to improve laboratory support for surveillance activities. Adequate laboratory support is essential for providing on-time and evaluate control strategies.

(iv) Introducing a quality assurance system for assessing and improving the quality of laboratory data.

4.6.4 The laboratory support in States/ UTs will be strengthened and the available system will be integrated well with the State and District surveillance programme. The Specific roles of the various laboratories at PHCs, District and State levels will be defined.

4.6.5 Technology and infrastructure for performing essential diagnostic tests at the District level, particularly microbiology cultures, bio-safely management and quality assurance would be given special attention.

4.6.6 The laboratory network for IDSP will be established at five levels of functions :

(i) Peripheral Laboratories and Microscopic Centers (L 1 labs)

(ii) District Public Health Laboratory (L 2 labs)

(iii) Disease Based State Laboratories (L 3 labs)

(iv) Regional Laboratories IDSP and Quality Control laboratories (L 4 labs)

(v) Disease based reference Laboratories (L 5 labs)

4.6.7 These facilities will have accreditation to NABL to ensure QA/QC.

4.6.8 NICD will function as the nodal laboratory and the hub of these diagnostic centers.

NICD

would develop a database of genetic profile of pathogens native to our

country. Any exotic

organism can be identified referring to the database.

4.6.9 Two more High Contaminant Facilities for holding virulent pathogens will be created for

research purposes and data bank storage, one in the Eastern part and the other in the

Southern part of our country.

4.6.10 Edusat system linking NICD with all districts is under establishment and the same will

be used for communication strategy and connectivity.

#### **Notification**

4.7

Necessary legal provisions/amendments to existing provision would be made to notify

any unusual syndrome or incidence of usual syndrome in unusual numbers. Linkages

would be established with the disaster management authorities, identified nodal

agencies in health sector and surveillance program for rapid epidemiological

interventions.

#### **Rapid Response Teams (RRTs)**

4.8

The State Government will set up a minimum of two (2) Rapid Response Teams. The

RRTs will comprise of at least one expert each in the field of Epidemiology; Public

Health, Microbiology, Clinical medicine and Entomology. The charter of duties of the

RRTs is given in Annexure - IV.

4.9

Each State, which has a target city/ district, will also have a State level RRT under the

Director, Health Services with additional specialists.

4.10 Two RRTs will be set up at National level.

4.11 These RRTs will be given additional training in the potential agents likely to be used for bio-terrorism, epidemiological investigation and their medical management.

### **Quarantine and Isolation**

4.12 The Centre/ States/ Local Authorities will prepare quarantine regulations supported by requisite legal provisions for enactments in their areas of jurisdiction. Quarantine and isolation protocols would be drawn up to support such regulations. Necessary Quarantine/ Isolations facilities would also be created.

### **Monitoring**

4.13 At the District level, the CMO will review the surveillance reports, advise the District Magistrate/ Commissioner of police about a bio-terrorist attack; identify the areas/ people/ communities affected as well as any quarantine requirements.

4.14 The Director Health Services of the State will monitor and advise the Health Secretary on surveillance reports received from the different districts.

4.15 All hospitals/ dispensaries in the target area whether public or private will have reporting obligations for any clinical signs/ symptoms/ epidemiological diseases. The list of Early Warning Signals is at Annexure – V.

4.16 A terrorist attack using biological agents may also have impact on animal health in the affected areas. An impact assessment will need to be made by a team of experts in the aftermath of such attacks and appropriate measures will be taken to prevent the spread of disease in animals. Teams of Experts will be developed and designated at the National, State and District/ target city levels for making the impact assessment of such attacks on animals.

## Laboratory facilities

4.17 Short orientation courses for laboratory staff in the public/ private sector as well as doctors/ paramedics regarding the reporting obligations will be conducted.

4.18 Identifying and equipping laboratories for sample testing of Biological samples and others such as air samples, food stuffs, postages, water etc.

4.19 Capacity for epidemiological investigation to be reviewed and strengthened as per requirements.

4.20 Each laboratory designated to handle bio-terrorism agents will have detailed SOPs listing out each step.

4.21 Laboratories will be designated at the National / Regional and State levels for analysis of samples for various types of agents which can be used in bio-terrorism. A list of National level designated laboratories as at Annexure – VI.

4.22 Highly infectious pathogens such as Marburg, Ebola and agents of other viral hemorrhagic fevers warrant high containment laboratories of Bio-Safety level 3 and Bio-Safety Level- 4 (BSL – 3 and 4). At least seven BSL – 3 and one BSL – 4 labs will be established under the health infrastructure which will include the upgradation of the existing BSL – 2 Labs.

4.23 The following laboratories may be upgraded from BSL – 2 and BSL – 3.

(a)

Micorbial Containment Centre, Pune

(b)

National Institute of Communicable Diseases (NICD), Delhi

(c)

National Institute of Cholera and Other Enteric Diseases, Kolkata

(d)

Tuberculosis Research Centre, Chennai

(e)

Entero- virus Research Centre, Mumbai

(f)

PGI, Chandigarh

(g)

JALMA, Agra

The tentative list of equipments required for BSL- 3 labs is at Annexure – VII.

4.24 Each District which has a potential target area should have a lab with a containment facility of level BSL – 1 and each State which has a potential target area will need to have a lab of the containment facility of level BSL – 2.

4.25 Establish international linkages for testing of pathological samples for hitherto unknown strains/ pathogens and their modes of treatment.

4.26 A terrorist attack using biological agents could also be by way of infecting imported livestock products viz. milk and milk products, meat of goat, sheep, pig and poultry, egg and egg products, pet foods and other animal foods with the ingredients of animal origin. Arrangements for inspection of above imported items would be strengthened.

4.27 Laboratories will be developed at the port of entry and infrastructure created for inspection of livestock products being imported.

4.28 Registration of facilities of the exporters and their regular inspection will be made compulsory to prevent a bio-terrorism attack through imported livestock products.

Hospital preparedness

4.29 Four Hospitals in each metropolitan city and one hospital in each State/ UT with requisite infrastructure will be identified as associated medical institutions. These

hospitals will be suitably geared up to handle mass casualty incidents resulting from a terrorist attack using biological agents. A minimum stock of medicines, vaccines and other material for handling a possible biological attack will be maintained at each identified hospital. The list, which also contains essential drugs/ equipment useful for natural calamities; is at Annexure – VIII.

4.30 The laboratory of the identified hospital to be upgraded to be able to handle diagnostic tests of all except the most virulent pathogens.

4.31 Physicians/ paramedical staff of the identified hospitals will be given orientation training to sensitize them on emerging infectious diseases with bio-terrorism potential and their case management.

4.32 SOPs for case management in case of an infectious disease outbreak/ rush of victims of a bio- terrorist attack to be drawn up for the identified hospitals.

Arrangement for vaccines/ drugs

4.33 Stocks of at least one million doses of small-pox vaccines would be ensured. MOH would identify the source. One National level small-pox vaccine producing centre would be made operational.

4.34 The indigenous drug/ vaccine production capability would be assessed and upgraded to meet the threat.

4.35 Stockpiling, distribution and administration of the vaccine in the target cities/ population at risk.

4.36 Sources of obtaining botulinum antitoxin at short notice to be identified.

4.37 Identify the drugs/ reagents which would be required for handling bio-terrorism attack; and identify the sources of procurement in advance.

Training

4.38 Training needs of doctors/ public health officers/ epidemiologists/ police/ civil

authorities in the target districts would be identified and training curriculum and programmes evolved accordingly.

4.39 The laboratory personnel of the identified State and District level laboratories will be trained in handling the possible bio-terrorism agents. A training institution will be identified for this purpose and training courses will be organized.

#### Legal Provisions

4.40 Review and if necessary strengthen the legal framework as per illustrations at Annexure – IX.

-

Epidemic Diseases Act, 1896

-

The Environment (Protection) Act, 1986

-

Rules for Manufacture, Use, Import, Export and Storage of

Hazardous Micro Organisms, Genetically Engineered

Organisms or Cells, 1989

-

Weapons of Mass Destruction (Prohibition of Unlawful Activities)

Act 2005

-

Recombinant DNA Safety Guidelines, 1990

-

Revised Guidelines for Safety in Biotechnology, 1994.

Drinking Water arrangements

4.41 Source (s) of safe drinking water would be identified to be tapped in case of contamination of existing sources of town/ city till decontamination procedures is completed.

#### Data Base

4.42 GIS database to be maintained for areas in the target list showing maps/ roadmaps of identified areas, important places of gathering like schools, meeting places, community centres, fairs and festivals, strength of medical and paramedical staff, number of beds in all identified hospitals including railways & defense), location of sensitive installations, inventory of emergency services (fire, police and transport) etc.

#### Security Arrangements

4.43 Security for different types of biological agents being handled in different laboratories both public and private will be enhanced. A list of potential biological agents which would need appropriate security measures would be prepared by the Ministry of Health and intimated to IB. All laboratories which are handling these agents will inform IB as to the security measures in place for handling these agents. The IB will conduct a review of the security measures from time to time.

#### District Task Forces

4.44 In the identified target areas, the District administration will set up Task Forces as follows

-

Law and Order under SP.

-

Corpse and carcass disposal under the Municipal Administrator.

-

Transport under Regional Transport Officer/ District Transport



Officer.

-

Food and Civil Supplies under the District Civil Supply Officer.

-

Decontamination arrangements under the Public Health

Engineering Department.

-

Generating awareness amongst public in the targeted regions

specifying the do's and don't's by Civil Defense.

### **Mock Drills**

4.45 Ministry of Health & Family Welfare will organize mock drills of the RRTs and other agencies responsible for the SOPs at least once every year. Separate SOPs will be laid down for mock drill/ exercises. The State Government would conduct mock drills through its RRTs and other agencies at least once a year to assess the preparedness.

### **Contact Details**

4.46 The complete details i.e. name, designation, telephone nos. (office, residence, fax, mobile, e-mail) will be appended with this SOP and updated every year in respect of RRTs, the laboratories, identified hospitals, Central Ministries/ Departments/ Organizations and all the Technical Agencies involve.

### **Awareness Generation**

4.47 Awareness generation among the public in vulnerable areas would be undertaken as a part of awareness generation for disaster management. Information suitable for the public domain will be identified from this SOP as well as the SOPs to be formulated by individual Ministries/ Departments/ Organizations/ Technical Agencies/ State

Government/ UT Administrations and should be made available through suitable means of information dissemination and awareness generation.

## **Review**

4.18 Review of the preparedness measures at the level of Cabinet Secretary once a year.

## **CHAPTER-5**

### **NOTIFICATION OF PHASE**

#### **5.1**

As soon as the surveillance mechanism indicates the incidence of a disease in increasing numbers pointing to a possible bio-terrorism attack, the following steps will be taken :-

- (i) The CMO will inform the District Magistrate/ Commissioner of Police.
- (ii) The District Magistrate will alert all the relevant agencies of the Government.
- (iii) The RRT would be mobilized for epidemiological investigation.

#### **5.2**

Standard case definitions would be circulated to the health functionaries through the official media.

#### **5.3**

The Centre/ State/ District Authorities would reiterate through print and visual media for all health institutions and professionals in Government and Private Sectors to notify the disease.

#### **5.4**

The quarantine and isolation protocols would be enforced.

#### **5.5**

Hospitals and Laboratories would be alerted for managing the clinical cases from the

notified disease agent.

## **CHAPTER – 6**

### **RESPONSE PHASE**

#### **6.1**

Rapid Response Teams of the State/ District will investigate the causes of outbreak/ increased incidence of the disease and collect pathological samples and send it to the identified State/ National laboratories for testing. The team from the District will remain at the site till the diagnosis and proposed method of treatment is received. The reporting proforma by RRTs is at Annexure – X.

#### **6.2**

Where necessary, the National level RRTs/ QMRTs of MoD will be requisitioned by the Director Health Services of the State.

#### **6.3**

Hospitals to be informed of the incident and to be alerted for receiving the patients and their treatment.

#### **6.4**

If necessary, tented hospitals to be set up for treatment of patients. Doctors/ paramedical staff to be requisitioned from neighbouring districts.

#### **6.5**

Measures to control the spread of infection/ quarantine measures to be instituted by CMO of the District/ Director, Health Services.

#### **6.6**

As soon as the pathogen is identified and treatment protocol received, it shall be disseminated to all identified hospitals/ clinics in the public/ private sectors of the

District/ State.

6.7

SOP for laboratory testing for pathogen will be drawn up by the identified laboratory and will be circulated to the hospital laboratories/ other laboratories in the affected area.

6.8

Reagents for diagnosing the identified pathogen will be distributed to the designated hospitals and the District laboratories.

6.9

Medicines/ Drugs identified for treatment will be procured/ requisitioned and distributed to the designated hospitals.

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6.10 Public to be taken into confidence to prevent panic. A list of do's and don'ts will be circulated through the print/ electronic media.

6.11 Hospitals will ensure appropriate isolation/ quarantine, waste disposal and personal protective measures so that no hospital staff/ community other patients are exposed to the infection.

6.12 All contaminated clothing / equipment etc will be carefully disposed off by incineration

Annexure – XI.

6.13 Any attack involving use of biological agents like Bacillus Anthracis, Coxiella Burnetii and Clostridium Botulinum responsible for causing diseases in human beings will also have an impact on animal health in the affected areas. An impact assessment will be made by a team of experts, in the aftermath of such attacks and appropriate measures will be taken to prevent the spread of disease in animals.

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**CHAPTER – 7****[RESTORATION PHASE]**

The damage done to public health utilities and the essential items utilized during the response phase will be replenished.

**7.2**

Public advisories will be issued regarding restoration of normalcy.

**7.3**

The District and the State RRTs will compile the data and analyze it to identify the deficiencies experienced in the implementation of the response measures. The necessary modifications will then be incorporated in the contingency plan for future action.

**Annexure – I****Agents likely to be used for Bio- terrorism****Sr. No. Disease****Agent**

1

Anthrax

Bacillus anthracis

2

Plague

Yersenia pestis

3

Tularemia

Francisella tularensis

4

Q fever

Coxiella burnetii

5

Botulism

Clostridium botulinum

6

Cholera

Vibrio cholerae

7

Shigellosis

Shigella dysenteriae (causes severe disease), S

flexneri, S boydii, S sonnei (Short clinical course)

8

Small pox

Variola virus

9

Viral Haemorrhagic fever

Ebola virus, Marburg virus, Lassa virus

## **Annexure – I – A**

### **Brief summary of Agents likely to be used for Bio- terrorism**

#### **Diseases**

#### **Anthrax**

Agent

Bacillus anthracis

Symptoms

identifications

(a) Inhalation Anthrax :

(i) Mild non-specific onset like Upper Respiratory Tract infection

(ii) Acute symptoms of Respiratory distress

(iii) Fever & Shock after 3 to 5 days

(iv) X-Ray findings of mediastinal widening

(v) Death following toxemia & septicemia in 80% cases

(b) Cutaneous anthrax

(i) Onset as malignant pustule

(ii) Progress to septicemic & death in 20 % cases

(c) Intestinal anthrax

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(i) Explosive food poisoning type outbreak

(ii) Fever with abdominal distress

(iii) Septicemia & death

Occurrence

(1) Primarily disease of herbivores

(2) Humans are incidental hosts

(3) Occupational hazards among animal handlers & endemic in Asia, Africa, South & Central America, South East Europe

Incubation Period

Few hrs to 7 days (most cases within 48 hrs.)

Communicability

Rare

Mode of

transmission

(a) By inhalation of spores through aerosol dispersion, dust, hides wool

etc.

(b) Contact with tissues of animal dying of the disease

(c) Ingestion of contaminated meat

Prevention & Control 1. Action on occurrence of a case

(a) Notification – reporting of cases to health authorities.

(b) Isolation – May be isolated in Isolation Ward though not contagious, for better dis-infection as elaborated below and also nursing care.

(c) All confirmed/ suspected cases to be administered procaine penicillin/ Benzyl Penicillin and treated as inpatient.

(d) Dis-infection – both concurrent and terminal Terminal : following discharge/ death of patients

Concurrent : Discharges – (i) By burning

(ii) By contact with 5 % Cresol for 4 hrs

Bedding & Linen : By chemicals with 0.5 % Cresol or 0.5 % Sodium

Hypochlorite & Steam sterilization

Floors & Walls : By scrubbing & spraying of 2.5 % Cresol

(e) Wearing of protective clothing by attendants

(f) Epidemiological investigation by searching for more cases and source of infection

2. Control dust environment (better ventilation and mopping)

3. Immunisation – to all high risk persons only. Cell free vaccine prepared from culture filtrate though not available in India, can be



procured. Annual boosters if exposure continues.

4. Care of skin abrasions and personal cleanliness

5. Wearing protective clothing & gear for those who are at high risk

6. Proper disposal of animal carcasses by incineration.

(For Biological

Warfare)

Mode of

transmission

Inhalation of spores : By Powder form

: By Aerosol sprays in vents/ tunnels

Prevention & Control (a) Immediate reporting to the police/ civil administration on receipt of

any suspicious material through packets or suspicious exposure of

aerosol

(b) Washing thoroughly & dis-infection as mentioned above if there is

accidental contamination

(c) DO NOT –

(i) Open any such unidentified or suspicious mail,

(ii) Try to smell or taste such material

(d) Immediate analysis of the material for Anthrax spores at local public

health labs or referral labs

(e) Persons handling mail and persons at risk where bioterrorism is

suspected should wear protective clothing such as masks & gloves

(f) Immunisation of all persons who are at high risk.

(g) Treatment of confirmed cases of Anthrax ; Prolonged treatment with

Antibiotics as mentioned above.

## **Disease**

### **Plauge**

Agent

*Yersenia pestis*

Symptoms/

Identification

Bubonic plague

(i) Non specific onset with fever, chills, malaise, myalgia sore

throat & headaches

(ii) Lymphadenitis of drainage area of flea bite mostly Inguinal

Region (90%) swollen, tender may suppurate

(iii) Fever, Septecenia endotoxic shock, Disseminated

Intravascular Coagulation (DIC) death

(b) Penumonic Plague (primary & secondary)

(i) Onset similar as (a) (i) above.

(ii) Signs & symptoms suggestive of pneumonia

(iii) Fever with pleural effusion

(c) Septecemic plague (primary or secondary to bubonic & pneumonic)

Occurance

(1) Persists in environment in wild rodents

(2) Human plague endemic in many countries of Africa, South East

Asia, China, and parts of S. America.

Incubation Period

1 to 7 days – Bubonic

2 to 4 days – Pneumonic

Communicability

Pneumonic – highly communicable

Mode of

transmission

Rat flea

Man

Rodents, Cats

## **Disease**

### **Tularemia**

Agents

*Francisella tularensis*

Symptoms/

Identification

Depend on route of introduction:

1. Indolent ulcer with swelling of regional lymph node
2. Painful pharyngitis, abdominal pain, diarrhea & vomiting
3. Pneumonic involvement
4. Painful purulent conjunctivitis
5. Laboratory confirmation with serum specific Antibody

Occurrence

North America

Europe

China & Japan

Incubation Period

3 – 5 days

Communicability

Not from person. Ticks are infective throughout life time

Mode of

transmission

- a) Bite of wood tick, dog tick, star tick, deer fly
- b) Handling of or ingestion of insufficiently cooked meat of infected animals
- c) Drinking of contaminated water
- d) Inhalation of dust from contaminated soil, grains etc.

Prevention & Control 1. Prevention of bite of ticks & flies by use of personal protective measures

2. Avoid bathing, swimming or drinking water contaminated by animals

3. Use of protective clothing while skinning / handling animals especially rabbits.

4. Live attenuated vaccine applied intra- dermally (used in former USSR) to high risk groups especially animals handlers

5. Action on occurrence of case –

- a. Notify the case
- b. Isolation & prevention of man – vector contact
- c. Concurrent disinfection of discharges/ secretions
- d. Epidemiological investigation of contacts and search for source of infection

(For Biological

Warfare) Mode of

transmission

- a) By aerosol dispersion of the bacteria to infect a large population
- b) Contamination of food and water by the bacteria can also be done
- c) Enzootic reservoirs among wild animals could be established which may serve as a future source of infection.

Prevention & Control a) Protective gears to be worn by susceptible persons if aerosol mode is suspected.

- b) Prompt isolation and prevention of man – vector contact
- c) Prior heating of water and all food stuff before consumption.

Disease

Q fever

Agent

*Coxiella burnetii*

Symptoms/

identification

1. Onset sudden with fever & chills, retro bulbar headache, weakness, malaise and severe sweat.

2. May present as Pyrexia of Unknown Origin (PUO)

3. Pneumonitis on X-ray exam.

4. Acute or chronic granulomatous hepatitis

5. Endocarditis

6. Laboratory confirmation – Specific Antibody detection by Immuno

Fluorescence (IF) in referral laboratories.

- Diagnostic isolation of *Coxiella* by inoculation in white mouse and

serial passage through them to identify the organism.

- Complement Fixation Test (CFT) with Agar prepared from egg yolk

Occurrence

Reported from all continents especially where animals are being handled

Incubation period

2 – 3 weeks.

Communicability

Not from person to person

Mode of

transmission

Airborne by dust/ grain contaminated by products of conception of animals & their excreta

Prevention & Control 1. Prevent access of people into sheds of infected animals

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2. Immunization of person at high risk by an inactivated vaccine

especially animals handlers and lab workers

3. Adequate dis-infection and disposal of animal products of conception.

4. Epidemiological investigation of contacts and search for more cases and source of infection.

5. Specific treatment with Tetracycline or Chloramphenicol continued for several days till patient is afebrile.

(for Biological

Warfare) Mode of

transmission

1. Aerosol mode most favoured as it infects large number of people and also animals who in turn can re-infect others
2. Food borne also a possibility as it is spread by food if contaminated.

Prevention & Control 1. Protective gears for those who are likely to be expose.

2. Preheating of all food stuff before consumption.

Disease

Botulism

Agent

*Clostridium botulinum*

Symptoms/

Identification

a) Classical –

1. Acute Bilateral cranial nerve involvement – visual difficulty/ dysphagia / dry mouth

2. Descending weakness/ Paralysis (flaccid)

3. Vomiting & Diarrhoea/ constipation may be present initially

b) Infant

1. Constipation followed by lethargy, poor feeding, ptosis, dysphagia, loss of head control, generalized weakness – floppy baby;
2. Respiratory difficulty – death

Occurrence

Worldwide

Incubation period

12 – 36 hrs

## Communicability

Not from person to person

Mode of

transmission

a) Ingestion of contaminated canned food containing preformed toxins

which is improperly cooked

b) Wound infection

c) Infant botulism by ingestion of spores & germination in intestine.

Prevention & Control 1. Effective food processing while canning & preservation

2. Information, Education & Communication (IEC) activity emphasizing

—

a. Proper cooking especially pressure cooking

b. Bulging containers should not be opened & off odour foods not to be 'tested'

c. Food preservation techniques

3. Action on occurrence of a case

a. Report to local health authorities

b. Concurrent dis-infection of containers used for cooking

c. Prompt detection & treatment by Trivalent Botulism Antitoxin

d. Management of Contacts : Those who are known to have also consumed the contaminated food should be given a cathartics, high enema, gastric lavage & kept under observations. At the earliest sign Antitoxin should be instituted.

e. Epidemiological investigation for source of infection & search



for more cases

(For Biological

Warfare) Mode of

transmission

1. Contamination of food with toxin or by the spores of the bacteria can

lead to widespread explosive epidemic

2. In experimental animals also known to spread by inhalation route.

Prevention & Control 1. Same as for Natural infection.

2. In addition all food & water should be boiled or heat treated before

consumption

3. Strict security of all the plants engaged in processing and canning of

food stuff.

Disease

Cholera

Agent

Vibrio Cholerae

Symptoms/

Identification

a) Sudden onset of painless and voluminous diarrhea, followed shortly

by vomiting

b) Rice – Water – Stools

c) Features of Dehydration

d) Muscle cramps

e) Hypovolemic shock

f) Lab diagnosis / confirmation –

(i) Use of Cary Blair/ Venkata Raman (VR) Media R Media/

Alkaline peptone water as transport media

(ii) Culture in Nutrient / Blood agar

(iii) Selective plating media – Tourocholate Citrate Bile Salt

(TCBS) Agar, GTTA

(iv) Serological Tests : Agglutination Test

Indirect Haemagglutination Test

Occurrence

El Tor Serotype – Endemic in Most part of Asia, Eastern Europe, Africa

0139 Sero Var – Endemic in Bangladesh, China, India, Malaysia,

Nepal, Pakistan & Sri lanka

Incubation period

24 to 48 hrs

Communicability

Till the organism is detected in stools i.e. few days after recovery. Use

of Antibiotics shortens the period of communicability

Mode of

transmission

Water & food borne especially raw and undercooked food

Prevention & Control 1. Information, Education & Communication (IEC) activities on personal

hygiene (of general population & food handlers) especially on hand

washing & general sanitation

2. Sanitary disposal of faeces, fly proofing of latrines.

3. Water treatment & purification

4. Control of flies

5. Food hygiene & sanitation – Use of chlorinated water for cooking.

6. Breast feeding of infants & boiling of milk.

7 Immunization : Partial protection (50%) with whole cell vaccine and live oral vaccine (not available in India) ‘Orachol’ – single dose gives high level of protection

Action on occurrence of case :-

i.

Notification :

ii.

Isolation : Enteric Isolation is important

iii.

Disinfection : Concurrent disinfection of vomiting & Faeces, linen & items used by patient.

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iv.

Contacts : Epidemiological surveillance of contacts for 5 days.

If transmission is detected chemoprophylaxis

Doxycycline/ Furoxone / Septran.

v. Investigation – to find the source of infection

vi. Specific treatment of cases – Rehydration, - Antibiotics as for

Chemoprophylaxis

(For Biological

Warfare) Mode of

transmission

1. Contamination of public drinking water sources or food supplied to

large population. Gatherings.

Prevention & Control 1. Adopt emergency measures to ensure a safe water supply

2. Ensure careful preparation and supervision of food and drinks

3. Drinking water sources and large kitchens where food is produced in

bulk should be properly guarded and staff put on strict vigil.

## **Disease**

### **Shigellosis**

#### Agent

*Shigella dysenteriae* (causes severe disease), *S. flexneri*, *S. boydii*, *S.*

*sonnei* (short clinical course)

#### Symptoms/

#### Identification

1. Acute infection involving large and small intestine

2. Characterized by diarrhea (with blood & mucous) with fever &

nausea

3. sometimes toxemia, vomiting, cramps & tenesmus.

4. illness self limiting lasting for 4-7 days.

5. Laboratory diagnosis by

(a) Isolation of bacteria in faeces/ rectal swab

(b) culture in selective media – CSLD & McConkey's agar

#### Occurrence

Worldwide :- Endemic in both tropical & temperate climates

#### Incubation period

1 to 3 days

#### Communicability

Till the presence of bacteria in faeces; usually up 4 weeks after illness.

Asymptomatic carriers may transmit infection.

Mode of

transmission

By faeco-oral route from patients or carriers

Prevention & Control 1. Same as for Cholera

2. no vaccine available

3. Notification

(For Biological

Warfare) Mode of

transmission

1. Contamination of public drinking water sources or food supplied to

large population / gatherings

Prevention & Control Adopt emergency measures to ensure a safe water supply

Ensure careful preparation and supervision of food and drinks

Drinking water sources and large kitchen where food is produced in

bulk should be properly guarded and staff put on strict vigil.

## **Disease**

### **Small pox**

Agent

Variola virus

Occurrence

1. Onset with fever, backache prostration

2. Severe dermal eruptions on face, hands, legs & body in

classical type

3. Milder infection in immunized persons

4. Flat type where the vesicles are flat and fever continues during eruption: high mortality

5. Haemorrhagic type : severe prodromal period, bleeding from mouth, nose, haematuria w3ith minimal eruption; high mortality currence

Nil, Stored at designated Laboratories at USA & Russia

Incubation period

10 to 15 days

Communicability

Highly contagious after eruption starts, scabs are also infective

(For Biological

Warfare) Mode of

transmission

1. Droplet infection

2. Skin contact

{By introduction of the disease to a small group of people through inhalation route or direct skin contact of the virus. Being highly contagious hence would rapidly spread to secondary cases}

Prevention & Control

a. Varification of Diagnosis : By clinical & lab identification of virus

b. Notification : Internationally notifiable.

c. Concurrent & terminal disinfection

d. Isolation of cases till all scabs fall off

- e. Search for new cases by Epidemiological investigation
- f. Mass vaccination of population residing in the near vicinity of the occurrence of the case.
- g. Protective clothing for contacts and those at high risk.
- h. Continue surveillance till six weeks of the last case.

## **Disease**

### **Viral Haemorrhagic fever**

#### Agent

Ebola virus

Marburg virus

Lassa virus

#### Symptoms/

#### identification

i.

Acute Viral illness

ii.

Sudden onset fever, myalgia, headache

iii.

Pharyngitis, vomiting, diarrhea

iv.

Maculopapular rash

v.

Haemorrhagic diathesis leading to hepatic and renal failure,

shock

vi.

Laboratory diagnosis by ELISA for specific Immunoglobulin G

(IgG) antibodies

Occurrence

1. Ebola-many areas of sub Saharan & Saharan Africa
2. Marburg-only on 5 occasions this disease has been detected (in Africa countries)
3. Lassa : endemic in African countries like Sierra Leone, Libya,

Guinea

Incubation period

Ebola 2 – 21 days

Marburg 3 – 9 days

Lassa 6 – 21 days

Communicability

As long as virus is in secretion

Mode of

transmission

Direct contact with blood & infected secretion mainly noscomial Aerosol transmission for biological warfare

Prevention & Control 1. Notification to local health authorities

2. Isolation of patient & treatment

3. Concurrent disinfection of all secretion of patients including all items with which the patient comes in contact – with 0.5 % sodium hypochlorite or 2.5 % cresol for bedding & linen and non disposable items – by heating /chemical treatment of secretion & discharge



4. Personal protective measures for patients handlers
5. Epidemiological investigation of contacts (in health care settings)
6. Specific treatment with antiviral drugs
7. Control rodent population (for Lassa fever)

(For Biological

Warfare) Mode of

transmission

By Aerosol mode to a large population and subsequent spread by

human to human transmission as mentioned earlier

Prevention & Control Same as for natural infection

## **Annexure – II**

### **DISTINGUISHING BETWEEN A NATURAL OUTBREAK OF DISEASE AND BIO-TERRORIST ATTACK**

Indicator

Intentional disease outbreak

Natural disease outbreak

Epidemiological

features

➤ An outbreak that is

unusual for a given

geographic area or

transmission season

➤ Unusual modes of

transmission

➤ The occurrence of an

epidemic with a similar  
disease or syndrome  
especially in a discreet  
population

➤ Multiple outbreak of an  
unexpected disease in a  
locality or in multiple  
localities. Clusters of  
patients arriving from a  
single locality or different  
vulnerable targets at the  
same time.

➤ Patients with a relatively  
uncommon disease that  
has bioterrorism potential  
(eg. Pulmonary anthrax,  
tularemia, plagues)

➤ Large number of patients  
with rapidly fatal illness  
(agent-dependent)

➤ Out break having  
expected distribution in  
terms of time, place and  
person

➤ Transmission as per

natural history of the

disease

➤ Geographic Distribution

on predictable lines.

Animal indicators

May have absence of vectors

related to disease.

Vector of a disease present

related to the outbreak

Devices, unusual

liquid spray or

vapour

Suspicious devices or packages

## **Annexure – III**

### **Differentiation of biological and chemical attack**

Indicator

Chemical attack

Biological attack

Epidemiological

features

Large number of patients with very

similar symptoms seeking care

virtually simultaneously (especially

with respiratory, ocular, cutaneous

or neurological symptoms, e.g.

nausea, headache, eye pain or

irritation, disorientation, difficulty

with breathing, convulsions and

even sudden death)

Clusters of patients arriving from a

single locality.

Definite pattern of symptoms

clearly evident.

Rapidly increasing disease

incidence (over hours or days) in

a normally healthy population.

Unusual increase in people

seeking care, especially with

fever, respiratory, or

gastrointestinal complaints.

Endemic disease rapidly

emerging at an unusual time or in

an unusual pattern.

Large numbers of patients with

rapidly fatal illness (agent-

dependent)

Patients with a relatively

uncommon disease that has bio-

terrorism potential (e.g.

pulmonary anthrax, tularemia,

plague).

Animal indicators

Dead or dying animals

Absence of insects normally

present

Sick or dying animals or fish

Unusual swarms of insect

Devices, unusual

liquid spray or

vapour

Suspicious devices or packages.

Droplets, oily film

Unexplained odour

Low clouds or fog unrelated to

weather.

Suspicious devices or packages.

#### **Annexure – IV**

##### **Terms of reference of Rapid Response Team (RRT)**

1. The Rapid Response Teams will be constituted in all the identified Districts and

State Headquarters. The team will consist of a public health expert, laboratory

expert, a clinician and an entomologist.

2. The RRTs will use the existing disease surveillance system and available

laboratory surveillance data on a weekly basis to detect early warning signals of

outbreaks as per the annexure enclosed.

3. Identify a team leader among RRT members with overall authority and accountability for rapid response.

4. Establish clear procedures for accessing funds and other resources for epidemic management.

5. Identify clear procedures for collection and transport of clinical material to concerned designated laboratories.

6. Identify competent laboratories for diagnostic confirmation.

7. Identify temporary shelters and/ or temporary hospitals in the event of severe epidemic emergency.

8. Update inventory of essential drugs quarterly.

9. Update information on health facilities including blood banks and manpower availability.

10. Institute quick, appropriate and effective area specific management of outbreak situations as follows;

a. To confirm the existence of an epidemic

b. Identify the outbreak with working case definition and estimating its magnitude and geographical distribution

c. Estimate its health impact in terms of morbidity and other losses

d. Describing the outbreak in terms of place, person and period

distribution for understanding the population at risk, probable mode of spread and source of infection

e. To identify the etiological agent involved in the outbreak and arrange to send the material to concerned laboratories for confirmation of diagnosis.

f. Identify the most effective control measures, which will minimize the ill effects of outbreaks using the available clinical and epidemiological

evidences. The control measures should not wait for the etiological diagnosis.

g. Assess local response capacity and seek the help of State/ National level RRTs if need arises.

h. Documentation of the episode and inform the higher authorities for dissemination of information & feedback.

## **JOB FUNCTIONS OF THE MEMBERS OF THE RAPID RESPONSE TEAM (RRT)**

1.

### **Microbiologist as RRT member :**

i.

Help in development of infrastructure of district / peripheral laboratories for providing laboratory support to outbreak / epidemic investigation.

ii.

Participate in outbreak/ epidemic investigation and provide laboratory support.

iii.

Carry out / co-ordinate training programmes for district and peripheral laboratories under Integrated Disease Surveillance Programme (IDSP).

iv.

Carry out laboratory based surveillance of common epidemic prone diseases including antimicrobial resistance and agents of bioterrorism.

v.

Carry out quality assurance of district laboratories under IDSP.

vi.

Help in establishment of laboratory network.

vii.

Identify competent laboratories for diagnostic confirmation.

viii. Identify clear procedures for collection and transport of clinical materials to the concerned designated laboratories.

ix.

Send regular laboratory based data to State and National level coordinating agencies.

**2.**

**Entomologist as RRT member :**

i.

Ensure availability of an Entomologist at the site of outbreak. If no entomologist is available, the service of an Entomologist from other areas to be utilized for the affected areas.

ii.

Ensure availability of insecticides and equipment the areas identified as being prone to bio-terrorism.

iii.

Periodic orientation and reorientation of entomologists working at the



periphery with regard to surveillance and control of vectors, rodents and resources of human diseases.

iv.

Regular supervision of the technical data of RRT which may include entomological data for monitoring the situation.

#### **A. Function of Entomologist in Pre-Outbreak period (Prevention)**

1. Based on epidemiological information, carry out surveillance of vector species frequently on regular basis, for their seasonal density pattern.
2. Examine any unusual change in the vector density and investigate the reasons.
3. In case of rodent borne infection e.g. plague, any change in rodent behaviour and the increase in parasite abundance.
4. Initiate immediate measures for the containment of vector density.
5. For rodent borne infections initiate anti-rodent measures in advance to prevent outbreak.

#### **B. Functions of Entomologist in RRT (during Outbreak)**

1. Identify species of Vectors involved in the episode.
2. Determine the density of the vector species in the affected area (s).
3. After assessment of the situation, suggest most effective vector control measures to prevent disease transmission.

**3.**

#### **Public Health Experts as RRT member**

(i)

The team will use the existing disease surveillance system and available laboratory surveillance data on a weekly basis to detect early warning signals of

outbreaks.

(ii) Identify a team leader among RRT members with overall authority and accountability for rapid response.

(iii) Establish clear procedures for mobilizing funds and other resources for epidemic management

(iv) Identifying temporary shelters and temporary hospitals in the event of severe epidemic / public health emergency.

(v) Update inventory of essential drugs on a quarterly basis.

(vi) Update information on health facilities including blood banks and manpower availability

(vii) Carry out the investigation along with the team

(viii) Institute quick, appropriate and effective area specific management of outbreak

situations as follows;

a. Confirm the existence of an epidemic

b. Identify the outbreak with working case definition and estimate its magnitude and geographical distribution

c. Estimate its health impact in terms of morbidity and mortality and other losses

d. Describe the outbreak in terms of place, person and period distribution for understanding the population at risk, probable mode of spread and source of infection

e. Identify the etiological agent involved in the outbreak and arrange to send

the material to concerned laboratories for confirmation of diagnosis.

f. Identify the most effective control measures, which will minimize the ill effects of such outbreaks using the available clinical and epidemiological evidences. The control measures should not wait for the etiological diagnosis

g. Assess local response capacity and seek the help of State/ National level RRTs if need arises.

h. Document the episode/ outbreak and action taken and inform the higher authorities for dissemination of information & feedback.

#### **4.**

##### **Clinician as RRT member :**

i.

Participate in the investigation. Use of routine surveillance data to know the trend of the diseases.

ii.

Examine and note the signs and symptoms of cases and make provisional diagnosis.

iii.

Make a list of infected cases and deaths.

iv.

Prepare a clinical definition based on the clinical presentation of cases for use by the health system.

v.

Make a provisional diagnosis and corroborate with the epidemiological

and laboratory findings to the outbreak.

vi.

Advise the type of clinical samples to be collected in consultation with the laboratory expert.

vii.

Prepare a standard and clinical case management protocol for use of the health system

viii. Assist in equipping the Hospitals/ Health Institutions in preparation of the management of cases.

ix.

Assist in preparing the report of the episode/ outbreak.

**5.**

**Chief Medical Officer of the district :**

i.

Constitute a RRT in the district.

ii.

Arrange for their training.

iii.

Maintain a list of various hospitals, health facilities and laboratories in the district.

iv.

Provide required equipment, drugs and supplies.

v.

Strengthen surveillance system in the district and provide routine surveillance data to the RRTs.

vi.

Mobilize the RRT at short notice and ensure logistic support to it.

vii.

Initiate necessary action promptly on the advice of the RRT for containment of the situation.

viii. Review the situation with RRT and monitor on daily basis.

ix.

Prepare report in consultation with RRT and disseminate.

x.

Coordinate with the district authorities and media agencies.

xi.

Plan and organize appropriate information, Education and Communication (IEC) activities in order to avoid panic and to promote public cooperation.

#### **Annexure – V**

**The possible epidemiological clues for which the public health system should be sensitized to capture the information and transmit it to the appropriate authority (District / State nodal officers).**

- The occurrence of an epidemic with a similar disease or syndrome, especially in a discrete population
- Many cases of unexplained diseases or deaths
- When the severity of the disease is more than the expected for a specific pathogen or failure to respond to standard therapy
- Unusual routes of exposure for a pathogen, such as the inhalation route for diseases

that normally occur through other exposures

- A disease that is unusual for a given geographic area or transmission season
- Disease normally transmitted by a vector that is not present in the local area
- Multiple, simultaneous or serial epidemics of different diseases in the same population
- A single case of disease by an uncommon agent (smallpox, some viral hemorrhagic fevers)
- A disease that is unusual for an age group
- Unusual strains or variants of organisms, or antimicrobial resistance patterns different from those circulating
- Similar genetic type among agents isolated from distinct sources at different times or locations
- Higher attack rate in those exposed in certain areas, such as inside a building if released indoors, or lower rate in those inside a sealed building if released outside.
- Disease outbreak with zoonotic impact.
- Intelligence of a potential attack. Claims by a terrorist or aggressor of the use of such agents.

## **Annexure – VI**

### **List of designated laboratories having the diagnostic capabilities but needing upgradations :**

1. National Institute of Communicable Diseases, 22 – Sham Nath Marg, Delhi – 110 054 (Telephones : 011 – 23913148, 011 – 23971272 Fax : 011 - 23922677)
2. Departments of Microbiology, AIIMS, (Virology), (Telephone No. 011 – 26593288)
3. Defense Research Development Establishment, Gwalior (Telephone No. 0751 – 2341550, 0751 - 2340730)

#### 4. ICMR Institute :

- National Institute of Cholera & Other Enteric Diseases, Kolkata (Diarrhoeal Diseases & other enteric pathogens). (Telephone No.1 033 – 23501176, 033 - 23508493)
- National Institute of Virology, Pune (Viral Diseases excluding HIV/ Polio) (Telephone No. 020 - 26124386)
- Enterovirus Research Centre, Mumbai (Enteroviruses) (Telephone No. – 022 - 24148750)
- Vector Control and Research Centre, (Vectors Filariasis) (Telephone No. – 0413 - 2372041)
- Centre for Research in Medical Entomology, Madurai (Vectors & other vector borne diseases ) (Telephone No. – 0452 - 2530746)

#### 5. Institutes of Department of Biotechnology :

- National Institute of Immunology, Aruna Asaf Ali Marg, JNU Campus, New Delhi – 110067 (Telephone No. – 26717102, 26717103)
- Centre for DNA Finger Printing and Diagnostics, 4-87/1, ECIL Road, Nacharam, Hyderabad – 5600076 (Telephone No. – 040 – 7155604, 5497)
- National Centre for Cell Science, NCCS Complex, Ganeshkhind, Pune – 411007 (Telephone No. – 020 – 56909-31)

Other laboratories will be identified to have a network of laboratories throughout the country with some upgradation. These can be Christian Medical College (CMC) Vellore, Institute for Preventive Medicine (IPM) Hyderabad, Medical College Imphal, BJ Medical College Gujarat, School of Tropical Medicines, Calcutta, PGI Chandigarh, Shimla Medical College. Tentative list of consumables and equipments are also enclosed.

Annexure – VII

List of equipments required for Laboratory handling samples from cases following Bioterrorist attack.

Microbiology Division.

1. Biosafety (BSL - 3) Cabinet
2. Mask
3. Gloves
4. Mask with disposable filter
5. Eye protector goggles
6. Disposable Gowns, cap, shoe cover
7. Biohazardous waste container – 20 litre capacity
8. Safety waste system for disposal of solvents, chemical and other biological waste – 20 Litre capacity.
9. Biosafety bag autoclavable ,puncture resistant of different color code.
10. Hypochlorite (5 %)
11. Hand disinfectant solution.
12. Dispenser with stand for hand disinfectant.
13. Needle/ syringe destroyer
14. Double wall vertical Autoclave.
15. Humidifier / fumigation electrical operated.
16. Pipette (battery operated)
17. Tripple container system for collection transport of hazardous samples.
18. Incinerator
19. Trolley for waste collection and disposal.
20. Any other items pertaining to biosafety measures being followed.



21. Chemical/ glass ware/ plastic ware and other consumables pertaining to laboratory requirements.
22. Real time Polymerized Chain Reaction (PCR) on-line gene sequencing detection system
23. Sequencer
24. Microwave Oven
25. Water Bath
26. Enzyme Linked Immuno Sorbent Assay (ELISA) reader
27. Automatic plate washing system
28. Biological Oxygen Demand (BOD) Incubator
29. Hot Air Oven
30. Class I and II Laminar Flow
31. pH Meter
32. Hand held pH meter
33. pH paper strips with various range
34. Deep Freezer – 20°C Celsius
35. Micro Tips with different capacity
36. Micro pipettes
37. Multi channel Micro pipette
38. Trans Illuminator
39. CO<sub>2</sub> Incubator
40. Vortex Mixer
41. Magnetic Stirrer
42. Automatic Washing Machine
43. Water Purifier system
44. Computer with internet

45. Ice making machine

46. Dry ice making machine
47. Co2 gas cylinder
48. Filter device unit
49. Automatic media dispensing device
50. Bactec system
51. Microscope with phase contrast and dark field microscopy attachment
52. Inverted microscope
53. Fluorescent microscope
54. Para film
55. Tough tags
56. Micro Lab kit containing 24 essential items required daily in microbiology, clinical and biotechnology laboratory.
57. High Power Liquid Chromatography (HPCL) system
58. Fax Machine.
59. Standard reference reagents for viruses and bacteria of Bioterrorist attack to be arranged from WHO.

***Equipments required especially for Anthrax, Plague***

1. BSL – 3 cabinet

-

1

2. BOD Incubators

-

2

3. Cold centrifuge with different heads -

1

4. Jacketed Autoclaves

-

1

5. Hot Air Oven

-

2

6. Flurorescent Microscope with Camera-

1 attachment

7. Binocular Microscopes

-

2

8. Deep Freezer - 20o Celcius

-

1

9. Refrigerators

-

2

10. Milli 'Q' Water purification system -

1

11. APIQ system

-

1

**Reagents**

1. R- phage
2. Reagents, chemicals and strips for API system
3. Standard strains of Bacillus anthracis.
4. Panel of positive and negative control sera for plague.
5. Anti F-1 IgM capture ELISA Test reagents for plague.
6. F-1 antigens capture ELISA test reagents for plague.
7. FITC conjugated rabbit anti-F-1 antigen polyclonal serum.
- 8.

Peroxidase conjugated rabbit anti F1 antigen polyclonal serum.

Additional Equipment :

- 1.

RCR Thermal Cycler

- 2.

Gel documentation

- 3.

Laminar flow with adjustable motor stool stand

- 4.

Dry bath

- 5.

Micro centrifuge

- 6.

Gel Electro process system with power supply

- 7.

Refrigerated Centrifuge

8.

Ultra low temperature double door freezer with deluxe CO2 back up system

9.

Electric Balance

10.

Heated Circulating bath

11.

Chemical/ consumable and plastic ware for PCR test

#### **Annexure – VIII**

#### **LIST OF REQUIREMENTS OF EMERGENCY DRUGS, MATERIALS AND CONSUMABLES**

Disease agents

Medicines/ Vaccines

Anthrax

Fluoro Quinolones

Doxycycline

Penicillin

Erythromycin

Inactivated cell free anthrax vaccine

0.5 % Hypochlorite solution for decontamination

Plauge

Tetracycline

Chloramphenicol

Streptomycin

Tularaemia

Streptomycin

Gentamycin

Tetracycline

Coxiella burnetti

Tetracycline

Doxycycline

0.01 % Lysol solution

Botulism

Polyvalent botulinum antitoxin

Penicillin

Cholera

Oral Rehydration Solution

Ringer lactate solution

Tetracycline

Doxycycline

Co-trimoxazole

Shigellosis

Ciprofloxacin

Ofloxacin

Co-trimoxazole

Ringer lactate solution

Nalidixic acid

Ampicillin

Small pox

Smallpox vaccine

Human vaccinia immune globulin

Viral hemorrhagic

fever including Ebola

Ribavirine- antiviral drug

0.5% Phenol

0.5 % Sodium Hypochlorite solution

**Equipment**

Nail Brush, Plastic, autoclavable

2 units

Bucket, Plastic approximately 12 litres

2 units

Gallipot, Stainless Steel, 100 ml

1 unit

Kidney dish, stainless steel, approximately 26 x 14 cm

1 unit

Dressing set (3 instruments + box)

- One stainless steel box approximately 17 x 7 x 3 cm.
- One pair surgical scissors, sharp/ blunt, 12-14 cm
- One Kotcher forceps, no teeth, straight 12- 14 cm
- One dissecting forceps, no teeth, 12 – 14 cm

2 units

Dressing tray, stainless, approximately 30x15x3 cm

1 unit

Drum for compresses with lateral clips 15 cm H diam. 15 cm

2 units

Foldable jerrycan, 20 litres

1 unit

Forceps Kocher, no teeth, 12-14 cm

1 unit

Plastic Bottle, one Litre

3 units

Syringe Luer, disposable, 10 ml

1 unit

Plastic Bottle, 15 ml

1 unit

Scissors Straight/ blunt, 12-14 cm

2 units

Supplementary supply for 1000 persons for three months

DRUGS\_\_\_\_\_Quantity

### **Anaesthetics**

Ketamine, inj. 50 mg/ml, 10 ml/vial

25 vials

Lidocain, inj. 1 % 20 ml/vial

50 vials

### **Analgesics**

Morphine inj. 10 mg/ml, 1 ml ampoule

50 ampoules

Acetylsalicylic acid tablet 300 mg

30000 tablets



Paracetamol tablet 100 mg

10000 tablets

### **Anti-allergics**

Hydrocortisone powder 100 mg for injection in One vial

50 vials

Prednisolone, 5 mg tablet

100 tablets

Epinephrine (Adrenaline) Antidotes

### **Antidotes**

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Naloxone injection 0.4 mg/ml, 2 ml ampoule

20 ampules

### **Anticonvulsants / Anti-epileptics**

Dizepam, in 5 mg/ml – 2 ml ampoule

200 ampules

Phenobarbital tablet, 50 mg

1000 tablets

### **Anti-infective drugs**

Amoxicillin, tablets/ Capsules 250 mg

3000 tabs/caps

Ampicillin, injection 500 mg/vials

200 vials

Benzathine Benzylpenicillin inj. 2.4 million IU/vial

(long acting penicillin)

50 vials

Benzylpenicillin, inj 5 million IU/ml

250 vials

Chloramphenicol, caps 250 mg

2000 capsules

Chloramphenicol, inj 1 g/vial

500 vials

Doxycycline, tablets/ capsules 100 mg.

2000 tabs/capsules

Metronidazole, tablets 250 mg

2000 tablets

Nystatin, vaginal tablets, 1000000 IU/tabs

1000 tablets

Nystatin, vaginal tablets, 1000000 IU/tabs

1000 tablets

Procaïn Benzylpenicillin, inj 3-4 million IU/vial

750 vial

Quinine, inj 300 mg/ml 2 ml/ampoule

100 ampoule

Quinine, sulphate, tablets 300 mg

3000 tablets

Sulfadoxine + Pyrimethamine, tablets, 500 mg+ 25 mg

300 tablets

Mebendazole, tablets 100 mg

5000 tablets

Cotrimoxazol, tablets 400 + 80 mg

20000 tablets

Chloroquine, tablets 150 mg

20000 tablets

### **Drugs affecting the Blood**

Folic acid, tablet 5 mg

1000 tablets

Ferrous Sulphate + folic acid, tablet 200 + 0.25 mg

20000 tablets

### **Cardiovascular drugs**

Methyldopa, 250 mg

500 tablets

Hydralazine, inj. 20 mg/ampoule

20 ampoules

### **Dermatological drugs**

Polyiodine iodine 10 %, sol, 200 ml bottles

10 bottles

Silver sulfadiazine cream 1 %, 50 g tube

30 tubes

Benzoic acid 6 % + Salicylic acid 3 % ointment, 40 g tube

25 tubes

Benzyl Benzoate lotion 25 %

1 litre

Gentian Violet powder

1000 gm

Tetracycline eye ointment, 1 % 5 mg tube

500 tubes

**Diuretics**

Flurosemide, inj 10 mg/ml/ampoule

20 ampule

Hydrochlorothiazide, tablet 25 mg

200 tablets

**Gastointestinal drugs**

Promethazine, tablet 25 mg

500 tablets

Prometnazine, inj 25 mg/ml, 2 ml/ampoule

50 ampoules

Atropine, inj 1 mg/ml, 1 ml/ampoule

50 ampoules

Aluminium hydroxide, tablet 500 mg

10000 ysn;ryd

**Oxytocies**

Oxytocin inj 10 IU/ml, 1 ml/ampoule

20 ampoules

**Psychlotherapeutic drugs**

Chlorpromazine, inj 25 mg/ml, 2 ml/ampoule

20 ampoule

**Respiratory tract, drugs**

Salbutamol, tablet 4 mg

1000 tablets

Aminophylline, inj 25 mg/ml, 10 ml/ampoule

50 ampoules

Epinephrine (Adrenalin) inj 1 mg/ml, 1 ml/ampoule

50 ampoules

### **Solution correcting water, electrolyte and acid base**

#### **disturbances**

Compound solution of sodium lactate (Ringer's lactate) inj sol, with

giving set and needle, 500 mg/bag

200 bags

Glucose, inj sol 5% with giving set and needle, 500 ml/bag

100 bags

Glucose, inj sol 50 %, 50 ml/vial

20 vials

Water for injection, 10 ml vials/ ampoules

2000 amps/ vials

Oral re-hydration salts

2000 sachets

#### **Vitamins**

Retinol (Vitamin A), caps 200000 IU Capsule

4000 capsules

Ascorbic Acid, tablet 250 mg

4000 tablets

#### **Renewable supplies**

Scalp vein infusion set, disposable 25 G (diam, 0.5 mm)

300 units

Scalp vein infusion set, disposable 21 G (diam, 0.8 mm)

100 units

IV placement canula, disposable, 18 G (diam, 1.3 mm)

15 units

IV placement canula, disposable, 22 G (diam, 0.8 mm)

15 units

IV placement canula, disposable 24 G (diam, 0.7 mm)

15 units

Needle Luer IV, disposable 19 G (diam, 1.1 mm x 38 mm)

1000 units

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Needle Luer IM, disposable 21 G (diam, 0.8 mm x 40 mm)

2000 units

Needle Luer SC, disposable 25 G (diam, 0.5 mm x 16 mm)

100 units

Spinal Needle, disposable, 22 G (diam, 0.7 mm x 40 mm) black

25 units

Syringe Luer, resterilizable, nylon, 2 ml (diam, 0.9 mm x 90 mm)

20 units

Syringe Luer, resterilizable, nylon, 5 ml

100 units

Syringe Luer, resterilizable, nylon, 10 ml

40 units

Syringe Luer, disposable , 2 ml

400 units

Syringe Luer, disposable , 5 ml

500 units

Syringe Luer, disposable , 10 ml

200 units

Syringe Luer, conical connector (for feeding) , 60 ml

20 units

Feeding tube, CII 5 or 6 (premature baby), Luer tip, 40 cm disposable 20 units

Feeding tube, CH 8, Luer tip, 40 cm disposable

50 units

Feeding tube, CH 16, Conical tip 125 cm disposable

10 units

Urinary Catcher (Foley), (No. 12 disposable)

10 units

Urinary Catcher (Foley), (No. 14 disposable)

5 units

Urinary Catcher (Foley), (No. 18 disposable)

5 units

Surgical Gloves, sterile and re-sterilizable No. 6.5

50 pairs

Surgical Gloves, sterile and re-sterilizable No 7.5

150 pairs

Surgical Gloves, sterile and re-sterilizable No. 8.5

50 pairs

Gloves, examination non sterile disposable

1000 pairs

Sterilization test tape (for autoclaves)

2 Rolls

Thermometer, Celsius, clinical, flat type

60 units

Spare bulb for otoscope

4 units

Batteries R6 alkaline AA size (for otoscope)

12 units

Ball pens

100 units

Hard cover exercise book

5000 units

Review of various Acts and Laws :

Environment (Protection) Act, 1986

It defines an environmental pollutant as any solid, liquid or gaseous substance present in such concentration as may be, or tend to be ,injurious to the environment.

Genetically modified organisms are also regulated in India under the Indian Environment (Protection) Act of 1986. The objective of the EP Act is the protection and improvement of the environment. Under this Act, “the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing controlling and abating environmental pollution”.

The measures may include “examination of such manufacturing processes, materials and substances as are likely to cause environmental pollution”. A hazardous substance for the purposes of this Act, means “ any substance or preparation which by reasons of its chemical or physio-chemical properties on handling, is liable to cause harm to human beings, other living



creatures, plants, micro-organisms, property or the environment”. It also provides for “inspection of any premises, plants, equipment, machinery, manufacturing or other process, materials or substances and giving, by order to take steps for the prevention, control and abatement of environment pollution”.

The Central Government may appoint officers, for purposes of this Act any duty entrusted to them powers to issue directions, which includes the power to direct the closure, prohibition or regulation of any industry, operation or process or stoppage or regulation of the supply of electricity or water or any other service.

The Central Government may make rules for the procedures and safeguards for the handling of hazardous substances, prohibition and restrictions on the handling, and on the location of industries and carrying on processes and operations in different areas.

Any person empowered by the Central Government “shall have a right to enter for the purpose of examining and testing any equipment, industrial plant, record, register, document or any other material, object or for conducting a search of any building in which he has reason to believe that an offence has been or is being or is about to be committed and for seizing any such equipment, industrial plant, record, register, document to prevent or mitigate environmental pollution.”

If any person willfully delays or obstructs in the performance of this function, he shall be guilty of an offence under this Act.

The Central Government “shall have powers to take for the purpose of analysis, samples..from any factory, premises or other places in such manner as may be prescribed.

Whoever fails to comply with or contravenes any of the provisions of this Act, shall be punishable with imprisonment for a term which may extend to five years or with a fine which may extend to one lakhs rupees or with both, and in case the failure or contravention

continues, with an additional fine which may extend to five thousand rupees per day.

No civil court shall have jurisdiction to entertain any suit or proceeding in respect of anything done, action taken or order or direction issued by Central Government under this Act.

### **The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.**

According to this Act :

- No person shall unlawfully manufacture, acquire, possess, develop or transport a biological or chemical weapon or their means of delivery.
- No person shall unlawfully transfer, directly or indirectly, to any one biological or chemical weapons.
- No person shall unlawfully transfer, directly or indirectly; to any one missiles specially designed for the delivery of weapons of mass destruction.

This Act also prescribes penalties and punishments for aiding non-State actors or terrorists as also for unauthorized export, etc.

### **Epidemic Diseases Act, 1896**

This Act gives powers to take special measures and prescribe regulations as to dangerous epidemic diseases. It states that when the Government “is satisfied that the state or any part thereof is visited by, or threatened with, an outbreak of any dangerous epidemic disease, the Govt., if it thinks that the ordinary provisions of the law for the time being in force are insufficient for the purpose, may take such measures as shall deem necessary to prevent the outbreak of such disease or the spread thereof.”

### **Rules for genetically modified organisms**

The Ministry of Environment and Forests used the broad definition of ‘ environmental pollutant’ as given in the 1989 Act to issue a set of legally binding rules to govern use of genetically

engineered organisms under the Environment (Protection) Act.

The 1989 'Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms, Genetically Engineered Organisms or Cells' constitute the legally binding regulatory framework for genetically modified organisms in India. As required by the 1989 Rules, bio-safety guidelines were first issued by the Department of Biotechnology under the Ministry of Science and Technology in 1990. These guidelines were revised and expanded in 1994 and 1998.

The Indian Bio-safety Regulatory framework, comprising the 1989 Rules and the 1990, 1994 and 1998 Department of Bio Technology guidelines, covers the entire spectrum of activities relating to genetically modified organisms. This includes "research involving genetically modified organisms, as well as genetic transformations of green plants, Recombinant DNA technology in vaccine development, and large-scale production and deliberate/ accidental release into the environment of organisms, plants, animals and products derived from DNA technology." Production facilities such as distilleries and tanneries that use genetically modified organisms are also covered.

The 1990 'Recombinant DNA Safety Guidelines' and 1994 'Revised Guidelines for Safety in Biotechnology' provide guidance on containment and safe laboratory practices for Genetically Modified Organisms (GMOs) in the agricultural and pharmaceutical sectors. They also, however, contain an important change from the 1989 Rules in their treatment of deliberate release of GMOs. While the 1989 Rules effectively banned such releases (permitting them only under special circumstances), the 1990 guidelines permit them, with a shift to assessing and managing ecological and health risks that might result.

## General Information

State

-----

District

-----

Town/ Village :-----

Ward/ Village :-----

Population

-----

## Background Information

Person reporting the outbreak

-----

Date of report

-----

Date investigations started

-----

Person (s) investigating the outbreak :-----

## Details of Investigation

Describe how the cases were found (may include: (a) house-to-house searches in the affected area; (b) visiting blocks adjacent to the affected households; conducting record reviews at local (c) conducting record reviews at local hospitals; (d) requesting health workers to report similar cases in their areas, etc):

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## Descriptive Epidemiology

I. Cases by time, place and person (attach summary tables and relevant graphs and maps).

II. Age-specific attack rates and mortality rates

III. High-risk age-groups and geographical areas.

**Description of Control Measures taken**

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**Description of Measures for Follow-up Visits:**

-----  
**Brief Description of Problems encountered**

-----  
**Factors which, in your opinion, contributed to the Outbreak**

-----  
**Conclusions and Recommendations**

Date

(Name and Designation)

Note : This report should be submitted by the investigating Officer (State/District/Public Health Centre (PHC) Nodal Officer to the next higher authority within a week of completion of investigation. Tables and Graphs should be included wherever appropriate.

**Guidelines for management of bio-waste in health facilities and bio-safety measures**

**WASTE MANAGEMENT**

Hospitals/ laboratory waste is a potential reservoir of pathogenic micro-organisms and requires appropriate handling. The commonest documented transmission of infection from waste to health care workers is through contaminated metallic wastes.

## **Principles of waste management**

### **The “Cardle to grave” concept of waste management**

- Hospital waste requires management at every step from generation, segregation, collection, transportation, storage, and treatment to final disposal.
- Segregation of waste into the prescribed categories must be done at the source i.e. at the point of generations.
- Color coded bags as per international norms need to be placed in appropriate containers with the appropriate label/logo e.g. biohazard symbol for infectious waste.
- Puncture proof containers made of plastic or metal with a biohazard symbol, in blood collection areas, injection trolleys and nursing stations, and operation theatres should be made available for collecting metallic wastes.
- A collection system for the transport of segregated wastes i.e. carts need to be provided for transportation of waste to the site of incinerator.
- A storage area for wastes which already has been disinfected prior to incineration needs to be demarcated.

### **Treatment of hazardous and infectious wastes**

#### **Sharps Alternatives available include :**

- Needle burners at the workstation site ;
- Puncture proof containers, which can be autoclaved shredded and landfilled or microwave/shredded and land-filled or treated by plasma pyrolysis ;
- Deep burial in a secured area,
- Cutting of needles using needle destructor, which is a mechanical method of disfigurement to avoid recycling, but is not a disinfection modality.

#### **Wastes requiring incineration**

- Anatomical parts and animal carcasses, and

Cytotoxic drugs (outdated) toxic laboratory chemicals other than mercury.

- Patient contaminated non-plastics and non-chlorinated plastics.

Wastes that cannot be incinerated are

Chlorinated plastics, volatile toxic wastes

Such as mercury.

Patient-contaminated plastics, non-plastics and infectious laboratory wastes should be treated by steam sterilization in autoclavable bags or microwave treatment. Shredding should follow both these methods. In case of non-availability of the above, chemical

treatment with 1% hypochlorite or similar is recommended. However, excessive use of chemical disinfectants may be a health and environmental hazard.

### **Radioactive wastes**

These are dealt with according to local laws & per guidelines of Bhabha Atomic Research centre.

Used Laundry handling & decontamination

Two categories of used linen are recognized. Where there is visible contamination by blood, faeces of other biological fluids, it is termed “contaminated” Other linen is termed “soiled” These two categories should be segregated and treated separately-

- All linen should be handled with minimum agitation to avoid aerosolization of

Pathogenic micro-organisms.

- Contaminated linen may be the source of infection to patients and staff and should be placed in impervious bags for transportation.

- Disinfection can be achieved by using hot water and/or bleach, using heavy-duty gloves, eye protection and masks to protect against splashes.

- Heavy-duty washers/dryers are recommended for hospital laundry.

- Laundered linen should be autoclaved before being supplied to the operating rooms/

Theatres and high risk areas e.g. burns units and transplant units.

NO linen should leave the hospital premises unless it has been decontaminated either by boiling or autoclaved.

## **Sterilization and disinfections**

### **(1) Sterilization**

Sterilization is the destruction of all micro-organisms including bacterial spores.

Operationally, this is defined as a decrease in the microbial load by 10. Sterilization can be achieved by either physical or chemical means.

- Plastics such as polyethylene and polypropylene are suitable only for sterilization with chemical or low temperature methods.
- Sterilization is necessary for medical devices penetrating sterile body sites, as well as all parenteral fluids and medications.
- Cleaning to remove visible soiling in reusable equipment should precede sterilization.
- All materials must be packed before sterilization. Only packed sterilized materials should be described as sterile.

Materials for packaging include :-

- Paper: This prevents contamination if intact and can also be used to wrap used devices after the procedure.

- Non-Woven disposable textiles
- Containers: These can be used only if they contain material intended for a single treatment procedure for a single patient. They must be provided with a filter and a valve, and must be monitored regularly. The end-user check the physical integrity of the package before use.



- Quality control parameters for the sterilization process record information on the

sterilization processing cycle and serve as a checklist for the CSSD;

- o Load number
- o Load content
- o Temperature and time exposure record chart
- o Regular physical/ chemical testing
- o Regular biological testing
- o Regular maintenance must be performed and documented.

## **(2) Disinfection**

Disinfection is a process by which vegetative micro i.e. growing forms of pathogenic organisms are killed.

An antiseptic is a non-toxic disinfectant that can be used on skin and living tissues.

Decontamination is a process by which vegetative micro-vegetative micro-organisms are killed.

Before cleaning, such processing may be required to make soiled instruments or material safe for handling and further processing.

## **Common Disinfectants**

Name

Used for article

Precautions

Sodium hypochlorite 1% in

use dilution

5% solution to be

Diluted 1:5 in tap water.

Disinfections of material

contaminated with blood and

body fluids

- Should be used in

well-ventilated areas.

- Protective clothing

required while

handling and using

undiluted

- Not to be mixed with

strong acids to avoid

release of chlorine

gas

- Corrosive to metals

Bleaching powder 7g/liter

with 70% available chlorine

Toilets, bathrooms, may be

used in place of liquid bleach

if liquid bleach is not

- Same as above

available.

Alcohol (70%) Isopropyl, ethyl

Alcohol, methylated spirit.

Smooth metal surfaces, table

tops and other surfaces on

which bleach cannot be used.

- Flammable, toxic, to

be used in well-

ventilated area, avoid

inhalation.

- To be kept away from

heat sources,

electrical equipment,

flames, hot surfaces.

- Should be allowed to

dry completely,

particularly when

using diathermy as it

can cause diathermy

burns.

Glutaraldehyde (2%)

For dis-infection of

endoscopes, respiratory

therapy equipment and for

materials that are destroyed

by heat. Can work as a

sterilant if contact time is 6-8

hrs and if used under strictly

controlled condition.

- Eye and nasal irritant,

may cause asthma

and skin allergies,  
hence should be  
used in well  
ventilated area, keep  
covered with well  
fitting lids.

- Eye protection,  
plastic apron and  
plastic apron and  
gloves should be  
worn while handling

### **Disinfectant**

### **Articles**

### **Comments**

Detergent with enzyme

Cleaning endoscopes,  
surgical instruments before  
dis-infection

Chlorhexidine combined with

alcohol or detergents

Antiseptic, for skin and

mucous membranes,

Preoperative skin preparation,

dis-infection of hands

- Inactivated by soap,

organic matter

- Relatively non toxic
- Should not be

allowed contact with

brain meninges/eye

or ear

Quaternary

Ammonium

Compounds (e.g Dettol)

May be combined with

chlorhexidine

Antiseptic, for cleaning dirty

Wounds

(Low level dis-infection only)

- Relatively non toxic
- Dilutions in use are

likely to get

contaminated and

grow gram negative

bacteria

- Should be used in

correct dilution

- Solution in use

should be changed

every 8 hours

- Stock bottle should

not be topped up

## **BIOSAFETY PRECAUTIONS**

Standard/universal precautions

With the onset of the AIDS pandemic, the concept of universal precautions has been adopted i.e precautions that should be practiced with all patients and laboratory specimens regardless of diagnosis. It is presumed that every patient/specimen could be potentially infected with blood born pathogens such as HIV, hepatitis B and C. Universal (Standard) precautions are applied to all patients regardless of diagnosis, instead of universal testing. The main objective is to prevent exposure of staff and patients to blood and body fluids.

Body fluids considered to be potentially infected with blood-borne pathogens are: semen, vaginal secretions, amniotic fluid, pericardial fluid, pleural fluid, cerebrospinal fluid, synovial fluid or any body that is visibly contaminated with blood. Spills of blood or body fluids should be treated with hypochlorite.

Universal precautions do not apply to the following unless they contain visible blood:

Faeces, nasal secretions, sputum, tears, urine, vomitus, breast milk and saliva. Since the above may have the potential to transmit other pathogens. Precautions should also be applied to all body secretions and excretions. Spills of blood or body fluids should be treated with hypochlorite.

Standard precautions also apply to unfixed tissue and all pathological and laboratory specimens.

### **(1) Procedures for standard precautions**

Hand decontamination

The role of hands in the transmission of hospital infections has been well demonstrated, and

can be minimized with appropriate hand hygiene. Compliance with hand washing, however, is frequently sub-optimal. This is due to a variety of reasons, including lack of appropriate accessible equipment, high patient to staff ratios, allergies to hand washing products and insufficient knowledge of staff about risks and procedures.

Hand washing is the single most important means of preventing the spread of infection.

Hand should be washed between patient contacts and after contact with blood/body fluids, secretion, excretions and equipment or articles contaminated by these.

## HAND WASHING

The following facilities are required;

- Running water: large washbasins with hands free controls, which require little maintenance and with anti-splash devices.
- Products: dry soap or liquid antiseptic depending on the procedure.
- Suitable material for drying of hands; disposable towels, reusable sterile single use towels or roller towels which are suitably maintained.

### **For hand dis-infection**

The specific hand disinfectants - antiseptics recommended are: 2-4% chlorhexidine, 5-7.5% povidone iodine, 1% triclosan or alcoholic rubs.

Alcoholic hand rubs are not a substitute for hand washing, except for rapid hand decontamination between patient contacts.

### **For surgical scrub (surgical care)**

Training is needed in the current procedure for preparation of the hands prior to surgical procedures.

Scrubbing of the hands for 3-5 minutes is sufficient. The recommended antiseptics are 4% chlorhexidine or 7.5% povidone iodine.

Equipment and products are not equally accessible in all countries or health care facilities.

Flexibility in products and procedures, and sensitivity should be instituted.

### **Clothing**

Staff can normally wear clean street clothes. In special areas such as burn or intensive care units/uniform trousers and a short-sleeved gown are required for men and women.

The working outfit must be made of a material easy to wash and decontaminate. If possible, a clean outfit should be worn each day. An outfit must be changed after exposure to blood or if it becomes wet through excessive sweating or other fluid exposure.

### **Shoes**

In aseptic units and in operating rooms, staff must wear dedicated shoes, which must be easy to clean. In other areas, change of footwear is unnecessary for prevention of infection.

### **Caps**

In aseptic units, operating rooms, or performing selected invasive procedures, staff must wear caps or hoods which completely cover the hair.

### **Masks**

Masks of cotton wool, gauze, or paper masks are ineffective. Paper masks with synthetic material for filtration are an effective barrier against micro-organisms. Masks are used in various situations and their requirements differ depending on the purposes for which they are needed.

Patient protection: Staff wear masks to work in the operating room, to care for immuno-compromised patients, to puncture body cavities- A surgical deflector mask which directs aerosols away from the surgical site is sufficient.

Staff protection: Staff must wear masks when caring for patients with airborne infections, or when performing bronhoscopies or similar examination. A high efficiency filter mask is



recommended. Filter masks remove organisms, which might be inhaled.

Patients with airborne infections must use surgical deflector masks when outside their isolation room.

## **Gloves**

Gloves are used for:

- Patient protection: Staff should wear sterile gloves for surgery, care for immuno-compromised patients and invasive procedures which enter body cavities. Non-sterile gloves should be worn for all patient contacts where hands are likely to become contaminated, or for any mucous membrane contact. When performing aseptic procedures, the gloves should be decontaminated between patients. If visibly soiled with blood, a fresh pair should be used.
- Staff protection: Staff should wear non-sterile examination gloves to care for patients with communicable disease transmitted by contact. Hands must be washed when gloves are removed or changed.

Disposable gloves should not be reused.

The wearing of gloves, masks and other protective clothing is only necessary for the tasks at hand and these items should be removed after the procedure.

## **(2) Safe injection practices:**

To prevent transmission of infections between patients:

- Unnecessary injections must be eliminated. Many medicines can be given orally and this is preferred to parenteral administration.
- Sterile needle and syringe should always be used. These should be disposable, if possible.
- Safe disposal practices in respect of metallic waste should be followed

Additional precautions for prevention of transmission of infection

In addition to standard precautions which are required for all patients in all situations, special precautions need to be taken for patients suffering from certain infections. These are based on the mode of transmission of these infections. The ICC should decide the policy for the individual hospital and procedures which are feasible in its situation.

#### (1) Routes of transmission

Transmission of Hospital Associated Infection can occur by one or more of the following modes:

##### Airborne:

Through small particles suspended in the air or large droplets expelled into the air by coughing, sneezing, talking (aerosols)/or by shedding of skin scales-contact

Through direct contact of hands or skin contact or indirectly through environmental surfaces and other items which come in contact with patient.

##### Inoculation or parenteral

Contaminated solutions, blood and body fluids can either through abrasions or other skin lesions, through mucous membranes but not through intact skin.

##### Faeco-oral

Micro-organisms found in the intestines can be transmitted either directly through contaminated food and water following unhygienic practices or indirectly.

##### Multiple routes

A disease may be transmitted by more than one mode e.g. respiratory viral infections can be transmitted through airborne (droplet) as well as by physical contact-Transmission-based precautions are special precautions taken in addition to standard precautions for known infections based on the mode of transmission of the infection. Education is most important. Awareness programmes for staff, visitors and patients must be established.

Posters outlining the precautions should be placed at appropriate locations. As the name implies, additional precautions should be applied in addition to standard/universal precautions.

The following precautions are recommended:

### **(1) Respiratory precautions**

- For infections transmitted by the airborne route through small droplets less than 5 micron in size which can be dispersed over long distances e.g. tuberculosis.
- The patient should be placed in a single room that ideally has good ventilation and sunlight, negative air pressure and 6-12 air changes per hour. If single room is not possible, patients should be in a cohort with other patients with same infection. Doors should be kept closed.
- For additional respiratory protection, well fitting filter masks should be worn.

Susceptible persons should not enter the room or patients having measles or chickenpox whereas persons immune to measles or chicken pox do not need to wear mask.

- Transportation of patient should be done when essential. Patient should wear a mask during transportation.

### **(2) Contact precautions**

These precautions should be used in addition to standard precautions for patients who are infected or colonized with important organisms that can be transmitted directly by hand or skin contact or indirectly through environmental surfaces in contact with the patients, such as gastrointestinal, respiratory, conjunctiva, skin and wound infections or colonization with multiresistant bacteria.

- The patient should preferably be placed in a single room. If that is not possible, he/she

should be placed with a cohort of patients having infection with the identical micro-organism.

- Clean, non-sterile gloves should be worn on entering the room or patients environment. Gloves must be removed after leaving the patients environment and hands washed immediately.
- A clean non-sterile gown should be worn on entering the patients room and removed on leaving the room.
- Sharing of patient care equipment between patients should be avoided. If sharing is necessary, the equipment should be adequately cleaned and disinfected before using on another patient.
- Transportation of patient must be limited. If transport is necessary, precautions must be taken to avoid contact with other patients and contamination of the environment.

### **(3) Blood/inoculation precautions**

In addition to standard precautions, diseases transmitted through inoculation or parenteral route such as hepatitis B, HIV/AIDS, malaria can be prevented by:

- Rational Injection practice: Unnecessary injections suturing and blood transfusions must be reduced.
- Safe procedures for the handling and prevention of accidents with sharp metallic waste should be ensured.
- Recapping of needle should be avoided; if recapping is required/then well-established single-handed procedures should be used.
- Metallic waste should always be disposed into a puncture resistant container.
- Exposed sharp metallic waste should never be passed directly from one person to another.

- During exposure-prone procedures such as phlebotomy, the risk of injury may be reduced by having maximum.
- Visibility and proper positioning of the patient.
- Fingers must be protected from injury by using forceps for holding suturing needles.
- Overflow of sharp metallic waste disposal containers can be prevented by sending the containers for disposal before they are completely filled.

## **Standard Operating Procedure (SOPs)**

### **For dealing With**

# **AFTERMATH OF A NUCLEAR ATTACK**

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## **GOVERNMENT OF INDIA**

## **MINISTRY OF HOMW AFFAIRS**

\*\*\*\*\*

## **STANDARD OPERATING PROCEDURES (SOP)**

## **FOR**

## **DEALING WITH**

## **AFTERMATH OF A NUCLEAR ATTACK**

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**ACRONYMS**

AEC

Atomic Energy Commission

AERB

Atomic Energy Regulatory Board

ARC

aviation Research Centre

BARC

Bhabha Atomic Research Center

CD

Civil Defense

CP

Commissioner of Police

CPMF

Central Para Military Forces

CPWD

Central Public Works Department

DAE

Department of Atomic Energy

DGCD

Director Intelligence Agency

DM

District Magistrate

DOS

Department of Space

DOT

Department of Telecommunication

DRDO

Defense Research Development Organisation

DWS

Department of Drinking Water Supply

ECC

Emergency Command Centre

ERC

Emergency Response Centres

ERT

Emergency Response Team

IB

Intelligence Bureau

I & B

Information & Broadcasting

IC

Incident Commander

IMD

India Meteorological Department

IO

Information Officer

MES

Military Engineering Service

MHA

Ministry of Home Affairs

MOD

Ministry of Defense

MOH

Ministry of Health

MOUD

Ministry of Urban Development

MOP & NG Ministry of Petroleum & Natural Gas

NCDC

National Civil Defense College

NEMA

National Emergency Management Authority

NRSA

National Remote Sensing Agency

NSC

National Security Council

NTFO

National Technical Facilities Organisation

QRT

Quick Response Team

R&AW

Research & Analysis Wing

RAM

Radioactive Materials



RDD

Radiological Dispersal Device

RSO

Radiological safety officer

SAP

State Armed Police

SDDM

State Department of Disaster Management

SDMA

State Disaster Management Authority

SEMA

State Emergency Management Authority

SG

State Government

SOP

Standard Operating Procedures

SPWD

State Public Works Department

UAV

Unmanned Aerial Vehicle

**STANDARD OPERATING PROCEDURES (SOP) FOR DEALING WITH**

**AFTERMATH OF A NUCLEAR ATTACK**

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## **STANDARD OPERATING PROCEDURES (SOP) FOR DEALING WITH\**

## **AFTERMATH OF A NUCLEAR ATTACK**

### **Chapter 1**

### **INTRODUCTION**

#### **1.1**

This SOP lays down, in a consolidated manner, the specific actions required on the

part of various Ministries/Departments/Organisations and concerned State Governments to deal with the aftermath of a nuclear attack. The SOP is designed to specify major actions that will be required to be taken by various authorities at national, state and district level.

## 1.2

The instructions contained in this SOP should not be regarded as exhaustive of all the actions that might be considered necessary. It will also be necessary for each Ministry/Department/Organization and the relevant state Government Where the potential targets are located to prepare detailed SOPs so as to translate each action point in a number of steps require to be taken by each of them.

## 1.3

The Ministries/Departments/Organizations concerned with these SOPs at national level will be as under:-

(i)

Ministry of Home Affairs-Nodal agency

(ii)

Ministry of Defense

(iii)

Department of Atomic Energy

(iv)

Ministry of Health

(v)

Department of Telecommunication

(vii) Director General Civil Defense

(viii) Intelligence Agencies – DIA, NSE, IB, R &AW and NTFO

(IX) Ministry of Information & Broadcasting

(x)

Ministry of Urban Development

(xi)

Ministry of Petroleum & Natural Gas

(xii) Department of Drinking Water Supply

(xii) Doordarshan/All India Radio/ARC/CPWd

(xiv) Ministry of Agriculture

(xv) Department of Animal Husbandry

(xvi) Ministry of Consumer Affairs.

1.4

The organizations concerned at the state level will be as under:-

(i)

State Department of Disaster Management (SDDM)/ State Disaster

Management Authority (SDMA)/State Emergency Management Authority (SEMA)

(ii)

District Magistrate/Commissioner of Police

(iii)

Police/Fire and Civil Defence Services

(iv)

Health Services

(v)

Transport Department

(vi)

Public works

(vii) Agriculture

(viii) Food & Civil Supplies.

1.5

The objectives of the SOP are-

(a)

To provide, in concise and convenient form, a list of major executive actions involved in passing from a state of peace to a state of war involving the use or potential use of nuclear weapons by an adversary and necessary preparation/remedial measures required to be taken;

(b)

to ensure not only that all concerned Ministries/Departments of the Government of India, State Government and District Administrations know the process measure required of them at each stage of the process but also that all actions are closely and continuously coordinated; and

(c)

to indicate the nature of the action which would be required by the state Governments/UT Administrations within their sphere of responsibilities so that they may prepare the plan in peace time accordingly.

1.6

This SOP will be reviewed every three years; in the month of June.

## **CHAPTER -2**

### **COMMAND AND CONTROL**

2.1

The Command and Control structure is given at **Annexure- I**

#### **District Level**

## 2.4

At the District/City level, the command and control Functions will be with the Unified Commander who may be District Magistrate/Commissioner of Police, as designated by the State Government. All departments/agencies of the Central and State Governments in the District/City will work in accordance with the directions of the Unified Commander.

### **Alternate Command**

For each of the levels of command enumerated above, there will be an alternate command structure designated by Government – to be located outside the potential target area, so that in the event of any level of command being decapitated by a sudden nuclear attack, the alternate designated command being decapitated by a sudden nuclear attack, the alternate designated command structure can take its place.

## **CHAPTER-3**

### **CONCEPT OF OPERATIONS**

#### 3.1

The SOP has been formulated taking into consideration both the possibilities that the hostilities with an adversary may start to begin with in form of conventional war which escalates into a nuclear conflagration or the hostilities may begin with a sudden nuclear attack. It is expected that even where the hostilities begin with a sudden unclear attack, there would be a certain period of building up of tensions which would enable precautionary measures to be taken; nevertheless the preparedness measures also take into account a contingency where this country is subjected to a sudden nuclear attack without any warning time whatsoever.

#### 3.2

When a nuclear strike is launched by adversary, it will seek to be so overwhelming as to minimize the possibility of a retaliatory strike. In order to adversary State may be in the form of simultaneous hits at multiple sites. The attack is likely to be focused on the specific types of targets. The target sites are likely to be :

(a)

Command, control and communication system/centres.

(b)

Sites/Bases Where nuclear assets are located.

(c)

Defense and other vital installations

(d)

Major metropolitan centers

3.3

There fore, instead of covering the whole country insofar as unclear preparedness Is concerned, it will make sense to focus only on locations/ towns/sites which meet the above criteria because covering the whole country will be unacceptably costly. A list of potential targets for a unclear attack will be drawn up by the Ministry of Defence with inputs from different intelligence agencies and updated at least once a year in the month of January. This list will be circulated to the Ministries/Departments charged with the responsibility for building up capabilities and making arrangements for dealing with the aftermath of a nuclear attack under this SOP.

3.4

The objective of the operations under this Manual shall be to reduce the casualties to the minimum possible by providing rescue, relief and medical services and to mitigate, as far as possible, the destructive effects of a nuclear attack on the morale of the affected population



and on the command, control and communication systems.

### 3.5

Based on the level of damage, the area which has been subjected to a nuclear attack can be segmented into four Zones. The Central Zone A is expected to be completely devastated with no likely survivors. Emergency Response Teams will not be expected to enter into this area as the radiation levels will be very high. The area surrounding it will be termed as Zone B which would also have seen massive destruction but where about 50% of the people are expected to have survived although with high doses of radiation. ERTs would be able to enter this area with full protection gear, and dosimeters. In Zone C, the casualties are expected to be up to the level of 20%. The Radiations Safety Officer will determine whether protection suits are required to be worn by ERTs/Civil Defense Teams working in this zone depending upon the prescribed intervention levels; the duration which the team is expected to spend in the said area and the radiation level in that area. In Zone D, no casualties are expected. Insofar

as Zone 'D' is concerned, protection suits will not be necessary. However all search and rescue teams/Civil Defense teams working in Zones B,C & D will at all times carry monitoring equipments and dosimeters.

### 3.6

The typical areas covered by these four Zones in the aftermath of an attack using a 20 KT weapon are shown at **Annexure-ii**. The size of the zones will vary depending on the size of the device and the height of the burst. The SOP provides that after a nuclear attack, the yield will be assessed and a tentative marking of the four zones done by the monitoring teams located in the Emergency Command Centres. The final marking of the zones will be done by the monitoring/assessment groups of the Emergency Response Teams.

### 3.7

Various other aspects covered in the SOP include avoidance of panic/exodus, massive training programmes for doctors and paramedics, development of data base of doctors/paramedics including in private sector in the vicinity of the target areas, organization of specialized search, rescue and evacuation teams in the satellite towns on the periphery of the targeted area and involvement of para-Military Forces and Civil Defense in carrying out these functions.

### 3.8

The level and nature of protective equipment to be provided to the Civil Defense volunteers/Paramilitary Forces personnel will be the same for similar type of operations.

### 3.9

The following three stages are envisaged:-

(a)

#### **preparedness stage (peace time) – CODE GREEN.**

This will include all actions that have to be taken during peace time by various agencies to ensure that the response plans are in a state of preparedness. This will include documentation, having equipment in place, exercises, drills, Training programmes, awareness programmes, purchase of equipment establishment of command and control systems etc. The preparedness measures also keep the possibility of a sudden nuclear attack in view the implementation of code green should commence immediately upon the approval of this SOP.

The details of actions to be taken are given in Chapter -4

(b)

#### **precautionary stage – CODE YELLOW.**

This is a stage which could be considered as a deviation from normal relations due to rising tensions with an adversary. The functions in this stage will need to be carried out by various agencies in order to enable movement from a stage of preparedness to the

preparedness to the precautionary stage on the presumption that there could be an imminent unclear attack. The precautionary stage will be declared by the Government. The details of actions to be taken are given in Chapter-5

(c)

**post –unclear attack stage- CODE BLACK.**

This will cover all actions which are to be taken once a nuclear attack has been confirmed. The details of actions to be taken are given in Chapter-6

3.10 In case of a sudden nuclear attack, the measures listed in the precautionary stage (code yellow) and the post attack stage (code Black) will come into operation concurrently.

**CHAPTER-4**

**PREPAREDNESS STAGE : CODE GREEN**

4.1

The preparedness stage will include all preparatory measures required to be taken by concerned Ministries/Departments, state Governments and their organizations for an effective and timely response.

**Potential Targets**

4.2

Identification and Annual review of potential targets will be undertaken by MOD in association with intelligence agencies and a list of such targets will be maintained as a part of this SOP.

{\*MHA/MES/CPWD/DOT/MOD(DRDO)}

4.4

Establishment of state ECC. Detailed protocol for manning the ECC to be laid down as above

{SGs}

4.5

Establishment of District ECC. Detailed protocol for manning the ECC to be laid down as above.

{\*SGs/Disst Admn}

4.6

SIS database to be maintained at the ECC for areas in and around targeted region with detailed information on-

(i)

Ma[s/Roadmaps of potential targets and satellite towns.

(ii)

Important places of shelter which will include schools, community centres, location (with strength) of medical and paramedical staff, number of beds in the hospitals, inventory of emergency services (fire, police and transport).

(iii)

Related satellite based aerial imageries of target areas.

{\*MHA/SGs/ARC/Disstt Admn}

### **Emergency Response Teams**

4.7

The Emergency Response Teams will be formed and trained both at the Central and State level The Str5ucture of the Emergency Response Teams is given at **Annexure-iii**

**(Responsibility : MHA/SGs)**

**{Assistance : DAE/MOD(DRDO)}**

4.8

The list of equipment for equipping ERT sot be drawn from CPMFs/State Plolic/ Fire

services is given in **Annexure-iv**.

4.9

The monitoring equipment and personal protective gear will be sanctioned and procured in advance for the emergency response and for other medical/civil defence personnel involved in rescue, evacuation and decontamination.

(MAH/DAE/DRDO/MOH/SGs)

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4.10 UAV s to be procured and kept in readiness with NTFO/Emergency Response Teams.

(MHA/DAE/NTFO/BARC)

4.11 Constitute Route Clearing Teams along with compatible engineering equipment in

Engineering Divisions of satellite towns-personnel to be trained and equipped to

operate in a radiation environment. These teams will carry out joint mock drills/training

with ERT s and QRT

[\*SG/MHA/MOD]

4.12 Engineering Teams for restoration of power and communication links to be identified in

satellite towns.

[\*SG s/CPWD/SPWD]

4.13 Raise Auxiliary Fire services on al large scale both in the tar4get areas as well as in

the satellite towns.

[\*SG s/MFA]

4.14 Identify/create sufficient water sources for firefighting in potential target target town and

satellite towns.

[\*SG s/Disst Admn]

4.15 Constitute monitor5ing teams of personnel from DAE/ DOS/IMD/DRDO/NTFO/ARC to

evaluate the yield/impact of the strike and monitor the movement of the radiation

cloud/fall out – one team for the National level and one for each concerned State ECC.

[\*DAE/DOS/IMD/MOD(DRDO)]NTFO/ARC]

4.16 Helicopters and necessary radiation monitoring equipment to be procured. Personnel required for aerial monitoring to be trained by BARC.

[\*MHA/DAE(BARC)/NTFO/ARC/MOD(DRDO)]

### **Civil Defense**

4.17 Legal powers at present included in the Civil Defense Act, 1968 and the Defense of India Act and the Rules framed there under provide overriding authority to the District Magistrates/Controllers to requisition any property for war/civil defence effort. These may be reviewed time to time for updation, where necessary.

[\*MHA]

4.18 A massive programme for training of Civil Defense/Home Guard personnel in the potential target towns and satellite towns to be taken up implementation. NCDC will devise an appropriate course/syllabus in consultation with DAE for training of Civil Defense volunteers.

[DGCD/NCD/DAE]

4.19 Raising training and equipping of Civil Defense teams for functioning in high radiation environment both in the target towns and satellite towns. It will be ensured that the strength of the Civil Defense teams to be raised in satellite towns is sufficient to cater

for carrying out rescue and relief activities in the potential target areas. Sanction of appropriate equipment for Civil Defense teams located in and around the target areas.

[\*MHA/CD]

4.20 In the satellite towns at least 10% of the Civil Defense strength will be called up on a roster basis every quarter. This will ensure that these teams remain in training and also

enable organized response to a sudden attack.

[\*DGCD]

4.21 Finalization of procedure for communication with the Civil Defense workers including sirens and signals.

[\*DGCD/DOT/DAE]

4.22 The list of equipment required by the Civil Defense has been worked out for the purpose of illustration, for Greater Mumbai only which is at **Annexure-v**

Similar exercise will have to be conducted by DGCD in respect of all vulnerable cities/areas/installations.

[\*DGCD]

4.23 Procurement of potassium Iodate tablets and their distribution to Civil defence Bodies.

[\*DGCD/MOH]

4.24 Procurement of lash lights (torches) and radio sets to be placed with the District Command Centres for distribution to affected population, post-nuclear attack.

[\*DGCD/SG s/Distt Admn]

### **Medical preparedness**

4.25 Identification and equipping of Hospitals for treatment for radiation cases and Mass Casualty Management in satellite towns around the target area.

[\*MOH/SGs]

4.26 Hospitals to be identified and capabilities built up therein for providing specialized medical facilities including bone marrow transplant facilities.

[\*MOH/SG s]

4.27 All identified hospitals to have Disaster Management Manual including SOP for steps to be taken following a nuclear attack.

[\*MOH/SG s]

4.28 Earmarking and organization of static and mobile first aid posts and mobile field hospitals in satellite towns and training of the Doctors/Paramedics in these teams.

[\*MOH/DGCD/DAE]

4.29 A data-base of the doctors and paramedics including the medical practitioners in private sector in the vicinity of the target areas to be developed for each target area.

[\*MOH/SG s]

4.30 Training capsules for training of doctors and paramedics for treatment of radiation-induced injuries be developed. Training/orientation courses of doctors/paramedical staff in Government, Public/Private Sector hospitals in and around the targeted regions including the satellite towns in handling of mass casualty/radiation injuries-to be organized.

[\*MOH/DAE/MOD(DRDO)]

4.31 Identification of sources (manufactures/wholesalers) for all appropriate types of medicines. An illustrative list of the medicines required is at **Annexure-vi**

[\*MOH/SG s]

4.32 Procurement of minimum quantity of medicines including Potassium Iodate tablets and their distribution amongst designated hospitals in and around the targeted regions.

[\*MOH//SG c]

4.33 A mechanism to rotate the medicine stocks by consumption and regular replenishment of the stock.

[\*MOH/CD/SG s]

4.34 Identifying and equipping existing laboratories in satellite towns for sample testing of foodstuffs and water.



[\*MOH/SG s]

4.35 Four mobile laboratories for sample testing of foodstuffs and water to be kept in readiness in satellite towns outside each target area. These will be manned by chemists from state Laboratories who will be specifically trained for this purpose by DAE.

[\*MOD/DAE/MHA/DRDO/SG s]

4.36 The mobile hospitals will have satellite communication equipments enabling telemedicine/consultation with experts in different field through video conferencing.

[\*MOH]

4.37 All existing crematoriums in the satellite towns to have incinerators.

[\*MOUD/SG s/Distt.Adman.]

4.38 Construct/Identify shelters for Local Command Post/Civil Defense Teams/Depots/Emergency Response Teams both in target and satellite towns.

[\*DGCD/SG s/DISTT Admn.]

4.39 Procurement of adequate number of wireless and storage of these sets out-side the targeted region in appropriate sage shelters.

[\*SG s/Disttt Admn]

4.40 Designate appropriate grounds for housing evacuees out side the target areas covering al directions.

[\*SG s/DGCD/MHA]

4.41 Locating/creating water sources near the identified premises

[\*SG s/Distt Admn]

4.42 Identification of stores for procurement/requisitioning of tents, shamianas, tinsheets, emergency sanitation and mobile diesel generating sets and entering into per-contracts to be reviewed every year.

[\*SG s/DGCD/Distt. Admn]

4.43 Identify towns/places far from the target area from where uncontaminated food stock/perishables can be drawn in the event of a nuclear attack. Transport arrangements/rates to be tied up and reviewed every two years.

[\*SG s/DGCD/Distt. Admn]

4.44 Establishment of linkages between NGOs, Civil Defense, Government Organizations and other volunteers for adequate arrangements for clothing, for men, women and children and its dispatch to civil defence centres located in the satellite towns outside the targeted regions.

[\*SG s/DGCD]

4.45 Putting in place fail proof alternative communication linkages between national, state and district Emergency command Centres, DAE, Indian Met. Dept of Space, ARC/NTFO and National Remote Sensing Agency. Hardening the communication links will be tested once every month.

[\*DOT]

## **Transportation**

4.46 Identification of transport vehicles both in public and private sectors.

[\*Distt Admn]

4.47 Rates of requisition of vehicles/premises to be finalized and reviewed every two years.

[\*SG s]

4.48 Sources of POL to be identified in periphery towns with arrangements for augmentation of supply within a short time of say 45 hours.

[\*MOP&NG]

4.49 POL reserves to be kept ready

[\*MOP7NG/SGs/Distt Admn]

4.50 Contingency plan for restoration of power supply within the shortest possible time.

[\*SGs/Electricity Boards]

### **District level preparedness**

4.51 Constitution of Teams by the District Administration as under:-

(i)

Law & order under S.P.

(ii)

Search and Rescue under ADM

(iii)

Auxiliary Fire Service under chief Fire Officer

(iv) Corpse and Carcass disposal under the Municipal Corporations.

(v)

Transport under the Regional Transport officer/District Transport officer.

(vi) Camp administration under SDM/Dy. Collector

(vii) Food and Civil Supplies under the District Civil Supply Officer.

(viii) Decontamination arrangements including disposal of contaminated water

,

under the public Health Engineering Departments.

(ix)

Mobilisation of adequate health services for treatment of radiation induced

injuries under the District Chief Medical Officer.

(x)

Generating awareness amongst public in the targeted regions which will

include preparation, distribution and demonstration of simple methods for

preparing safe shelters within or adjacent to their houses and display of

appropriate designs of shelters under Dy. Controller Civil Defense.

(xi)

Evacuation under Dy. Controller Civil Defense.

All the above mentioned Teams will function under the overall charge and direction of Dist. Magistrate.

[\*Distt. Admn]

4.52

Necessary law & order arrangements to be worked out and orders drafted and kept ready for:

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(a)

Providing security at relief camps.

(b)

Preventing panic

(c)

Preventing people from going into the affected area.

[\*SG s/MHA/Distt Admn]

4.53 District administrations to draw up draft orders for management of relief: Camps assigning specific responsibilities to specific officers/departments. These orders will be updated in the month of April each year.

[\*SG s//Distt Admn]

4.54 Darft orders to be kept ready for mobilization of CPMF s to report to state/District

Command Centres Scheme for such reporting to be worked out by MHA.

[\*MHA]

4.55 AIR transmitters located in satellite towns to be set up/strengthened.

[\*I&B/SGs]

4.56 A massive programme for dissemination of information to people to be undertaken by integration it with the awareness generation campaign for natural disasters to ensure that it does not result in panic or exodus of population from the potential targets.

[\*MHA/DAE/I&B/SGs/Distt Admn]

4.57 The Civil Defense mechanism will also carry out awareness generation as a part of its duties. Pamphlets containing do's/don'ts, make shift shelter designs, health precautions, etc in case of a nuclear attack to be printed and distributed to the population in and around the targeted regions by civil defence/home guard volunteers as a part of regular Civil Defense exercises.

[\*DGCD/I&B]

4.58 Material for dissemination through Doordarshan and other TV channels, All India Radio and print media for awareness generation to be developed and kept in readiness.

[\*DGCD/MHA/DAE/I&B]

4.59 Population in the potential target areas to be advised to maintain radio sets.

[\*DGCD/I&B/SGs]

#### **Mock drills/Exercises**

4.60 Mock drills/exercises will be carried out for each fact of preparedness. Mock drills will be carried out for, in particular:-

(a)

Rescue and evacuation-with ERTs/SAPs/Civil Defense Teams/Route Clearing Teams working together. This will also cover transport.

(b)

Decontamination.

(c)

Setting up relief camps, first aid posts mobile hospitals

(d)

Activation of ECC s and deployment of monitoring and assessment teams-the aspect of communication will also be exercised together with this.

[\*DGCD/CPMFs/SGs]

4.61 These mock drills/exercises will be carried out as a part of the general mock drills for disaster management so as not to create any unnecessary panic.

~

[\*DGCD/CPMFs/SGs]

4.62 Keeping considerations of economy in view, instead of carrying out mock drills/exercises throughout the country on all facets, one aspect will be taken up for exercise in some selected towns while another aspect is covered in other selected towns.

[\*DGCD/CPMFs/SGs]

#### **Contact details**

4.63 Complete details (Name designation, Telephone Nos. both office/Residence/Mobile and e-mail) in respect of the following will be attached as an Appendix form part of these SOPs:

i.

Nodal Offices of-

#### **4.64 Redundancy/Reserves**

Insofar as personnel equipment is concerned, reserves of 10% of the authorized strength. Insofar as monitoring equipment is concerned, a reserve of 25% of the authorized strength.

#### **4.65 Updation/Modernization**

Equipment will be reviewed every year and where necessary the list of equipment will be updated from time to time depending upon the technological advances.

#### **Review**

4.66 Preparedness and Response measures will be reviewed and updated in the month of May every year and a report sent to MHA.

[\*MHA/MOH/DGCD/MOD/DRDO/DEA/SGs/ERTs/ERCs]

### **CHAPTER-5**

#### **PRECAUTIONARY STAGE:CODE YELLOW**

5.

The precautionary stage is divided into two stages stage-I in which activation measures required prior to response will be put in place and Stage-II where all the resources will be mobilized to be ready for response in case of a nuclear attack. The precautionary stage will be declared by the Government based on assessment and evaluation of various factors including intelligence inputs. The declaration of the precautionary stage will trigger off the following sequence of actions:

#### **STAGE-I (Activation)**

5.1

ECC s at National, State and district level outside the targeted regions to be activated.

[\*MHA/DAE/NRSA/DOS/MOD(DRDO)/ARC/IMD/SG s/Districts]

5.2

All teams mentioned in preparedness stage to be called up.

[\*MHA/ALL concerned]

5.3

Civil Defense volunteers to be called to the assembly points for briefing.

5.4

Personnel from IMD, DOS, DAE, ARC/NTFO and DRDO to man the national/State monitoring centres.

[\*MHA/SG s/IMD/DOS(NRSA)DAE/ARC/NTFO/MOD(DRDO)]

5.5 All intelligence inputs to be provided to National and State command posts.

[\*MOD(DIA)/IB/R&AW/NSC]

5.6

Engineering units/route clearing units to be mobilized and kept on standby in satellite towns for route clearing/clearing up radioactive debris, and restoration of power/communication links.

[\*SG s/DOT]

5.7

Mobile laboratories for sampling foodstuff/water to be activated.

[\*MOH/DAE/SG s]

5.8

Medical teams to be kept in readiness

[\*MOH/SG s/CMO]

5.9

Potassium Iodate tablets to be supplied to potential target areas.

[\*MOH/CD/SG s/Distt Admn]

5.10 Doordarshan, Media (visual & print)to intensify their awareness campaign. Civil

Defense to provide necessary material.



5.11 Pamphlets/posters highlighting important do's and don'ts to be disseminated to the population in the potential target areas simultaneously ensuring that it does not result in panic or exodus of population.

[\*DGCD/SGs/Distt Admn]

## **STAGE-II (Mobilisation)**

5.12 The command and control structures to be shifted to the Emergency Command Centres

[\*MHA/SG s/Districts]

5.13 All teams mentioned in stage I do be moved to their assembly points.

[\*MHA/ALL Concerned]

5.14 Civil Defense services for rescue first aid, decontamination, temporary shelters, evacuation, command and control and communication to be mobilized and moved to their designated stations.

[\*DGCD/SG s/Distt.Admn]

5.15 Arrangements to be made for disposal of very large quantities of radioactive waste material. This could be in the form of large tanks for storing the contaminated water, plastic bags for holding contaminated clothes and arrangements for disposal of contaminated bodies/carcass.

[\*SG s/DAE/Distt Admn.]

5.16 Establishment of decontamination centers with adequate arrangements for disposal of contaminated water.

[\*SG s/Distt Admn]

5.17 Government and public sector vehicles to be mobilized except those which are involved in emergency services.

]

[\*SG s/Distt Admn]

5.18 Private transport to be requisitioned for evacuation/transport of food and supplies etc.

[\*SG s/Distt Admn]

5.19 Private medical practitioners to notified to be on standby

[\*MOH/SG s/Distt Admn]

5.20 Potassium Iodate Tablets to be distributed to the public with the instructions to take one tablet per day for two weeks immediately after a nuclear attack.

[\*DGCD]

5.21 Requisitioning of tents/shamianas, tin-sheets, emergency sanitation, mobile diesel generating sets and its dispatch to the District Command Centres.

[\*SG s/Districts/DGCD]

5.22 Adequate supply of baby food to be moved to designated shelters.

[\*SG s/F&CS/Distt Admn]

## **CHAPTER-6**

### **POST NUCLEAR ATTACK: CODE BLACK**

6.

As soon as a nuclear attack takes place, following actions will be taken:-

#### **Impact assessment**

6.1

Monitoring teams of DAE/DOS (NRSA) / IN\MD/ARC/NTFO/MOD(DRDO) located at National Command /centre to assess impact and advise the command Authority regarding the extent of damage, level of radiation hazards etc.

[\*DAE/NTFO/NRSA/DOS/ARC/DRDO]

6.2

UAV s with monitoring equipmen/sensor/video to owerfly the area.

[\*NTFO/ARC/DAE]

6.3

Yield of the bomb to be assessed by a team of

DAE/DOS/NRSA/IMD/ARC/NTFO/DDRO etc based in the National command Centre.

[\*DAE/DOS/NRSA/IMD/ARD/DRDO/NTFO]

6.4

Monitoring equipment already procured to be fitted in the helicopters which will be sent

for recce for impact assessment.

[\*ARC/DAE/NTFO]

6.5

Radioactive cloud to be tracked continuously and wherever possible, fallout to be

monitored and measured.

[\*DAE/Monitoring Teams]

6.6

Assessment teams from Emergency Response Battalions to move to the affected

areas and assess radiation levels for earmarking areas in which search and rescue teams can

operate-as also levels of protection required for each area.

[ERT s]

### **Earmarking of Zones**

6.7

After taking inot account the assessment made, the Unified commander, on the advice

of the Assessment Team, and the Radiation Safety Officer will earmark the areas in Zone 'B'

from where the population is be evacuated.

## **Search and evacuation**

6.8

Based pm the assessment, the search/rescue/evacuation teams of Emergency

Response Battalions will move in earmarked area of Zone 'B' for rescue and evacuation. The

rescue and evacuation, from 'C' and such areas in Zone 'D' which are to be evacuated,

keeping in view the direction of the plume and the area covered by fall out will be carried out by

the Civil Defense Teams assisted Where necessary by Emergency Response Teams.

[Distt.Aemmn./ERT s]

6.9

Road clearance teams to be deployed for road clearance to facilitate evacuations.

[\*SG s/Distt. Admn]

6.10 All emergency response personnel to be administered potassium iodate tablets.

[\*DGCD/CPMF s/SG s/Distt.Admn]

6.11 Fire fighting teams to commence operations the earmarked areas of Zone B and in

Zone C and D

[\*SG s/Distt.Admn/CD]

6.12 CPMF s/Police deployment to prevent panic/exodus or entry into the area.

[\*CD/SG s/Distt.Admn]

6.13 First aid posts to be set up at the periphery of Zone 'D' and activated.

[\*MOH]

6.14 Decontamination centres to be activated

[\*MOH]

6.15 Camps to be established Evacuated population which does not have any injuries will

be decontaminated and housed in the camps

[\*SG s/Distt Admn/CD]

6.16 Persons who are injured to be evacuated and brought to the first aid posts where they will be decontaminated. After first aid and providing new clothes they will be shifted to evacuation camps/field hospitals, depending on their condition.

[\*SG s/ERT s/CD/Distt.Admn]

6.17 Seriously injured patients, who cannot wait for decontamination will be sent to designated hospitals which have “dirty treatment” areas.

[\*MOH/Distt Admn]

### **Decontamination/Disposal**

6.18 Contaminated clothing material to be packaged and dumped in Zone ‘A’

[SG s/Distt.Admn/DAE]

6.19 Disposal of dead bodies/carcasses in incinerators.

[SG s/Distt.Admn/DAE]

6.20 Information Centres to be activated. Additional police stations to be set up near relief camps

[SG s/Distt.Admn]

6.21 People in the affected areas to be advised regarding precaution to be taken with regard to consumption of foodstuff and water.

[\*I & B/CD/SG s/Distt.Admn]

6.22 Mobile sampling units to sample foodstuff and water in satellite towns on a continuous basis.

[\*MOH]

6.23 Core monitoring team at National COC/State EOC comprising of

DAE/NRSA/DRDO/IMD/DOS to continue assessment and updating of the situation, based on the latest information, and advise the command authority.

[\*MHA/DAE/NRSA/IMD/MOD(DRDO)/ARC/NTFO/DOS]

\*Coordinating agency for the activity

Sr.

No

Block

Sr.

No

Primary Health Center

Name

Phone No.

1

AMRAVATI

1

Walgon

0721-2386132

2

Shirala

0721-2710050

3

Anjangaon bari

0721-2385300

4

Mahuli jah.

0721-2710045

2

BHATKULI

5

Bhatkuli

0721-2389302

6

Kholapur

0721-2679677

7

Ashti

0721-2383001

3

DARYAPUR

8

Amla (endly)

07224-275122

9

Yeoda

07224-237014

10 Ramtirth

07224-232051

11 Chandrapur

07224-232555

4

ANJANGAON SURJI

12 Kakarda

7227-233396

13 Sategaon

722,424,003

14 Kapustalni

7,224,244,004

5

ACHALPUR

15 Dhkmangao G

07223-225989

16 Patrot

07223-260742

17 Yesurna

07223-202305

6

CHANDUR BZ.

18 Asagaon Purana

07227-200315

19 Karjgaon

7227-225471

20 B.Thadi

7227-2531583

21 Telwel



7227-202420

7

MORSHI

22 Ambada

07228-234023

23 Hiwarkhed

07228-245249

24 Khed

07228-202700

25 Nerpenglai

07228-227452

26 Vichori

07228-228858

8

WARUD

27 Amner

07229-245065

28 Pusala

07229-242055

29 Shendurjana Ghat

07229-238499

30 Raurj BaZar

07229-233071

31 Loni (Warud)

07229-203407

9

TIWASA

32 Mardi

07225-245010

33 Kurha

07225-225240

34 Talegaon TH

07225-277074

10 DHAMANGAON RLY 35 tALEGOAON

07222-232260

36 Anjansingi

07222-231272

37 Mangarul Dast

07222-230466

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38 Nimboli

07222-203944

11 CHNDUR RLY

39 Amla vish

07222-200802

40 Palskhed

07222-259740

12 NANDGAON KH

41 Mangrul Chavala

07221-2212200

42 Papal

07221-226175

43 Loni TAKli

07221-224191

44 Satergaon

07221-2021137

45 Dhamak

07221-229011

13 CHIKHALDRA

46 Salona

7,220,202,059

47 Tembrusonda

7,220,202,072

48 Semadoh

7,220,202,073

49 Hatatru

7,220,204,058

50 Katkumbha

7,220,225,161

14 DHARANI

51 Kalamkhar

07226-202097

52 Sadrabadi

07226-2331010

53 Harisal

07226-202099

54 Bijudhawadi

07226-233348

55 Bairagad

07226-202098

56 Dhulghat Rly

07226-202506

**LIST OF ANTIDOTES/DRUGS AND RESUSCITATION**

**ITENS/DECONTAMINATIONS/SUPPORTIVE EQUIPMENTS**

**ANTIDOTES**

1. Inj. Atropin

: - 9700 Amp

2. Inj. PAM – ml

: -255 Amp

3. Inj. BAL

: -Nil

4. Inj. Sodium Nitrite

: Nil

5. Sodium Thioisulphate :-Nil

6. Inj. Amyl Nitrite

: -Nil

**DRUGS AND RESUSCIATION ITEMS**

1. Potassium Chloride Oral

: - 25 Bottles

2. Inj. Soda Bicarb

:-

3. Oxygen Cylinder

:- 134 Nos

4. Ambus Bag 250/500 ml

:- 5 each

5. Tab. Paracetamol

:-600000 Tabs

6. Tab. Ibuprofen 400

:-200,000 Tabs

7. Ciprofloxacin Eye "Drops/Oint

:-Nil

8. ORS Power

:-30000