



**LIGHTNING &
THUNDERSTORM
ACTION PLAN
2024**

**DISASTER
MANAGEMENT
RELIEF AND
CIVIL DEFENSE
DEPARTMENT**

**GOVERNMENT
OF RAJASTHAN**

INTRODUCTION

The Indian subcontinent is among the world's most disaster-prone land masses. Almost 85% of India's geographical area is vulnerable to one or the other hazard(s). Out of the 28 States and 8 Union Territories, 22 states and union territories are disaster prone. India, with approximately 1.44 billion people, is the second most populous country in the world. A high population density increases our vulnerability to various hazards. Besides thunderstorm & Lightning have emerged as major weather hazards in recent years affecting different parts of the country.

Lightning and Thunderstorms incidents have a devastating impact on agriculture and aviation sectors in addition to surface transport, power, communication and other socio-economic sectors. These may also lead to loss of human lives, assets/ property/ livelihoods, etc. Due to rising global temperature and climate changes the severity in frequency of thunderstorms will rise in the years ahead.

Thunderstorms have some important characteristics such as the formation of a squall, strong updraft and downdraft, towering cumulonimbus clouds which are associated with turbulence and icing, in-cloud electrification and associated lightning, localized strong rain and hailstorm.

Lightning is yet another weather-related disaster associated with thunderstorms. Lightning occurs due to electrically charged regions in a cloud which is called intra-cloud lightning (IC) or between Cloud-to-Cloud (CC lightning), or between a cloud and the ground (CG lightning). The charged regions in the atmosphere temporarily equalize themselves through this discharge referred to as a flash. A lightning flash becomes a strike if it involves an object on the ground. The flow of electric charges can affect any electrically conductive body. Hence, electrical appliances, if operated during a lightning strike, can affect their normal functioning and have a risk of becoming faulty. Similarly, living beings coming in contact with lightning, either directly or indirectly through electrical conductors, can be affected, which may lead to severe burns or even deaths. Lightning strikes the Earth 50 to 100 times each second over the globe.

ACTION PLAN ON LIGHTNING

Impact of Thunderstorm/Lightning

Rural and forest areas are the most vulnerable given the presence of tall trees and water bodies. A majority of the lightning victims are people working in the fields in rural areas. Lightning is also a major cause of electrical power breakdowns and forest fires. It can also damage communication and computer equipment and affect aircraft navigation systems. A moderate thunderstorm can damage thatched huts, roads, standing crops, orchards, and power and communication lines. A severe thunderstorm can cause major damage to thatched houses/ huts. Rooftops may also blow off. Unattached or loosely tied metal sheets may fly. It can also damage power and communication lines as well as roads, besides flooding of escape routes, breaking of tree branches, uprooting of large trees, etc.

Indian Institute of Tropical Meteorology (IITM), Pune, an autonomous institute under the Ministry of Earth Sciences, Government of India, has initiated a project to study the characteristics of lightning by using Lightning Location Network (LLN). This network can accurately detect the location of occurrence of a lightning strike and can help forewarn the public at least 1-2 hours before the occurrence of a thunderstorm. Population density, literacy rate and urbanization along with the density of lightning strikes and the region's topography are the major factors affecting lightning

Lightning in Rajasthan from History to Present

Rajasthan, often referred to as the "Land of Kings," is a region rich in history, culture, and natural beauty. Situated in the northwest of India, Rajasthan is known for its arid landscapes, majestic forts, and vibrant festivals. Among the various natural phenomena that shape the region's environment, lightning holds a prominent place. In this comprehensive study, we explore the history, cultural significance, scientific understanding, and contemporary issues surrounding lightning in Rajasthan, tracing its evolution from ancient times to the present day.

1.1 Lightning in Ancient Rajasthan:

1.1.1 EARLY REFERENCES IN LITERATURE AND MYTHOLOGY:

The history of lightning in Rajasthan can be traced back to ancient times through references in Hindu scriptures, epics, and mythological texts. Deities such as Indra, the god of thunder and rain, are depicted wielding thunderbolts, symbolizing the power and ferocity of lightning storms. Myths and folklore associated with lightning reflect the reverence and fear inspired by this natural phenomenon among ancient civilizations in Rajasthan.

1.1.2 ARCHITECTURAL RESPONSES TO LIGHTNING:

The architectural heritage of Rajasthan bears testimony to the region's long-standing awareness of lightning hazards. Forts, palaces, and temples constructed over centuries feature design elements aimed at mitigating the risk of lightning strikes, such as lightning rods, domes, and strategic placement on elevated terrain. These architectural innovations reflect the ingenuity and adaptive strategies of ancient builders in safeguarding against natural disasters.

1.2 Cultural Significance and Symbolism

1.2.1 LIGHTNING IN FOLKLORE AND TRADITION:

Throughout Rajasthan's history, lightning has been imbued with cultural significance, symbolizing divine power, celestial forces, and cosmic order. Folk tales, oral traditions, and rituals associated with lightning convey beliefs about its transformative and awe-inspiring nature, shaping the cultural identity and worldview of Rajasthan's diverse communities.

1.3 Scientific Understanding and Meteorological Insights

1.3.1 EARLY OBSERVATIONS AND NATURAL PHILOSOPHY:

The scientific study of lightning in Rajasthan began with early observations by travelers, scholars, and natural philosophers who sought to unravel the mysteries of atmospheric electricity. Accounts of lightning phenomena, such as ball lightning and St. Elmo's fire, contributed to the development of natural philosophy and early theories of electricity in the region.

1.3.2 MODERN METEOROLOGICAL RESEARCH:

Advancements in meteorological science have deepened our understanding of lightning processes and dynamics in Rajasthan. Meteorological observatories, lightning detection networks, and satellite imagery provide valuable data for studying lightning activity, seasonal patterns, and spatial distribution across the state. Scientific research on lightning-induced phenomena, such as wildfires, soil erosion, and atmospheric chemistry, informs efforts to mitigate risks and enhance disaster resilience in Rajasthan's diverse ecosystems.

1.4 Lightning Safety and Risk Management

1.4.1 PUBLIC AWARENESS AND EDUCATION:

Given the frequent occurrence of lightning storms in Rajasthan, raising awareness about safety measures and emergency preparedness is crucial. We discuss initiatives for educating communities, schools, and outdoor enthusiasts on lightning risks and mitigation strategies.

1.4.2 TECHNOLOGICAL SOLUTIONS AND FORECASTING:

Advancements in meteorological technology, such as lightning detection systems and early warning alerts, aid in forecasting and tracking lightning activity. We evaluate the effectiveness of these tools in minimizing casualties and property damage during severe weather events.

1.5 Future Directions and Challenges

5.1 CLIMATE CHANGE IMPACTS:

As climate change accelerates, Rajasthan faces evolving patterns of extreme weather, including intensified lightning storms and associated hazards. We examine the implications of climate variability for disaster resilience and adaptation efforts in the region.

1.5.2 COMMUNITY RESILIENCE AND ADAPTATION:

Building resilient communities requires holistic approaches that integrate traditional knowledge, scientific expertise, and policy interventions. We propose strategies for enhancing adaptive capacity and reducing vulnerability to lightning-related disasters in Rajasthan and beyond.

**District wise Thunderstorms & Lightning Death Statistics Report-
2018 to 2023 (01.01.2018 to 31.12.2023)**

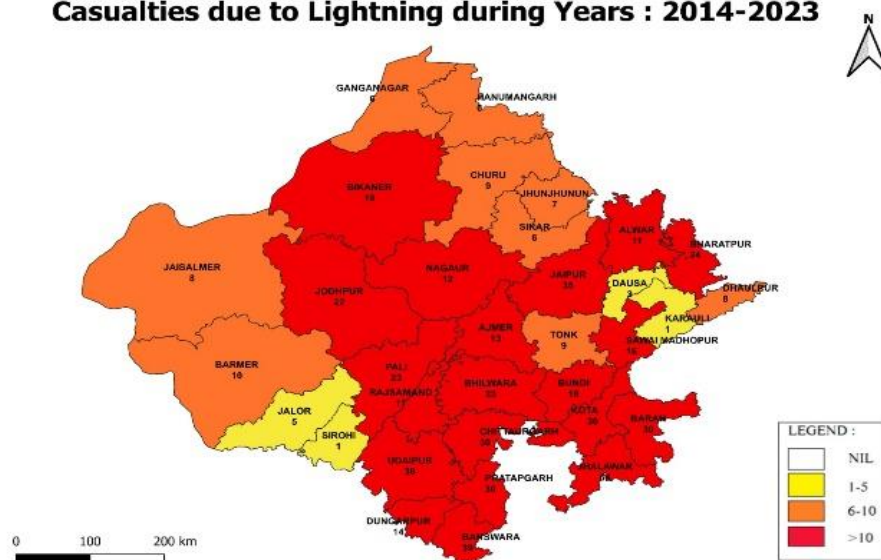
S.N.	Districts	2018	2019	2020	2021	2022	2023
1	Ajmer	0	3	1	6	1	2
2	Alwar	2	6	0	0	1	2
3	Banswara	1	1	13	11	5	1
4	Barmer	0	2	0	1	0	1
5	Baran	1	3	0	5	3	2
6	Bharatpur	2	6	0	8	2	0
7	Bhilwara	3	3	3	2	1	0
8	Bikaner	0	3	4	4	1	2
9	Bundi	1	5	0	3	5	0
10	Chittorgarh	0	3	1	6	5	4
11	Churu	1	1	0	3	0	2
12	Dausa	1	1	0	1	0	0
13	Dholpur	3	0	0	5	0	0
14	Dungarpur	0	1	2	8	0	1
15	Hanumangarh	0	1	0	0	0	0
16	Jaipur	0	0	3	26	0	1
17	Jaisalmer	1	0	5	1	0	1
18	Jalore	0	1	0	0	0	1
19	Jhalawar	2	6	5	2	12	5
20	Jhunjhunu	0	0	2	2	1	0
21	Jodhpur	0	0	6	6	2	0
22	Karauli	0	1	0	0	0	0
23	Kota	1	1	2	9	8	4
24	Nagaur	0	3	2	4	1	1
25	Pali	1	3	0	1	4	3

26	Rajsamand	0	2	1	0	2	0
27	Sawai Madhopur	1	0	1	5	0	0
28	Sikar	0	0	3	3	0	0
29	Sirohi	0	0	0	0	0	1
30	Shri Ganganagar	0	0	0	5	1	0
31	Tonk	0	0	0	3	0	1
32	Udaipur	1	14	4	9	6	0
33	Pratapgarh	1	2	1	8	7	0
Total		92	75	59	147	68	35

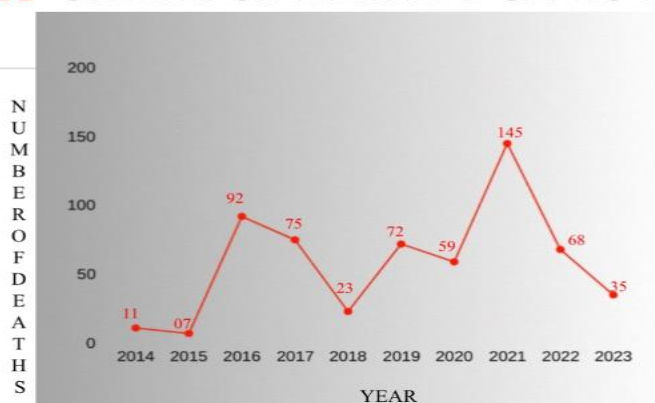
Color Mark	Color Name	Indicator
	Red	More than 10
	Orange	05 to 10
	Yellow	02 to 05
	Green	Below

Source: Department of Disaster Management, Relief & Civil Defense, Government of Rajasthan

Casualties due to Lightning during Years : 2014-2023



YEARLY GRAPH OF DEATH DUE TO LIGHTNING



Brief Note: Thunderstorm and Lightning

THUNDERSTORMS:

A thunderstorm is said to have occurred if thunder is heard or lightning is seen. Usually, the thunder can be heard up to a distance of 40 km from the source of origin. Thunderstorms fall in the category of Meso-gamma weather systems with a spatial extent of around 2~20 km and temporal scale of a few hours. Considering their intensity, the thunderstorms in India are categorized as follows:

- **Moderate thunderstorm:** Loud peals of thunder with associated lightning flashes Moderate to heavy rain spells and maximum wind speed of 29 to 74 kmph.
- **Severe thunderstorm:** Continuous thunder and occasional hailstorm, and maximum wind Speed exceeding 74 kmph.

Thunderstorms occur round the year in different parts of the country. However, their frequency and intensity are maximum during summer months (March to June) as the most important factor for the occurrence of thunderstorms is the intense heating up of the atmosphere at the surface level.

LIGHTNING:

Lightning is a high-energy luminous electrical discharge accompanied by thunder. It is of threetypes:

- ✓ Thundercloud or Intra-cloud lightning (IC)
- ✓ Cloud-to-cloud or Inter-cloud lightning (CC)
- ✓ Cloud-to-ground lightning (CG)

The third type of lightning takes a toll on lives and property, and therefore, is of more concern to us. However, inter-cloud and intra-cloud lightning are also dangerous as they may hit aircrafts. These are also the precursor to cloud-to-ground lightning.

Lightning has a total path length of a few kilometers. Its peak power and total energy are very high, with the peak power discharge in the order of a 100 million watts per meter of the channel and the peak channel temperature approaching 30,000 °C. Peak currents in a lightning discharge range up to hundreds of kilo amperes (kA) with its typical value being 40 kA. Predicting the precise time and location of lightning is very difficult. However, a season or a period of lightning occurrence is known for many reasons.

ACTION PLAN OF LIGHTNING

2.1 Necessity of Lightning Action Plan

Thunderstorms & Lightning have received limited attention compared to Cyclone, Earthquake and Floods. However, Thunderstorm and its associated weather phenomenon severely impact different parts of India including Rajasthan.

- In 2021, Rajasthan observed 147 deaths. Most of the affected people belong to economically and socially weaker section of the society.
- Apart from loss of precious human lives, property, infrastructure, livestock and livelihoods are severely impacted.
- Due to advancement in technology and understanding of Thunderstorm and Lightning, Preparedness and Mitigation measures can significantly reduce the impact of Thunderstorm and Lightning and related weather phenomenon.

Hence the action plan on lightning is required to reduce the deaths due to lightning.

2.2 Objectives of The Plan

- To reduce loss of lives, injuries, economic losses.
- To improve and implement the mitigation plans affectively enabling to respond promptly and effectively.
- To develop tools for assessment and undertake preparedness measures through coordinated inter-agency efforts.

- To undertake reconstruction as an opportunity to build disaster resilient structures and habitat.
- To evolve a coordinated strategy for disaster risk reduction in all the affected areas by involving all the stakeholders (administration, line departments, scientists, engineers, Panchayat Raj Institutions, Non- Governmental Organizations, Community Based Organizations and communities).

2.3 Key Components of the Plan

Severe and extended incidents of thunderstorm and lightning can disrupt social and economic services. Government agencies have a critical role to play in preparing and responding to the severe weather atmospheric events at the local level, working closely with all stakeholder departments on a short, medium and long-term strategic plan. The main key components of the plan are:

- Establish qualitative and effective Early Warning System
- Inter-agency coordination and communication
- Developing advanced preparedness, mitigation and response plan
- Preparedness at the local level for effective incidence response plan
- Capacity building and training
- Public awareness and community outreach
- Collaboration with Non-Government Organizations and civil society
- Installation of Lightning Arrestors

Assessing the impact and getting feedback for reviewing and updating the plan based on experiences during previous year

EARLY WARNING AND COMMUNICATIONS

3.1 Forecast and Issuance of Alerts/ Warning

India Meteorological Department (IMD), Ministry of Earth Sciences, is the nodal agency for providing current weather information and forecast, including warnings for all weather related hazards. Forecasts (Based on Specific Range, Time Duration and Area. While short to medium range forecast provides the potential areas with a probability of occurrence, now casting provides more specific information about the place/time of occurrence.

A thunderstorm is a small-scale phenomenon and has a life cycle of about three hours. It has a dimension of 2 km to 20 km, and therefore, its detection is difficult. Weather monitoring systems such as automatic weather stations (AWS) provide some basic parameters such as wind speed, wind direction, relative humidity, temperature, pressure, etc., but do not predict lightning. Thunder clouds can be captured by the geostationary satellite located at 36,000 km. These signatures can be used in lightning studies.

On the day of occurrence of a severe weather incident/thunderstorm, State-level offices of the IMD start now casting. As now casting is valid for the next two to three hours, it gives only a limited lead-time. This now cast, is provided to State Control Rooms, District Collectors, etc. This alert is specific and issued for a district/ group of districts with the time of occurrence and associated wind speed. With these, IMD has started all India now cast services for localized, high impact weather incidents such as thunderstorms with a lead time of up to 3 hours in advances since 2019.

To be effective and complete, an Early Warning System needs to comprise four indicating elements:

- (i) Risk knowledge
- (ii) Monitoring and warning service
- (iii) Dissemination and communication
- (iv) Response mechanism and capacity building

3.2 Early Warning/Alerts: Dissemination and communication Strategy Dissemination strategy of warning messages

The impact of severe weather events and lightning in the state is significant, especially to the safety of the public and also to the activities of the Government of Rajasthan. The proximity lightning detection network system is the best way for detection of Lightning/Thunderstorm.

Department of Disaster Management, Relief and Civil Defense, Government of Rajasthan through State Emergency Operation Centre (SEOC) disseminate through Sachet Portal.

In the process, the SEOC also uses IMD Data and NRSC ISRO Data information for determining the thunderstorm / lighting activity in order to cross-verify the data presented in visualization tool.

3.3 Dissemination of Information

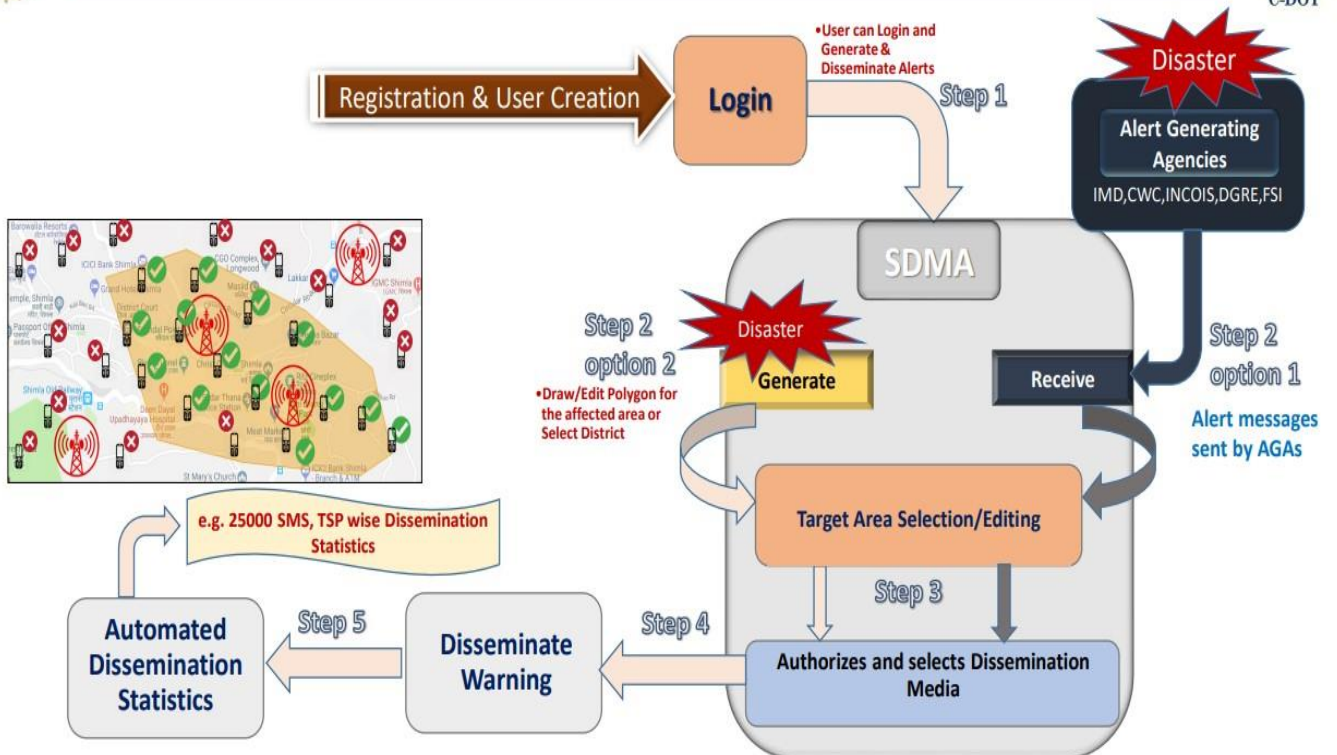
The state-of-the-art lightning detection and alerting mechanism has been established in SEOC and further developed a detailed operating procedure to monitor and warn in advance of 30-40 minutes regarding possible thunderstorms/lightning. One of the ways of communication is through SMS, Mobile Application, and Web browser service etc.

Total number of messages consumed during 2022-2024

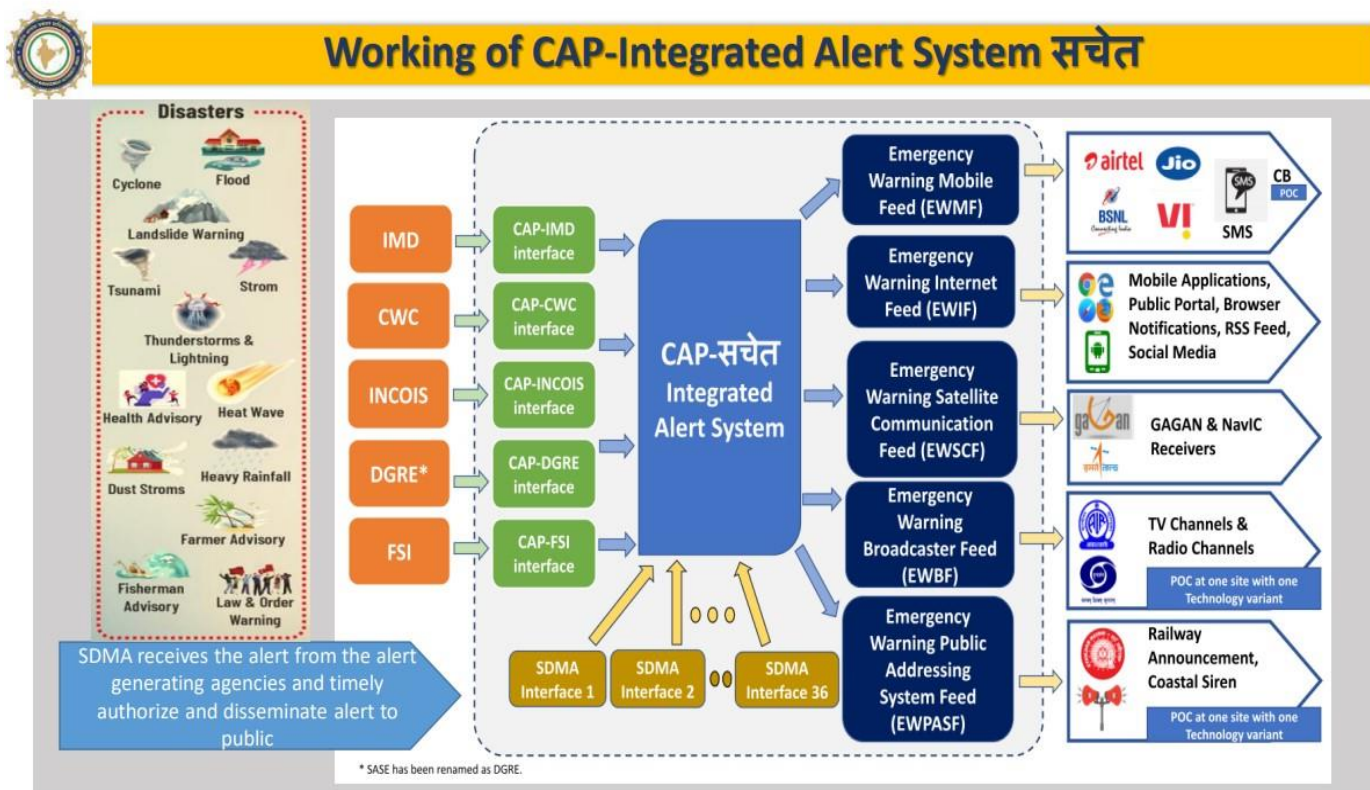
No of SMS			Messages disseminateon mobile Application	Messages disseminateon Web Browser	Total Mobile Application Users
2022	2023	2024			
7.27 lakhs	165.98 crore	12.71 crore	1.1 Cr	6.5 K	1.07 Lac



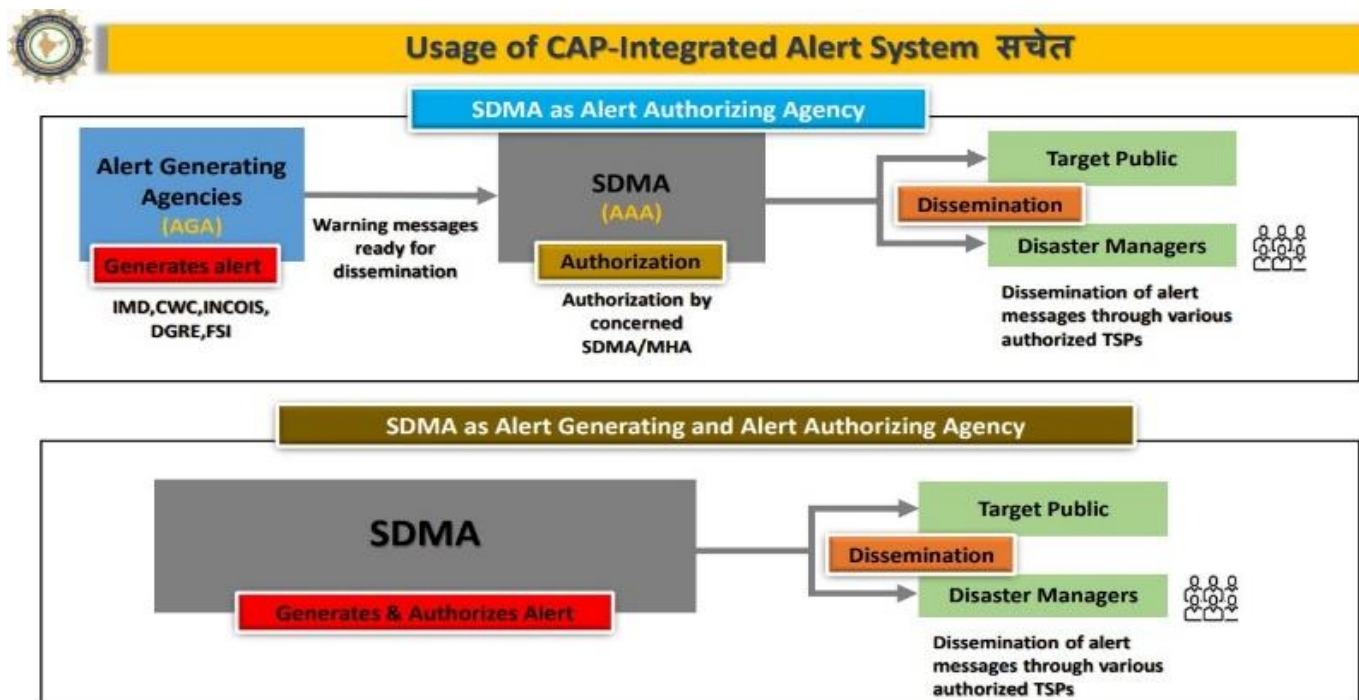
Usage of CAP-Integrated Alert System सचेत



Flow Process of Sachet



Working of CAP Sachet



Alert Dissemination Flow Process of CAP Sachet

The area of dissemination depends upon the severity of the event as well as the terrain and population of the area where lightning activity is likely to happen.

The area of dissemination is determined by SEOC and alert messages are disseminated to General Public through web based tool, by entering Latitude and Longitude of the region along with estimated radius of lightning affected region.

LIGHTNING GROUND TROOTHING

- Observed lightning locations are cross checked with the district officials regarding the report of injury /death of human / livestock at the predicted location of strike.

DISTRICT/LOCAL LEVEL:

The local authorities, due to their proximity to the affected population are in the best position ensuring last mile delivery of messages such as:

- Conduct regular inter-personal communication activities
- Demonstrate the safety tips to the vulnerable population in their local language, using local customs, cultural aspects and behavior patterns;
- Strengthen and involve local communities such as Self Help Groups (SHG'S), Municipal bodies, NGOs etc.
- Panchayati Raj Institutions, Anganwadis, Gram Sabhas, medical professionals and other local networks
- Give special emphasis to dissemination in locations of “closed homogeneous groups” such as schools, colleges, offices, cinemas, etc.
- Carry out Outdoor media campaigns using banners, posters, billboards, etc.
- Carry out special awareness programmes for the differently-abled, pregnant ladies, children etc.

PREVENTION, MITIGATION AND PREPAREDNESS MEASURES

4.1 Preventive Measures

Disaster prevention covers measures aimed at impeding the occurrence of a disaster incident and/or preventing such an occurrence from affecting communities.

The occurrence of thunderstorm and squall can't be impeded. However, their harmful effects can be minimized through a number of measures.

4.1.1 HAZARD AND VULNERABILITY ASSESSMENT

Hazard zoning shall be done and vulnerable areas must be clearly marked on a map. However, the vulnerability areas (locations specific/ sub division specific) assessment shall be identified by the district administration on bases of past experiences.

The extent of vulnerability (mild, moderate or intensive) and the probable cost of damages to crops due to incidents of varying intensities must be included in the assessment report to be prepared by the district administration.

4.1.2 CAPACITY BUILDING & TRAINING

Capacity Building at State Level and at Districts are strengthening by Disaster Management Department at root level and other agencies like NDRF, SDRF, and Civil Defense etc. are also putting efforts to strengthen the capacity building.

4.2 Mitigation and Preparedness Measures

A. **Enhanced understanding of preparedness and mitigation measures:**

This will help us to minimize the losses due to thunderstorms and lightning.

B. **Hazard resistant construction:**

- Relevant building codes and guidelines of the Bureau of Indian standards shall be followed while construction of houses for multiple hazard resilient housing.
- Ensure community based and organization level disaster preparedness with special reference to thunderstorm and lightning.
- Conduct safety audit for all the buildings of essential services in the state / district with special references to lightning hazard risk.

C. **Laying underground electricity cables and telephone lines:**

These are best suited, particularly for congested townships where thunderstorms/squall may cause falling of electricity and telephone poles, and snapping of cables.

D. Emergency Communication Systems: Planning, updating and mobilization of existing radio communication resources in emergency situations and acquisition of satellite phones to make them available at the *Sub Division/Village/Municipal* level to ensure prompt response in the event of occurrence of any disaster.

E. Technical, Social, Organizational and Administrative preparedness: The most urgent need of the hour is to develop a DSS (Decision Support System) for lightning now cast, which is currently being done using the existing network of observations, radars, satellites and lightning data. To accomplish this, lightning network could be expanded over all thunderstorm prone areas across the State/District and information thus obtained could be merged with satellite observation to generate meaningful insights for different regions with a lead time of 1-2 hour.

The now cast alerts/warnings shall be accompanied with actionable information (Do's and Don'ts) and potential impact (expected damage). The DDMA's, *sub division*-level Disaster Management Group at sub division/ tehsil level shall be formed with representatives of various line departments, including Agriculture, Forest, BSNL and other telecom service providers, Electricity Companies, Revenue, P.W.D, Health, Police and Fire etc. Village Disaster Management Committees (VDMCs) shall also be formed at the village level comprising local villagers. This would certainly strengthen the local response mechanisms to disaster

F. Emergency Plan for Hospitals and Health Centers: Emergency expansion plan for civil hospitals, Community Health Centers, Primary Health Centers (PHCs) and additional PHCs, including schemes for mobile medical teams for a post-disaster situation, shall be in place. A list of Army hospitals, Govt. Hospitals (both Centre and State), private hospitals and nursing homes in each district shall be prepared. Phone numbers of all these medical facilities shall be available in the District Control Room as well as in the SEOC. Based on the hazard assessment, emergency medicines, Operation Theatres and life- saving drugs shall be kept ready. Vacant post of doctors and paramedical staff shall be filled in all the government hospitals in order to make available the required number of medical workers at the time of an emergency. An Action Plan must be considered for training of doctors and paramedical staff on handling patient inflow and treating them in case of a disaster.

G. Focusing on Research and Establishing a Forecasting Centre for Thunderstorm and lightning to carry out the hazard zonation and vulnerability analysis for thunderstorm and squall with State-level knowledge institutions.

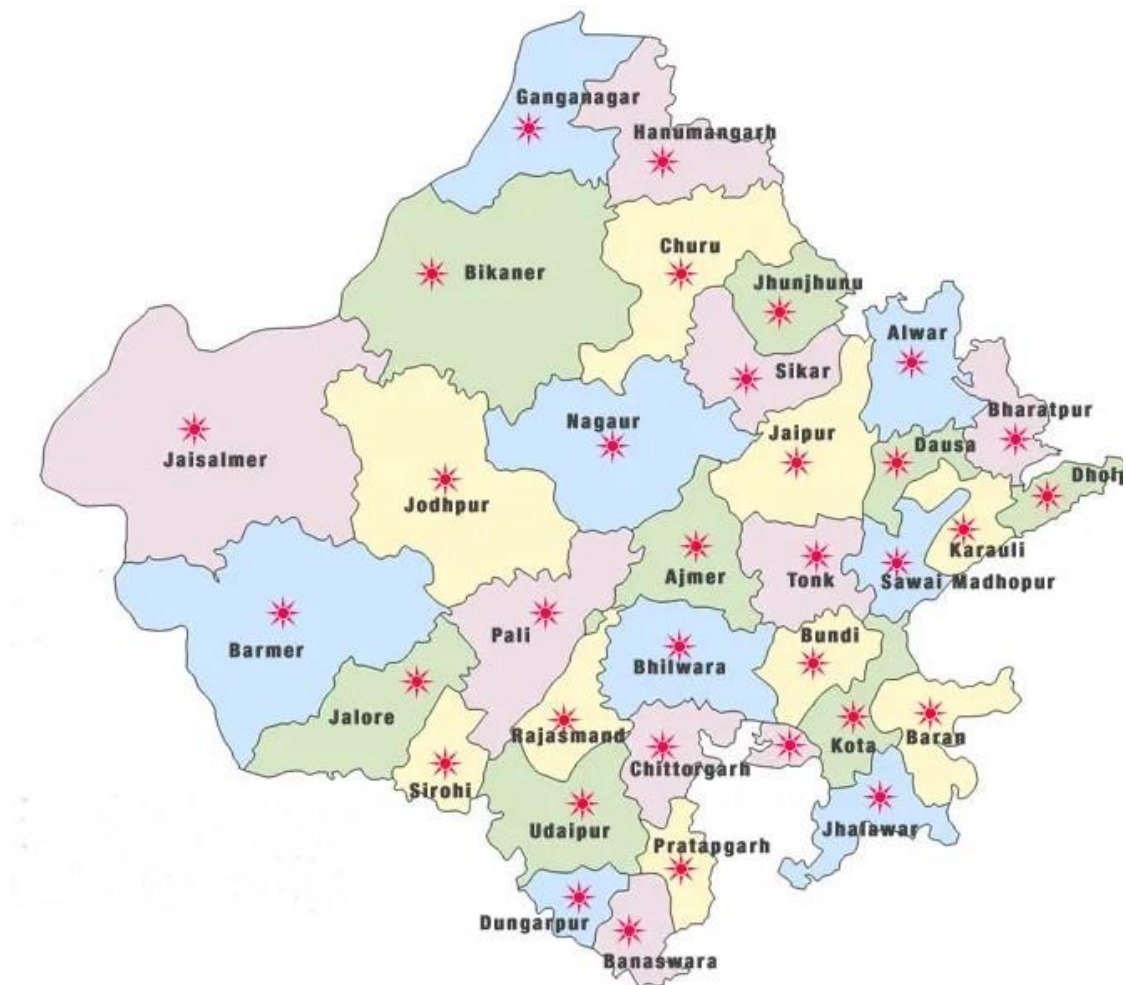
H. Making Disaster Risk Reduction (DRR) a part of school and college curriculum: Youth and children shall be taught about extreme weather incidents and the Do's and Don'ts to be followed before, during and after a disaster. They act as agents of change and bring about greater awareness in the neighborhood and society.

I. Protection against Lightning — Lightning Shields

Installation of lightning arrestors and sound earthing for each building is essential. Lightning shields are the most commonly employed structural protection measure for

buildings and other structures. A lightning shield consists of the installation of a lightning conductor at a suitably high location at the top of the structure. Lightning shields are not foolproof in their effectiveness. The ability of lightning shields to complete the cloud-to-ground circuit depends on several variables such as the height of the conductor, the shape and size of adjoining structures or natural conductors.

Since most of the lightning deaths occur at the agriculture fields, arresters should be installed closer to the fields in addition to having the over the buildings. Shelter should also be constructed closer to the fields.



Proposed Lightning Arresters in Various Districts of Rajasthan

ACTION – BEFORE, DURING AND AFTER

(A) Before Thunderstorm and Lightning

To prepare for a thunderstorm, one should do the following:

- Do remember that vivid and frequent lightning indicates the probability of a strong Thunderstorm.
- To begin preparing, you shall build an emergency kit and make a good communications plan.
- Remove dead or rotting trees and branches that could fall and cause injury or damage during a severe thunderstorm.
- Postpone outdoor activities.
- Remember the 30/30 Lightning Safety Rule: Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder. Stay indoors for 30 minutes after hearing the last clap of thunder.
- Secure outdoor objects that could blow away or cause damage.
- Get inside a home, building, or hard top automobile (not a convertible). Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.
- Remember, rubber-soled shoes and rubber tires provide NO protection from lightning. However, the steel frame of a hard-topped vehicle provides increased protection if you are not touching metal.
- Unplug appliances and other electrical items such as computers and turn off air Conditioners. Power surges from lightning can cause serious damage.
- Shut windows and outside doors. If shutters are not available, close window blinds, shades or curtains.
- Unplug any electronic equipment well before the storm arrives.

(B) During Thunderstorms and Lightning

If thunderstorm and lightning are occurring in your area, one should:

- Use your battery-operated radio/TV for updates from local officials.
- Avoid contact with corded phones and devices including those plugged for recharging.
- Cordless and wireless phones not connected to wall outlets are safe to use.
- Avoid contact with electrical equipment or cords.
- Avoid contact with plumbing or pipes. Do not wash your hands, do not take a shower, do not wash dishes, and do not do laundry. Plumbing and bathroom fixtures can conduct electricity.
- Stay away from windows and doors, and stay off porches.
- Do not lie on concrete floors and do not lean against concrete walls.
- Avoid natural lightning rods such as a tall, isolated tree in an open area.
- Avoid hilltops, open fields, the beach or a boat on the water.
- Take shelter in a sturdy building. Avoid isolated sheds or other small structures in open areas.
- Avoid contact with metal tractors, farm equipment, motorcycles, golf carts, golf clubs, and bicycles.

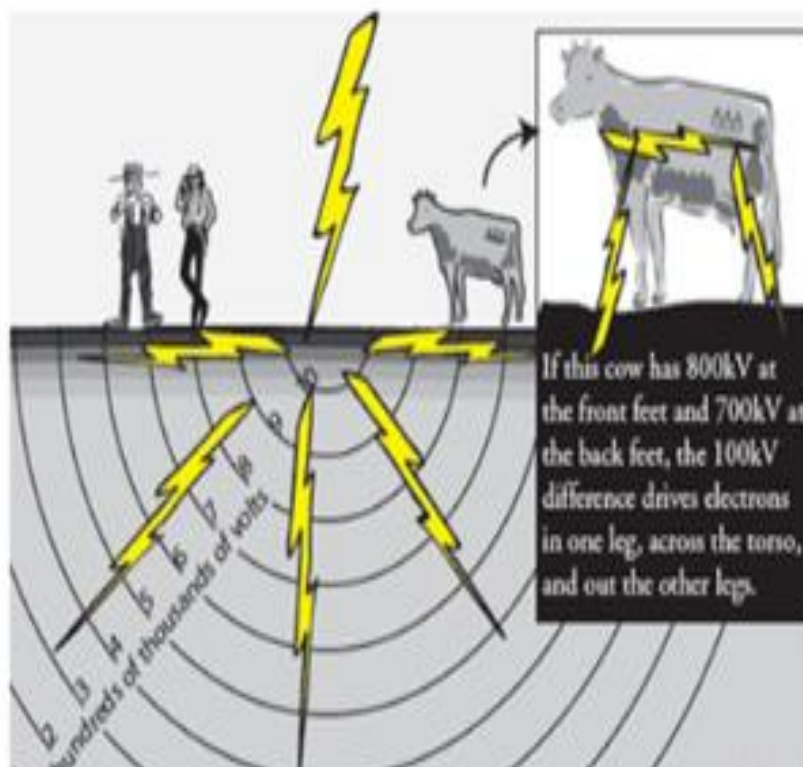
(C) After Lightning Strike Effect On a Human Being

If lightning strikes you or someone you know, call for medical assistance as soon as possible. You shall check the following when you attempt to give aid to a victim of lightning:

- Breathing – If breathing has stopped, begin mouth-to-mouth resuscitation.
- Heartbeat – If the heart has stopped, administer Cardiopulmonary Resuscitation (CPR).
- Pulse – if the victim has a pulse and is breathing, look for other possible injuries. Check for burns where the lightning entered and left the body. Also be alert for nervous system damage, broken bones and loss of hearing and eyesight.

VARIOUS PREVENTION TIPS

Lightning Safety Tips (Outdoor)



CAPACITY BUILDING

The State/District administration shall emphasize greater awareness by making Thunderstorm and Lightning, Dust/ Hailstorm, Strong Winds & other Disasters as a part of educational curriculum, covering all the relevant aspects. This would result in fostering a culture of prevention, mitigation and preparedness as well as effective and rapid response, relief, rehabilitation and recovery. Case studies of major previous incidents may be used as valuable inputs in the process.

The State/District administration shall coordinate with Ministry of Home Affairs, National Disaster Management Authority, Ministry of Earth Sciences and Ministry of Human Resources Development for preparation on relevant topics on the above hazards for imparting training for all the stakeholders, community volunteers, NGOs, community based organizations, youth organizations, such as NCC, NSS, NYKS, Home Guards, Urban planners etc.

The NIDM, under the guidance of the NDMA at the national level and SDMAs /State governments and Administrative Training Institutes (ATIs) at the State level, also organize training of elected representatives (Members of Parliament, Members of Legislative Assemblies, Councilors, panchayat members, etc.) and administrative personnel from all central ministries and departments and State governments.



Training & Capacity Building at State & in Districts like Dhaulpur, Karauli, Jaisalmer, Barmer by Senior Consultant & Consultants, Disaster Management

Category	Place
A	Karauli
B	Dhaulpur
C	Jaipur
D	Barmer
E	Jaisalmer

MYTHS ON LIGHTNING

As a part of the awareness programs some myths on lightning should also be communicated to the public. Some of the myths are:

- a. The person struck by a lightning carries an electrical charge. The fact is the struck by the lightning does not carry any charge and should be attended by immediately.
- b. The second misconception is that lightning does not strike the same place twice. Actually, lightning can strike at the same place several times and the consistent forecast is based on this concept.
- c. The third myth is that lightning can never occur without rain. What is required for lightning to occur is the presence of cumulonimbus clouds with sufficient charge.
- d. The other misconception is we are completely safe in a metal-bodied vehicle. As long as we stay inside without touching the metal parts or without peeping outside. In fact, we should not enter into a car when it is lightning.

PRECURSORS:

Before the lightning occurs, a few precursors can be observed. Two of them are: An FM radiocan pick up the static of lightning discharge well before the thunder and can give an alert.

PRECAUTIONS:

Whenever a lightning alert is given, one should become as small as possible by squatting to the ground as low as possible as shown in fig.

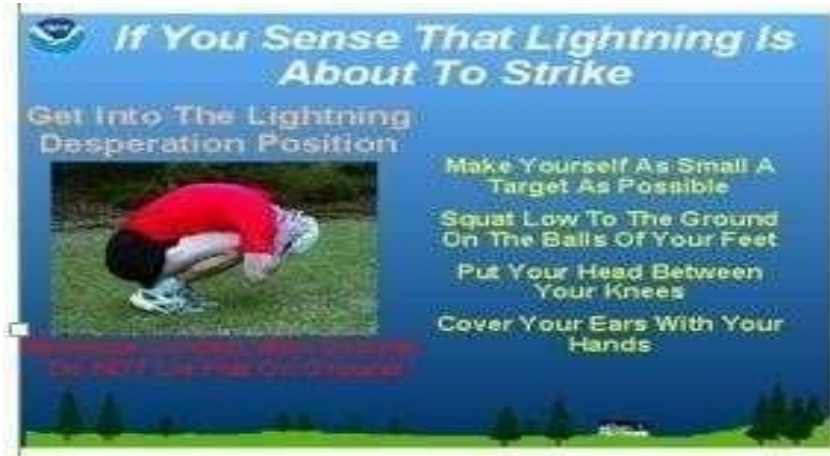


Fig.: Example of squatting after hearing the lightning alert

One should not be very close to a tree as the side splash is likely to hit. The safer places to stay slightly away from the tree.

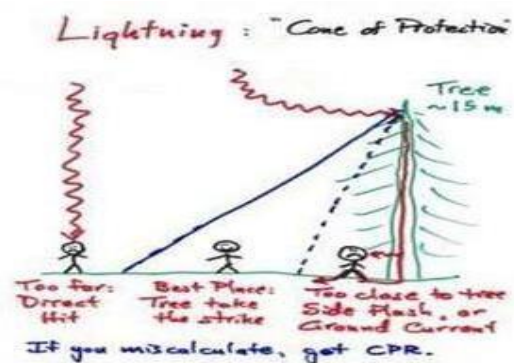


Fig.: Side splash of lightning closer to a tree

THE UNSAFE PLACE DURING LIGHTNING ARE:

- Small structures including huts & rain shelters.
- Nearby metallic objects like fences, gates, instrumentation and electrical equipment, wires, and power poles.
- Also AVOID isolated trees, AVOID water, AVOID open fields, AVOID using the (hardwired) telephone and headsets.
- Avoid being in or near high places (tanks/towers/stacks) or open fields or under isolated trees, under communication towers, flagpoles, metal fences, rivers
- Parking lots / Tennis Courts / Golf Courses / athletic fields / tents & temporary structures
- Near clothes lines, wire fences, overhead wires, and rail-road tracks
- When inside a building, avoid the use of the telephone, taking a shower, washing your hands, electrical wiring, cable TV wiring, plumbing, appliances, being near windows & stay off balcony

ROLES AND RESPONSIBILITIES OF THE AGENCIES/DEPARTMENTS ON THUNDERSTORM AND LIGHTNING, IN RAJASTHAN

1. Joint Secretary, Disaster Management - Nodal Officer for State.

2. District Magistrate – Nodal officer for District.

- The state-of-the-art alert system set up in the SEOC have a detailed operating procedure to effectively monitor and warn in advance regarding thunderstorms and lightening.
- If the intensity of the activity is high, the team of operators follows deterministic process, fill alerting forms and notify SEOC in-charge about the situation.
- Review of quantitative and qualitative data for process evaluation and improvements are carried out.
- Annual evaluation of Lightning Action Plan is annually evaluated by organizing a meeting with key Departments / Agencies and relevant stakeholders.

DISASTER MANAGEMENT DEPARTMENT

- The alert messages are sent to District Administration, Tehsildar and concerned Sub Division Officer (SDO).
- Alert messages are sent through WhatsApp mobile application and social media to Information & Public Relations (I&PR) department to publish in TV channels & also shared with general public.
- Conduct the 30/30 Lightning Safety Rule: Go indoors if, after seeing lightning, you cannot count to 30 before hearing thunder. Stay indoors for 30 minutes after hearing the last clap of thunder.

MEDICAL & HEALTH DEPARTMENT AND MEDICAL PROFESSIONALS

- Keep emergency wards ready in all PHCs / UHCs and Hospitals
- Increase outreach of community health workers in at-risk neighborhoods during a thunderstorm/lightning alert, if feasible.
- Report Thunderbolts patients to Nodal Officer on daily basis and generate weekly reports on public health impacts of thunderstorm /lightning for Nodal Officer.
- Expedite recording of cause of death in death certificates.

UDH DEPARTMENT / CORPORATIONS / MUNICIPALITIES & PANCHAYAT RAJ DEPARTMENT /PANCHAYATS

- Demonstrate the safety tips to the vulnerable population in their local language, using local customs, cultural aspects and behavior patterns;
- Local artists and art forms may be utilized for entertainment based education programs.
- Strengthen and involve local communities such as SHGs, Municipal bodies, NGOs,
- Panchayati Raj Institutions, Anganwadis, Gram Sabhas, medical professionals and other local networks;

- Give special emphasis to dissemination in locations of “closed homogeneous groups” such as schools, colleges, offices, cinemas, etc

INFORMATION AND TECHNOLOGY (IT) DEPARTMENT

- Send real time information through Dash board/ interface on all activities related to thunderstorm /lightning.
- Generate reports encompassing all activities undertaken during thunderstorm /lightning alert to use for evaluation of systems and action plan.

EDUCATION DEPARTMENT

- Provide disaster related training to students.
- If school is not functioning, permit use of school premises as shelter during lightning
- An emergency kit should be built as a first aid and make a better communications plan.
- Use of NCC, NSS & Scouts as volunteers in case of emergency.

FIRE DEPARTMENT

- Ensure presence of staff during Lightning alert period.
- Ensure functioning of communication equipment to receive messages / alerts of occurrence of fire.
- Ensure adequate supply of water and foam to fight fires.

COMMUNITY GROUPS / SELF-HELP GROUPS / WARD LEVEL COMMITTEES / NGOS

- Reach the unreached and educate the community on a continuous basis, in addition to providing feedback on the outreach and impact of lightning Action Plan to the Key Departments / Agencies / Nodal Officers at State and District Levels.

**PLAN TO THE KEY
DEPARTMENTS / AGENCIES /
NODAL OFFICERS
AT
STATE AND DISTRICT LEVELS**

A. UNDERSTANDING RISK AND DOCUMENTATION

Before Thunderstorm and Lightning				
	Task/Activities	Condition	Responsibility	Action
1.	Development of Thunderstorm, Lightning and other associated weather events risk profile in Rajasthan	Systematic study of past lightning occurrences by any expert agency or group.	<p>Lead Agency: Department of Disaster Management, Relief & Civil Defense, Jaipur</p> <p>Indian Meteorological Department Jaipur</p>	<p>1. Bulk SMS is being given to various Telecommunication subscribers on lightning alert messages</p> <p>2. Mapping of Thunderstorm and Lightning affected area on no. of deaths and injuries (both humans and animals) at different places with latitude and longitude points are being identified.</p>
After Thunderstorm and Lightning				
2	Documentation On Thunderstorm, Lightning and other Associated Weather Incidents in Rajasthan	<p>Compile and document Thunderstorm and Lightning incidents' related deaths (Human and Animals) and destruction of infrastructure in the affected parts of the state</p> <p>Document Best Practices which have resulted in prevention of loss of human/animal life during the Thunderstorm and Lightning incident.</p>	<p>Lead Agency: Department of Disaster Management, Relief & Civil Defense, Jaipur</p> <p>Support Agency:</p> <ul style="list-style-type: none"> • Fire Services, • Panchayati Raj Department, • Agriculture Department, • Power Department, • Revenue Department • Medical Department 	<p>Compile and document Thunderstorm and Lightning incidents' related deaths (Human and Animals) and destruction of infrastructure in the affected parts of the district. Document</p> <p>Best Practices which have resulted in prevention of loss of human/animal life during the Thunderstorm and Lightning incident.</p>

B. COORDINATION AND RESPONSE

Responsibility On the strike of Thunderstorm and Lightning on receiving Early Warning				
	Task/Activities	Condition	Responsibility	Action
1.	State emergency operation center and District emergency operation center actively coordinate on the information of Thunderstorm and Lightning strikes, incidences to the key stakeholders for the immediate decisions by Relief Commissioner's Office/ SDMA and respective Departments.	As per the tracking information of the thunderstorm and Lightning, SEOC will provide information and advisory to the DDMA for actions	Lead Agency: SDMA in Coordination with SEOC and line departments.	<p>Coordinate with Gram Panchayat & other Lead Agencies</p> <p>Panchayats to ensure that all people are in safe shelters</p> <p>Coordination with all line departments at on thunderstorm and Lightning at district level.</p>
2.	Compilation of data on deaths and injuries (human loss and animals) due to lightning activities at SEOC Level	Coordinate with DEOC immediate relief to the affected population and areas of the incidences reported and provide advisory to the DDMA for actions.	Lead Agency: SDMA in Coordination with SEOC and line departments <ul style="list-style-type: none"> • Fire Services, • Panchayati Raj Department, • Agriculture Department, • Power Department, • Revenue Department • Medical Department 	<ol style="list-style-type: none"> 1. Coordinate with Lead Agency: GPs/municipalities, police, DDMA etc 2. Coordinate for accessibility & services in areas of the incidences at district level. 3. Coordinate with NDRF, SDRF, Home guards for the rescue of the people if stuck on the site of thunderstorms and Lightning strike. 4. Coordinate with health department for the deployment of ambulances for the timely treatment of the injured due to thunderstorm and Lightning. 5. Restore power supply after the thunderstorm.

3.	Damage and Loss Assessment	Consolidate the data on the casualties, damage and loss reported by the districts in prescribed format and will be sent to Government of India.	Lead Agency: Relief Commissioner's Office/SDMA in coordination with SEOC	Collect the information of Lead Agency: casualties, damage and loss in DDMA in prescribed format. Coordination with the State Government, nodal departments at district level.
----	----------------------------	---	--	---

C. EARLY WARNING AND COMMUNICATION

Before Thunderstorm and Lightning				
	Task/Activities	Condition	Responsibility	Action
1.	Thunderstorm and Lightning	To provide technical advisory on early warning and monitoring system, Scope for dissemination of alerts using early warning systems.	Lead Agency: Relief Commissioner's Office/SDMA in coordination with SEOC	Received the alert messages from SEOC at district EOCs. The same alert messages on lightning and thunderstorm will be disseminated to Districts Level functionaries/ public.
2	Activity using Early Warning Dissemination System (EWDS)	To Strengthen the system for dissemination of existing Early warning 'Now casting' issued by IMD (It has lead-time /validity for 3 to 4 hours).	Lead Agency:Relief Commissioner's Office/SDMA in Coordination with SEOC & DEOC	Information dissemination to Districts Level functionaries/ public.
3	Systematic Mass awareness campaign on Do's and Don'ts related to thunderstorm and lightning.	Development/customization of awareness material on Do's and Don'ts related to thunderstorm and lightning.	Lead Agency: Relief Commissioner's Office/SDMA in Coordination with SEOC	Conduct awareness programs, Do's and Don'ts along with posters, banners, videos, pamphlets related to thunderstorm & lightning.

D. PREVENTION AND MITIGATION

	Task/Activities	Condition	Responsibility	Action
1.	Conduct safety audit of all the buildings of essential services in the state with special referenceto Lightning hazard risk.	Develop guidelines for conducting safety audit of the critical infrastructure with special reference to Lightning hazard risk. Coordinate with PWD, Engineering institutions and relevant departments	Lead Agency: Relief Commissioner's Office/SDMA in Coordination with SEOC	Systematically coordinate with PWD, Engineering institutions and relevant departments for Completion of safety audits of critical infrastructure with special reference to Lightning hazard. Develop plan for retrofitting, structural mitigation measures, for making critical infrastructure safe from multiple hazard
2	Implementation of structural mitigation measures for making critical infrastructure safe	Develop guidelines for retrofitting, structural mitigation measures formaking critical infrastructuresafe from multiple hazards. Develop advisory for departments on budgetary provisions from the perspective of mainstreaming of disaster risk reduction and increased in Disaster Risk reduction.	Lead Agency: Relief Commissioner's Office/SDMA in Coordination with SEOC and Urban Development Department	1. Develop advisory for the district level departments for completion of structural mitigation measures and retrofitting as Per the guidelines from Relief Commissioner's Office/SDMA. 2. Periodic review of the work Completed in the DDMA meetings.
3	Ensure all new infrastructure and houses follow building codes and guidelines for multiple hazard resilient housing	1. Formation of state level task force for ensuring that all new private and Public buildings are multiple Hazard resilient with special reference to Lightning. 2. Develop inter-agency reporting mechanism for the monitoring of reinforcement of building codes. 3. Develop advisory forDDMAs	Lead Agency: Relief Commissioner's Office/ SDMA Support Agency: PWD, RevenueDepartment, Agriculture, Health, Education, Panchayati Raj, Rural developmentand Urban Development	1. Formation of districtlevel task force for ensuring that all new private and Public buildings are multiple hazards resilient with specialreference to Lightning. 2. Develop inter agency reporting Mechanisms for the monitoring of reinforcement of Building codes. 3. Periodic review of the new

		for hazard resilient construction of new buildings..		constructions in the DDMA meetings
4	Ensure all new infrastructure and houses follow building codes and Guidelines for multiple hazard resilient housing.	<p>Formation of state level task force for ensuring that all new private and public buildings are multiple hazard resilient with special reference to Lightning.</p> <p>Develop inter agency reporting mechanisms for the monitoring of reinforcement of building codes.</p> <p>Develop advisory for DDMA's for hazard resilient construction of new buildings.</p>	Panchayati Raj, Rural development and Urban Development Department.	<p>1. Formation of district level task force for ensuring that all new private and Public buildings are multiple hazard resilient with special reference to Lightning.</p> <p>2. Develop inter agency reporting mechanisms for the monitoring of reinforcement of building codes.</p> <p>3 Periodic review of the new constructions in the DDMA meetings.</p>

E. PREPAREDNESS

	Task/Activities	Condition	Responsibility	Action
1.	Ensure community based and Organization level disaster preparedness with special reference to Lightning and thunderstorm.	<p>Developed guidelines for Disaster Preparedness with Special reference to Thunderstorm and Lightning.</p> <p>Develop guidelines for line department to ensure organization level disaster preparedness with special reference to thunderstorm and Lightning.</p> <p>Develop advisory for urban preparedness with special reference to thunderstorm and Lightning for Urban local bodies.</p> <p>Conduct inter agency coordination meetings to ensure departmental preparedness with special reference to Thunderstorm and Lightning.</p>	<p>Lead Agency: Relief Commissioner's Office/SDMA</p> <p>Support Agency: PWD, Revenue Department, Agriculture, Health, Education Panchayati Raj, Rural development and Urban Development Department</p>	District administration is to ensure to conduct coordination meetings with line departments at district level for preparedness as per the Relief Commissioner's Office/ SDMA advisory, with special reference to thunderstorm and Lightning.

4. CAPACITY BUILDING

Before Thunderstorm and Lightning				
	Task/Activities	Condition	Responsibility	Action
1.	<p>Medium-term capacity building programme on lightning and thunderstorm for targeted groups</p>	<p>To conduct Capacity building programs for community level workers and volunteers (Teachers, Anganwadi workers, ASHA workers, Agriculture extension workers, National Cadet Corps, National Service Scheme, Nehru Yuva Kendra Sangathan Volunteers) on lightning and Thunderstorm.</p> <p>Develop Master trainers for wider reach to conduct training at district, block and village levels.</p> <p>Capacity building of masons on lightning and thunderstorm, squall risk reduction.</p> <p>Review construction practices from Lightning and squall risk mitigation. Develop a ready to use booklet on construction practices</p> <p>Create Master Masons for real estate and construction sector</p>	<p>Lead Agency: Relief Commissioner's Office/ SDMA</p> <p>Support Agency: NIDM, State Revenue, Agriculture, Health, Education, Panchayati Raj, Rural development, UN Agencies, NGOs, Public Works, Rural Engineering Department</p>	<p>Capacity building of community level workers and volunteers (Anganwadi workers, ASHA workers, National Cadet Corps, National Service Scheme, Nehru Yuva Kendra Sangathan) on lightning, thunderstorm and squalls at district, block and village levels.</p> <p>Conduct training for Lightning and Thunderstorm, squall risk reduction through Construction practices at district, block and village levels. It will also include earthquake and flood risk mitigation elements.</p>

DOS AND DON'TS RELATED TO THUNDERSTORM, LIGHTNING, SQUALL, HAILSTORM AND DUST STORM (NDMA)

1. IF AT HOME OR WORK

(Preparation)

- Look for darkening skies and increased wind.
- If you hear thunder, then you are close enough to be struck by lightning.
- Keep on monitoring local media for updates and warning instructions.
- Stay indoors and avoid travel if possible.
- Close windows and doors, and secure objects outside the home (e.g. patio furniture, bins, etc.)
- Ensure that children and animals are inside.
- Unplug unnecessary electrical appliances (to isolate them from the main power supply which may conduct a power surge during a lightning storm)
- Remove rotten tea timber or any other debris that may cause a hazard

(Response)

- Avoid taking a bath or shower or running water for any purpose. This is because lightning can travel along pipes. Keep away from doors, windows, fire places, stoves, bath-tubs, or any other electrical charge conductors.
- Avoid using corded phones and other electrical equipment (mobile or cordless phones are safe)

2. IF ON FOOT

(Response)

- Go to safe shelter immediately – avoid metal structures and or constructions with metal sheeting.
- Ideally find shelter in a low lying area and make sure that the spot chosen is not likely to flood. Crouch down with feet together and head down to make yourself a smaller target.
- Hairs standing up on the back of your neck could indicate that a lightning is imminent.
- Do not lie flat on the ground; this will make a bigger target. Keep away from all utility lines (phone, power, etc., metal fences, trees, and hill tops).
- Do not take shelter under trees as this conduct electricity.
- Rubber-soled shoes and car tires do not offer protection from lightning.

3. IF TRAVELING

(Response)

- Get off bicycles, motor-cycles or farm vehicles.
- Get to a safe shelter.
- If boating or swimming, get to land as quickly as possible and take shelter.
- During a storm, remain in your vehicle until help arrives or the storm has passed. (The metal roof will provide protection, if you are not touching metal inside; windows should be up; park away from trees and power lines.

4. TREATMENT

- **IMPORTANT:** If at all possible get any individual who is struck by lightning to a proper facility such as a hospital.
- If possible, give basic first aid.
- People struck by lightning carry no electrical charge and can be handled safely.
- Check for broken bones, loss of hearing and eyesight.
- A victim of lightning strike can suffer varying degrees of burning. Check the impact point and where the electricity left the body

AWARENESS PROGRAMS

Aiming on Self Awareness and self-protection, as it plays a key role in any situation, we have focused on that aspect also and has initiated for rural Awareness programs.

Lightning awareness videos and posters are sent to the all-District level Government officials and stakeholders to conduct awareness programs at Gram Sabha, Anganwadi, and Village and panchayat level meetings and at all schools & colleges from village level to district level. Besides, posters are posted at prominent public places.



Awareness Programs in Districts & at State Level

CONCLUSION

All the departments / agencies shall take necessary timely action to implement the Lightning action plan to mitigate the adverse effects of Lightning/Thunderbolts. Lightning is a significant hazard to the population. Lightning-casualty statistics show an alarming rise in the number of lightning casualties compared the past. This is primarily due to the increasing temperatures because of the climate changes. However, Department of Disaster Management, Relief & Civil Defense, Government of Rajasthan could significantly reduce the deaths due to lightning by following the guidelines issued by NDMA from time to time.

People are often under the direction of others, whether they are children or adults participating in awareness programs. They needed education about the hazards of lightning and become familiar with proved lightning- safety strategies. The action plan is only as good as its compliance and unwavering. Understand the 30–30 rule as a minimal determinant of when to suspend activities and follow it.

Comparative analysis Number of Lightning strikes vs Lightning deaths

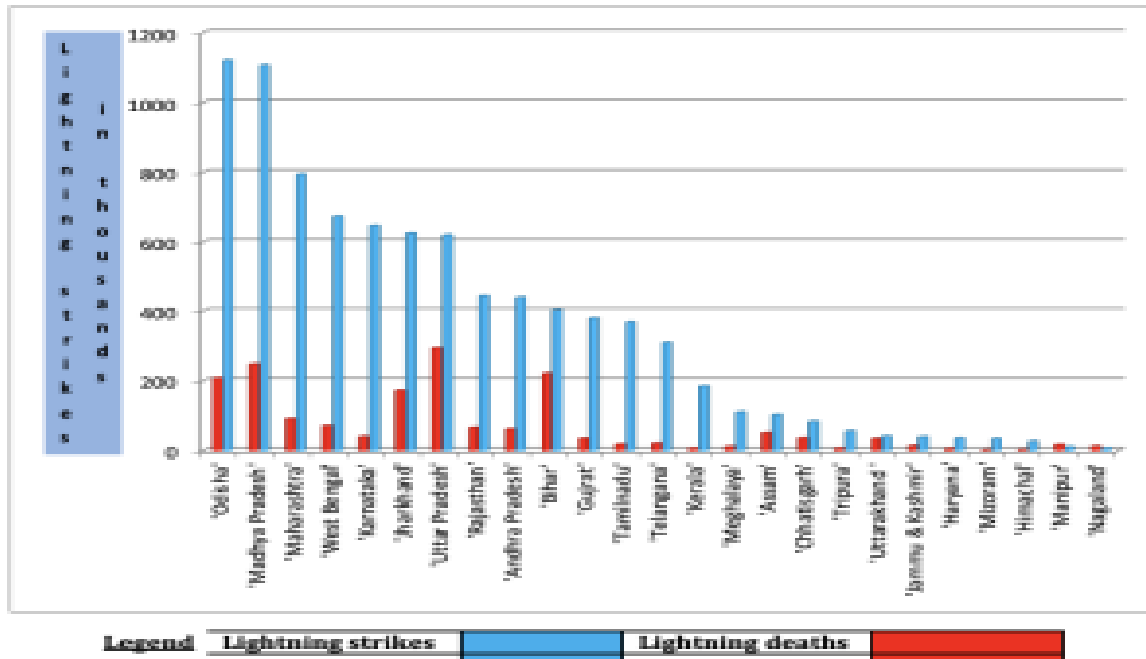
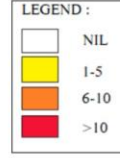
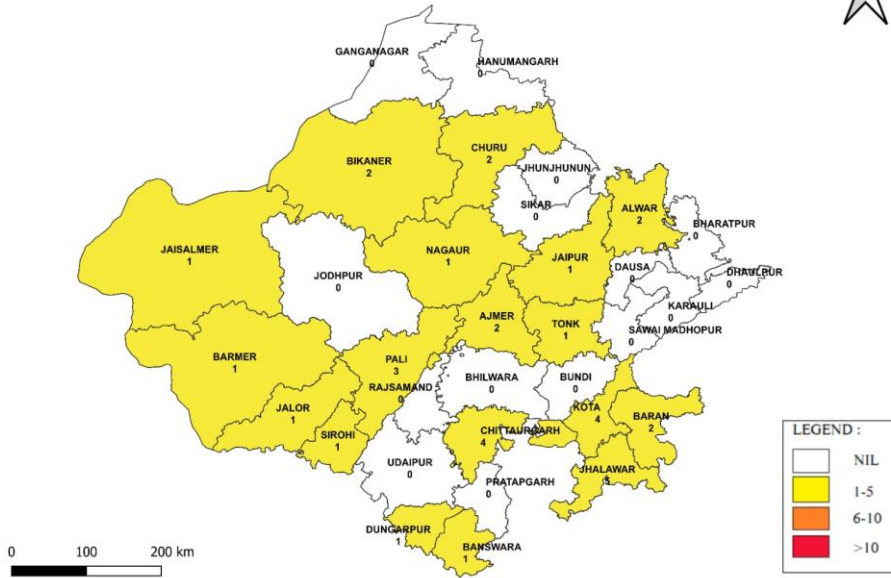
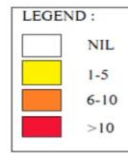
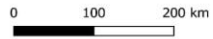
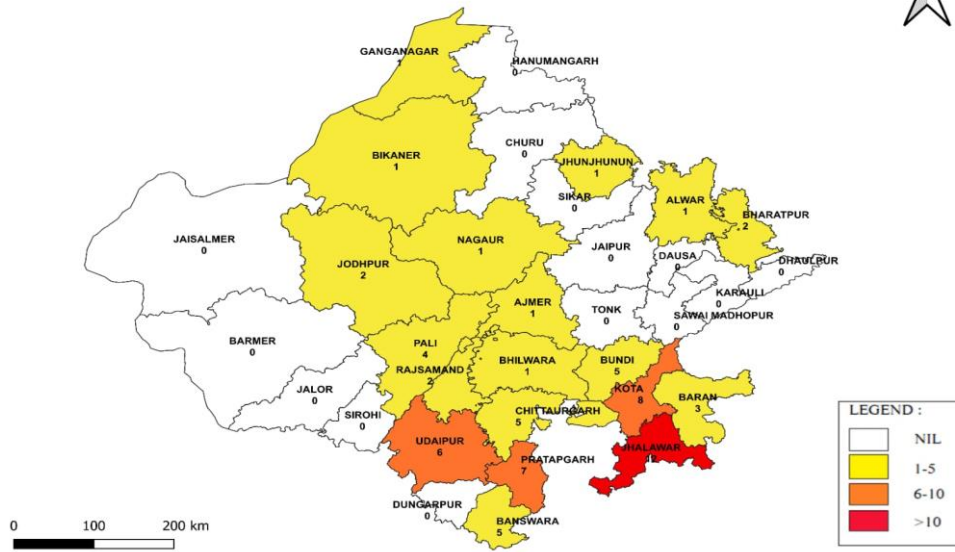


Table 5: Comparative analysis lightning strikes vs deaths

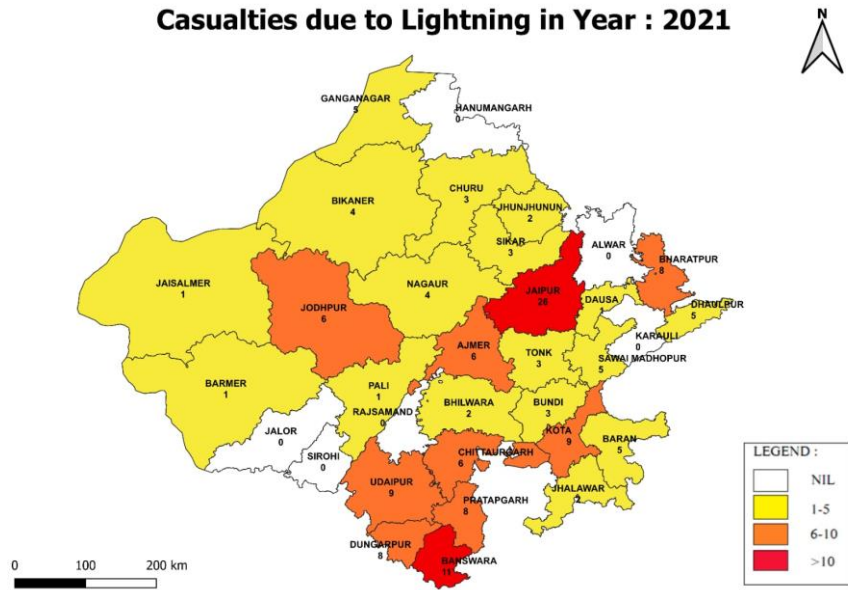
Casualties due to Lightning in Year : 2023



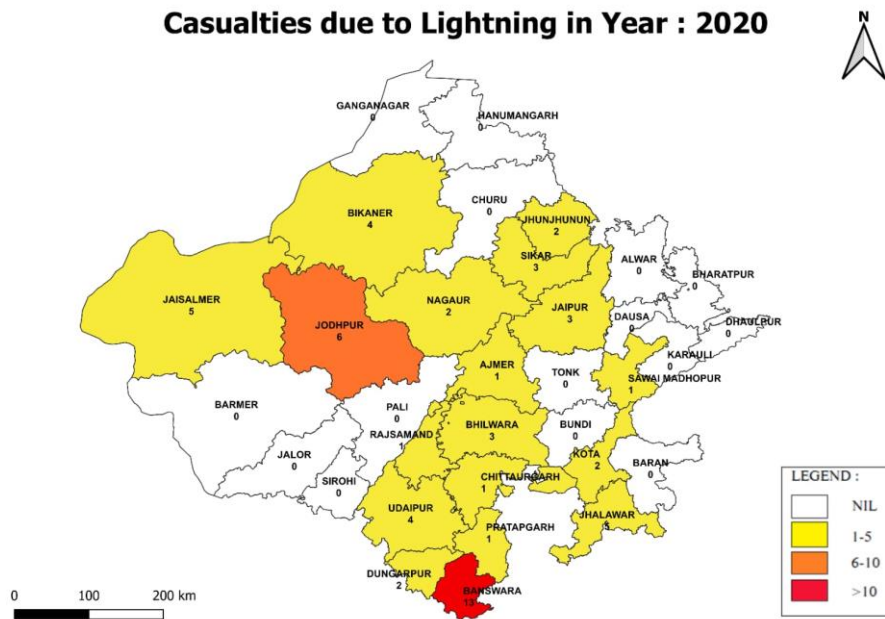
Casualties due to Lightning in Year : 2022



Casualties due to Lightning in Year : 2021



Casualties due to Lightning in Year : 2020



LIST OF DISASTER MANAGEMENT OFFICIALS

S.NO	Name	Designation	Office	Mobile
1.	Sh. Anand Kumar	Additional Chief Secretary	0141-2227568	---
2.	Sh. Bhagwat Singh	Joint secretary	0141-2227084	9680020677
3.	Dr. Brij Bhushan Sharma	F.A.	0141-2227102	9414067747
4.	Dr. Rakesh Kumar Meena	Assistant Secretary	0141-2227084	9587343333
5.	Sh. Makkhan Lal Khateek	OSD-I/S.O.	0141-2227084	9799075674
6.	Sh. Birbal Meena	OSD-II	0141-2227403	8529265874
7.	Smt. Jyoti Nagar	Sr. AO	--	8890645969
8.	Sh. Shivendra Varshneya	Programmer	0141-2227084	9001632707
9.	Sh. Ghansyam Meena	E. O.	0141-2227084	9413417961
10.	Dr. Harish Samaria	Senior Consultant	0141-2927394	8005636299
11.	Sh. Kunwar Rajal Arora	Consultant	0141-2927394	7906915630
12.	Dr. Narendra Kumar Sankhala	Consultant	----	9887035062
13.	Ms. Himadri Bhatnagar	Consultant	-----	7231009222
14.	Sh. Jitendra Vyas	Consultant	-----	7737316636

LIST OF DISTRICT MAGISTRATES

S.No.	District	Name	Telephone No.	Mobile No.
1	Ajmer	Dr. Bharti Dixit	0145-2627421	9968291498
2	Alwar	Mr. Ashish Gupta	0144-2337565	9899737259
3	Banswara	Dr. Inderjeet Yadav	02962- 240002,242968	8743080729
4	Barmer	Mr. Nishant Jain	02982-220003, 222444	9412700922
5	Baran	Mr. Rohitashi Singh Tomar	07453-237001	9810524888
6	Bharatpur	Mr. Amit Yadav	05644-223086	9996237788
7	Bhilwara	Mr. Namit Mehta	01482-232601	9414132812
8	Bikaner	Namrata Vrishni	0151-2226000, 2520314	8696887733
9	Bundi	Mr. Akshay Godara	0747-244300, 2445200	7073329899
10	Chittorgarh	Mr. Alok Ranjan	01472-240001	9414676635
11	Churu	Mr. Pushpa Satyani	01562-250806	9829062471
12	Dausa	Mr. Devendra Kumar	01427-224666	9717180139
13	Dholpur	Mr. Srinidhi Bt.	05642-220871	9449725585
14	Dungarpur	Mr. Ankit Kumar Singh	02964-231002	9725136544
15	Hanumangarh	Mr. Kana Ram	01552- 266156,260001	9950525303
16	Jaipur	Mr. Prakash Rajpurohit	0141-2209001	9983934283
17	Jaisalmer	Mr. Pratap Singh	02992-252201	8447370171
18	Jalore	Mr. S. Pooja Kumari Partha	02973-222207	8079061914
19	Jhalawar	Mr. Ajay Singh Rathod	07432-230403, 07432-230404	9414350377
20	Jhunjhunu	Mr. Chinamay Gopal	01592-232040	9818883864
21	Jodhpur	Mr. Gorav Aggarwal	0291-2650322	7568597500
22	Karauli	Mr. Neelabh Saxena	07464-250100	8090651676
23	Quota	Dr. Ravindra Goswami	0744-2451200	9971141943
24	Nagaur	Mr. Arun Kumar Purohit	01582- 241444,241786	9828251345
25	Pali	Mr. Lakshminarayan Minister	02932-252801	9414201828
26	Rajsamand	Dr. Bhanwar Lal	02952-220536, 221036	8890463322
27	Sawai Madhopur	Dr. Khushal Yadav	07462-220444	9414616333

28	Sikar	Mr. Qamar Ul Zaman Chaudhary	01572-250005	7409812252
29	Sirohi	Mr. S. Shubham Chaudhary	02972-220497,221187	7073877727
30	Shri Ganga Nagar	Mr. Lok Bandhu	0154-2445001	9582433213
31	Tonk	Dr. Soumya Jha	01432-246377	8882821038
32	Udaipur	Mr. Arvind Kumar Poswal	0294-2410834	9660422065
33	Pratapgarh	Dr. Ajanli Rajoria	01478-222266	9711320451
34	Anupgarh	Mr. Avadhesh Meena	58121, 58122	9582852336
35	Balotra	Mr. Sushil Kumar Yadav	02988-294610	9711088480
36	Beawar	Mr. Utsav Kaushal	01462-257336	9024297734
37	Deeg	Mr.S. Shruti Bhardwaj	05641-294000	9829051174
38	Didwana-Kuchaman	Mr. Balmukund Asawa	01580-222000	9413357125
39	Dudu	Mr. Prakash Rajpurohit	01428-294651	9983934283
40	Gangapur City	Dr. Gaurav Saini	07463-236136	7879147898
41	Jaipur Rural	Mr. Prakash Rajpurohit	0141-2209001	9983934283
42	Jodhpur Rural	Mr. Gourav Aggarwal	0291-2650322	7568597500
43	Cucumber	Mr.S. Sweta Chauhan	01467-220001	7080600108
44	Kotputli-Behror	Smt. Kalpana Agarwal	01421-299177	9413318811
45	Khairthal-Tijara	Mr.S. Artika Shukla	01460-298200	7311130030
46	Neem Ka Thana	Mr. Sharad Mehra	01574-230045	9968432960
47	Phalodi	Mr. Harji Lal Atal	02925-222323	9414890094
48	Salumbar	Mr. Jasmeet Singh Sandhu	02906-294900	9079313972
49	Sanchore	Mr. Shakti Singh Rathod	02979-294900	9414002900
50	Shahpura	Mr. Rajendra Singh Shekhawat	01484-299055	9413315936

CHIEF MEDICAL HEALTH OFFICER (CMHO)

Sno	District	Name	Mobile No.	Office No.
1	Ajmer	Dr. Jyotsna Ranga	9413851400	01452631111
2	Alwar	Dr. Yogendra Kumar Sharma	9414231765	01442340145
3	Anupgarh	Dr Girdhari Lal	9414205187	-
4	Balotra	Dr Vakaram Chodhari	9610378000	-
5	Banswara	Dr. H.L.Tabiyar	7742120111	7742120333
6	Baran	Dr Sampath Raj Nagar	8432111933	07453230451
7	Barmer	Dr C.S.Gajraj	9828879733	2982230462
8	Beawar	Dr Sanjay Gahlod	9772656856	
9	Bharatpur	Dr Gaurav Kapoor	9414694056	05644223660
10	Bhilwara	Dr. Chetendra Puri Goshwami	8696947181	01482232643
11	Bikaner	Dr. Mohit Singh Tanwar	8875336971	01512226341
12	Bundi	Dr. O.P.Samar	9950430545	07472442895
13	Chittorgarh	Dr. Tara Chand Gupta	8003411264	01472245813
14	Churu	Dr Manoj Kumar Sharma	7014470590	01567222038
15	Dausa	Dr Seeta Ram Meena	7891510002	07891510014
16	Deeg	Dr Vijay Kumar Singhal	9414202929	
17	Dholpur	Dr. Jayanit Lal Meena	9414710128	05642220733
18	Didwana	Dr Narendra Singh Choudhary	7014107070	
19	Dudu	Dr Sunil Sivodiya	9602099289	
20	Dungarpur	Dr Alankar Gupta	9929806187	02964232486
21	Gangapur City	Dr Batti lal Meena	9664474779	
22	Hanumangarh	Dr. Naveet Sharma	7597222000	01552261190
23	Jaipur I	Dr Ravi Shekawat	9166476778	01412605859
24	Jaipur II	Dr Hansraj Bandoliya	73740004410	01412603426
25	Jaisalmer	Dr Rajendra Kumar Paliwal	9460106454	02992251792
26	Jalore	Dr. R.S. Bharti	9672478797	02973222246
27	Jhalawar	Dr. Moh. Sajid Khan	9929289426	07432230009
28	Jhunjhunu	Dr. Chotelal Gujar	9460371010	01592232415
29	Jodhpur	Dr Surendar Singh Shekawat	9414464281	02912511085
30	Jodhpur west	Dr Partap Singh Rathor	9414703357	

31	Karauli	Dr. Dinesh Chand Meena	9116649112,	07464297031
32	Kekri	Dr Udaram Balotia	8302281706	
33	Khairthal- Tijara	Dr Arvind Gar	8930552020	-
34	Kota	Dr. Jagdish Soni	9414231183	07442329259
35	Kotputli- Bharoad	Dr Ashis Singh Shekawat	9828261988	
36	Nagaur	Dr Rakesh Kumawat	9887024841	01582240844
37	Neem ka Thana	Dr Vinay Gahlot	9414466790	
38	Pali	Dr. Vikash Marwal	9784859777	02932257555
39	Phalodi	Dr. Abhishek Agarwal	9460054029	
40	Pratapgarh	Dr. Jeevraj Meena	6375674532	01478222564
41	Rajsamand	Dr Hemant Bindal	9829487992	02952221716
42	S. Madhopur	Dr. Dharm Singh Meena	9414459342	07462235011
43	Salumber	Dr Jagdish Prasad Bunkar	9413954545	
44	Sanchore	Dr B.L.Bishnoi	9414373721	
45	Shahpura	Dr Ghanshayam chawla	9829508745	
46	Sikar	Dr Nirmal Singh	9414527300	01572248216
47	Sirohi	Dr. Narayan Gaur	9414128100	02972222259
48	Sri Ganganagar	Dr. Ajay Sighla	9414873243	01542445071
49	Tonk	Dr Ashok Kumar Yadav	9679378969	01432244099
50	Udaipur	Dr Ashok Aditya	9829065941	06367304312