Standard Operating Procedure (SOP) for responding toTerrorist attacks using CHEMICAL WEAPONS

Standard Operating Procedure (SOP) for responding to Terrorist attacks using Chemical Weapons

INDEX

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 Athority (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 Incedent 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 Unirts.

3.5 Awareness generation among the public in vulnerable areas has to be undertaken as a part of awareness generation for disaster management. Information suitables for the public domain will be identify 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 arrpopriately trained in the do's and don'ts, of a chemical weapon attack. Training capsules should be developed and integrated into the trainining programme.

3.7 The list of equipment for detection, protection, decontamination and medical treatment has been identified and places 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 Hydrabad 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 hithertofore. 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 fiver 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 will 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 re2quired to the Incident Commander.

The Incident Commander will :-

i) Cordon off the area and restrict entry into the cordonedarea 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 determing the sources/ typero 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 poice 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. Paracitamol
6. Tab. Ibubrofen 400
7. Ciprofloxasin Eye Drops/ Oint.
8. ORS Powder
9. Diazapam

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 tot 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.

- 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 be 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 form 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 hositals 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 STRUCTURTE 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

- Idendification of rescue requirements.
- Evacuation requirements.
- Run- off considerations
- Air-monitoring requirements
- Placement of arriving emergency forces

(a) Staging area

(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_2
(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
TERRORIST ATTACKS USING BIOLOGICAL AGENTS

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 intiation 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).

CHAPTER – II

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 WIfare	- 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 on 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

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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.

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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.

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), Yersienia Pestis (plauge) etc to organisms such as Veriola (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 drup 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 distrsicts 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 of 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 alsos 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 qualityassurance 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 nopdal 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 Distsrict 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) Tuberclosis 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, met 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 etems would be strengthered.

4.27 Laboratories will be developed at the port of entry and infrastructure created for impaction 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 durgs/ 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 antiotoxin 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 Distsrict 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 idengified 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.

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, Coxicella Bruneti and Clostridum 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.

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	Cosiella brunetii
5	Botulism	Clostridium botulinum
6	Cholera	Vibrio cholerae
7	Shigellosis	Shigella dysenteriae (causes severe disease), S flexneri, S boyadii, 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 Anthras : (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 toxaenia & septicemia in 80% cases (b) Cutaneous anthrax (i) Onset as malignant pustule (ii) Progress to septecemic & death in 20 % cases (c) Intestinal anthrax

	(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 & Stream sterilization Floors & Walls : By scrubbing & spraying of 2.5 % Cresol
	(e) Wearing of protoctive 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 troroughly & 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 infectied 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 & preventation 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 sources 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 brunetii
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. Emdpcarditis 6. Laboratory confirmation – Specific Antibody detection by Immuno Flurescence (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

	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 Tetracyline 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 form 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 labvage & 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 comsuption 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) Muxcle 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.

	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, - Antibotics 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 dysenterieae (causes severe disease), S flexneri, S boydii, S sonnei (short clinical course)
Symptoms/ Identification	1. Acute infection involving large and small intestine 2. Charaterized by diarrhea (with blood & mucous) with fever & nausea 3. sometimes toxaemia, vomiting, cramps & tenesmus. 4. illness self limiting lating for 4-7 days. 5. Laboratory diagnosis by (a) Isolation of bacteria in faeces/ rectal swab (b) culture in selective media – CSLD & Me Conkey'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 vigit.
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 occurance 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. Heamorrhagic diasthesis leading to hepatic and rental 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

Indicatior	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 indictors	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 unsual time or in an unusual pattern. Large numbers of patients with rapidly fatal illness (agent-depedent) 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 etio0logical 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 distsribution

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

d. Describe the outbrteak 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. Advice 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 o 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.l 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 consumpbles 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 wit 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. Hypochorite (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) Incubato
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^{O} Celsius
35. Micro Tips with different capacity
36. Micro pipettes
37. Multi channel Micro pipette
38. Trans Illluminator
39. Co2 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, Plaugue

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 - 20^{O} 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 lgM 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
Shegellosis	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

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
Nystanin, vaginal tablets, 1000000 IU/tabs	1000 tablets
Nystanin, vaginal tablets, 1000000 IU/tabs	1000 tablets
Procain 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
Mewbendazole, 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
Ferrours 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	
Polyyidone iodine 10 %, sol, 200 ml bottles	10 bottles
Silver sulfadiazine cream 1 %, 50 g tube	30 tubes
Benzoic acid 6 % + Salicylic acid 3 % onntment, 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
Alaminium 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 latate (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
Glocose, 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
Renuwable supplies	
Scalp vein infustion set, disposable 25 G (diam, 0.5 mm)	300 units
Scalp vein infustion 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

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, examinatyion 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 the4 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 andabatement of environment pollution”.

The Central Government may appoint officers, for purposes of this Act any damy entrust to them powers to issue directions, which includes the power to direct the closure, phohibition 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 team 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 forGenetically 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.

Annexure - X

PROFORMA FOR REPORTING INCIDENTS BY RRT

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):

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

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. carats 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 disfiguremebnt to a avoid recycling, but is not a disinfections 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 than 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 handing & 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;

    - Load number
    - Load content
    - Temperature and time exposure record chart
    - Regular physical/ chemical testing
    - Regular biological testing
    - 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 hypochiorite 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 wihg70% available chorine	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 habdling

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

BISOSAFETY 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 di8agnosis. 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 al 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 appro0priate 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. Flexi8bility 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 were 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 to become 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 al 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 ski9n 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 diseases 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 percautions

- 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. thberculosis.
- 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 or environmental surfaces in contact with the patients, such as gastrointestinal, respiratory, conjunctiva, skin and wound infections or coonization with multiresistant bacteria.

- The patiebt 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 remoced 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 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, HIVE/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

GOVERNMENT OF INDIA
MINISTRY OF HOMW AFFAIRS

*****

STANDARD OPERATING PROCEDURES (SOP)
FOR

DEALING WITH

AFTERMATH OF A NUCLEAR ATTACK

*****

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

INDEX

ANNEXURES

STANDARD OPERATING PROCEDURES (SOP) FPR 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 Affaires.

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 requied to be taken;

(b) to ensure not only that all concerned Ministries/Departments of the Government of India, State Government and Distr5ict 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 decapacitated by a sudden nuclear attack, the altermate designated command

being decapacitated by6 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 wher 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 ievel 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 Trams 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 upto the level of 20% The Radiations Safety Officer will determine whether protections 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 din the said area ad 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 ad 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 Treams.

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 progranmes, 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)

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 mounth.

[*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 Fier 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 helath 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:

(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 wil 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/excrcises 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.

[*DGCD/I&B]

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.

[*DGCD/I&B]

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 ot 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 takebn:-

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 owrfly 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.

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

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.Aemn./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 ion 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	Raurrj 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

		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 Thoisulphate :-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. Paracitamol :-600000 Tabs
6. Tab. Ibubrofen 400 :-200,000 Tabs
7. Ciprofloxasin Eye “Drops/Oint :-Nil
8. ORS Power :-30000