UTTAR PRADESH

STATE DISASTER MANAGEMENT PLAN FOR

CHEMICAL LEAKAGES OR SPILLAGE

(Draft)

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Executive Summary

Approach to disaster management sector has seen a paradigm shift, that is, from top-down relief and response it has gradually moved to a more technocratic approach and presently to towards a culture of prevention and preparedness. This approach has three distinct but interrelated components: *hazard assessment, vulnerability analysis* and *enhancement of management capacity*. It is now recognized that risks (physical, social and economic) unmanaged (or mismanaged) for a long time lead to occurrence of disasters. This evolution of approaches from relief and response to risk management has begun to influence the way disaster management programs are now being planned and financed.

India is vulnerable to varying degrees to a large number of natural as well as man-made disasters. High Powered Committee (HPC) on Disaster Management was constituted in August 1999 with the approval of the Prime Minister under the Chairmanship of Shri J.C. Pant, former Secretary to the Government of India. The HPC prepared comprehensive model plans for DM at the national, state and district levels. Though the original mandate of the HPC was confined to preparation of plans for natural disaster only, man-made disasters like accidents, industrial and chemical accidents, biological disasters, etc. were included to ensure a holistic approach for preparation of Disaster Management Plans. Our national approach in disaster management received a boost with coming into force of Disaster Management Act, 2005.

Uttar Pradesh State Disaster Management Plan (UPSDMP) on Chemical Attacks is a result of this approach of preparedness to face this man-made calamity. UPSDMP on Chemical Attacks has been prepared in consultation with various departments and agencies of the Government of Uttar Pradesh and other stakeholders expected to participate in disaster management. The Objectives are to develop plans through a consultative approach; to understand socio-economic vulnerability of people and integrate into disaster management activities in case of a Chemical attack; to strengthen existing organisational and administrative structures; to prepare resource

inventory and other mechanisms to combat chemical attacks; to ensure prevention, response and recovery; and to channelise involvement of various government departments, research, specialised agencies, multilaterals, bilateral, non government organisations training institutes, Community Based Organisations etc.

The **Chapter II on profile of Uttar Pradesh** helps us to understand political, social, economic and demographic concerns that have to be weaved in while preparing UPSDMP on Chemical Attacks. Uttar Pradesh is the fourth largest and most populous state in India sharing international border with Nepal. U.P. is facing a difficult demographic situation. It has both high people numbers and high population growth rate. The high demographic growth rate has resulted in high density of population, tremendous Pressure on land and other infrastructure. The state is also high in unemployment rate as well as illiteracy rate.

The **Chapter III on Chemical attacks** helps us in understanding what it is all about. Chemical attacks are acts with intentions of causing damage to enemies. It is carried out by using chemical warfares as weapons of mass destruction. Chemical warfare (CW) involves using the toxic properties of chemical substances as weapons to kill, injure, or incapacitate an enemy. Chemical warfare is different from the use of conventional weapons or nuclear weapons because the destructive effects of chemical weapons are not primarily due to any explosive force. The potential of some of these agents is nearly as great as that of nuclear weapons, and therefore, included in the triad of Weapons of Mass Destruction (WMD): Nuclear, Biological and Chemical. Chemical weapons are very dangerous, but they're not easy to acquire or use. Synthesizing chemical warfare agents is often difficult, particularly in home laboratories. These super toxic chemicals are also extremely dangerous to handle and deliver in the large quantities needed to inflict mass casualties.

The **Chapter IV on Vulnerability Assessment and Risk Analysis** helps us in mapping the risk exposure and vulnerability of the state. Although there has been no Chemical attack in the state, it is significant to note that in last few years Uttar

Pradesh has faced incidents of terrorist attacks. There has been disturbing news of some places in UP sheltering terrorists and supporting terrorist activities. This has really increased vulnerability of the state and its people. Given the high population density, there would be tremendous damage to human and cattle lives, agriculture and economy of the state in case of a chemical attack.

The **Chapter VI on Preventive and Preparedness Measures** deals with measures which if not help in negating the risk entirely, will help in putting in place mechanisms like strengthening Intelligence and Surveillance; awareness of Community and Health Workers; medical preparedness, decontamination, evacuation plans etc. This section also entails resource inventory; roles and responsibilities for preparedness and mitigation for chemical attacks.

The **Chapter VI on Response** would help in optimising the outputs, given the resource constraints. Response management is based on the three key management tasks of command, control and coordination. Response plan contains the actions to be taken immediately after a disaster including disseminating warning/alert to the potential victims; disseminate information to vertical and horizontal administrators for disaster management; and declaring disaster based on severity / vulnerability. The chapter entails a detailed Emergency Response Structure.

The **Chapter VII on Recovery Plans** provides a structure for the management of all the inputs into the recovery process in a way that is appropriate to the needs of the community. It allows individuals, families and communities to attain a proper level of functioning through the provision of information, specialist services and resources. The Recovery process is therefore a long-term process in which everyone has a role – the Government including the self-government institutions, the NGOs, and especially the affected people, their families and the community. In case of a chemical attack, there would be mass casualties and the effect may spread to huge areas. The survivors and affected people spread over a large geographical area would require support, both in

tangible and intangible form, to regain normalcy and start life afresh from where it got disrupted.

The **Chapter IX on Capacity Building** focuses on important components of preparedness include planning, capacity building; well-rehearsed hospital DM plans, training of doctors and paramedics, and upgradation of medical infrastructure at various levels to reduce morbidity mortality. This is important since departments dealing with this disaster need to be equipped with state-of-the-art tools for rapid investigation and prescription of antidotes. It covers human resource development, training and education, documentation, research and development.

The **Chapter X on Institutional Arrangements and Roles and Responsibilities** covers who will do what in case of a chemical attack. Uttar Pradesh Disaster Management Authority (UPDMA) has been set up under the UP Disaster Management Act, 2005, and is headed by the Chief Minister as its Chair person and has a 14 member Governing Body. The Authority clearly allocates responsibilities among various stakeholders. This Plan has proposed setting up of a Crisis Management Group to deal with Chemical Attacks. UP already has a GIS based mapping of the entire state and there are Emergency Operation Centres that have been set up in the state. This Chapter also defines the role of Incident Commander who will take charge in case of a chemical attack. Depending on the scale of the Disaster it can be Chief Secretary or District Magistrate.

The **Chapter XI on Partnerships with other Stakeholders** covers role of community, NGOs, International Cooperation, Public Private Partnership and Mass Media.

The **Chapter XII on Financial Arrangements** deals with budgetary allocations for carrying out preventive, preparedness and post-disaster relief work in case of a chemical attack. Expenditure on relief, rescue and rehabilitation far exceeds the expenditure on prevention and management. This should therefore, be the underlying

principle for allocation of adequate funds at industry and government level for prevention, mitigation and preparedness rather than concentrating on their management at the time of a disaster. The basic principle of return on investment may not be applicable in the immediate context but the long-term impact would be highly beneficial. Thus, financial strategies should be worked out such that necessary finances are in place and flow of funds is organised on a priority basis by the identification of necessary functions, both in the phases of preparedness and response, relief and rehabilitation respectively.

The **Chapter XIII on Follow Up Actions** discusses follow up actions that have to be undertaken by various agencies/departments to operationalise the Plan.

The main vision of this document is to initiate coordinated efforts to have an effective disaster management strategy for the State, with focus on extremely quick, efficient and coordinated response and recovery to minimise impact of chemical attacks, if it were to happen.

Chapter-I Introduction

1.1 Vision of the Document

Almost in parallel with the paradigm shift in poverty reduction programs – from income poverty to human poverty -- the disaster management sector has also seen a paradigm shift. Disasters are no longer seen as extreme events created entirely by natural forces but as manifestations of unresolved problems of development. The disaster management practices have evolved from largely a top-down relief and response approach to a more inter-sectoral risk management approach. In the current paradigm of risk management approaches, there is more room than ever before for addressing the issues of risk reduction. Till a few decades ago, disasters were viewed as one-off events and responded by governments and relief agencies without taking into account the social and economic implications and causes of these events. With significant advancement in our understanding of the natural processes that underlie the hazardous events, a more technocratic approach came into existence which believed that the "only way to deal with disasters was by public policy application of geophysical and engineering knowledge". These approaches looked at disasters as exceptional events, not related to the ongoing social and developmental processes. Gradually this attitude changed to an emphasis on preparedness measures, such as stockpiling of relief goods, preparedness plans and a growing role for relief agencies such as the Red Cross.

In recent years, a more comprehensive approach that of disaster risk management has emerged. This approach has three distinct but interrelated components: *hazard assessment, vulnerability analysis* and *enhancement of management capacity*. It is closely integrated with ongoing development processes. Disasters are no longer viewed as extreme events created entirely by natural forces but as unresolved problems of development. It is now recognized that risks (physical, social and economic) unmanaged (or mismanaged) for a long time lead to occurrence of disasters.

This evolution of approaches from relief and response to risk management has begun to influence the way disaster management programs are now being planned and

financed. There are initiatives aimed at reducing social and economic vulnerability and investing in long-term mitigation activities. Unfortunately such initiatives aimed at prevention and mitigation are few, poorly funded and insignificant in comparison with money spent by donors and development banks on humanitarian assistance and relief, as well as on post disaster reconstruction.

The main vision of this document is to initiate coordinated efforts to have an effective disaster management strategy for the State, with focus on extremely quick, efficient and coordinated response and recovery to minimise impact of future disasters.

1.2 Evolution of the document

1.2.1 International precedence

The initiative for disaster management globally started with the member states of the United Nations General Assembly declaring the 90s as the International Decade for Natural Disaster Reduction (IDNDR). The international initiative was conceived to motivate concerted international action and cooperation that could "reduce the loss of life, property damage, social and economic disruptions caused by natural disasters, especially in developing countries." IDNDR is based on the understanding that there is sufficient scientific and technical knowledge that can save lives and property from natural and other disasters through more extensive application. International impact on the subject was expanded in May 1994 at the World Conference of Natural Disaster Reduction convened by the UN at Yokohama, Japan. Participating countries including India adopted the fundamental principles of natural disaster prevention, preparedness and mitigation embodied in the Yokohama Strategy and Plan of Action for a Safer World. The Yokohama Conference underlined the economic rationale for disaster reduction, complementing the scientific foundation with an essential commitment from public policy authorities.

The goals that were established for the IDNDR are:

- To improve the capacity of each country to mitigate the effects of natural disasters,

in the assessment of disaster damage potential and in the establishment of early warning systems and disaster resistant capabilities.

- To devise appropriate guidelines and strategies for applying existing scientific and technical knowledge.
- To foster scientific and engineering endeavours aimed at addressing critical gaps in knowledge.
- To disseminate existing and new technical information.
- To develop measures for the assessment, prediction, prevention and mitigation of natural disasters through programmes of technical assistance and technology transfer, education and training and to evaluate effectiveness of programmes.

In essence, the decade's activities sought to shift the emphasis from post-disaster relief to pre-disaster risk reduction.

1.2.2 Disaster Management in India

India is vulnerable to varying degrees to a large number of natural as well as man-made disasters, ranging from earthquakes, floods, cyclones, tsunamis, droughts, avalanches, landslides etc. Further, the vulnerability to Nuclear, Biological and Chemical (NBC) disasters and terrorism has also increased manifold.

Disaster risks in India are further compounded by increasing vulnerabilities, due to a variety of factors. These include population, poverty, rapid urbanisation, increasing industrialisation, development within high-risk zones, environmental degradation, climate change etc. This increased vulnerability has seriously threatened national security and present & future course of development.

For planning and coordination of Disaster Management Activities in India, a High Powered Committee (HPC) on Disaster Management was constituted in August 1999 with the approval of the Prime Minister under the Chairmanship of Shri J.C. Pant, former

Secretary to the Government of India. The HPC prepared comprehensive model plans for DM at the national, state and district levels. Though the original mandate of the HPC was confined to preparation of plans for natural disaster only, man-made disasters like accidents, industrial and chemical accidents, biological disasters, etc. were included to ensure a holistic approach for preparation of Disaster Management Plans.

The HPC constituted 5 sub-groups to develop detailed history of each type of disaster and the type of plans of actions needed to have the most effective preparedness, response and recovery strategies for each type of disaster.

The five sub-groups were: Water & Climate related hazards, Geological hazards, Industrial, Chemical and nuclear hazards, Accidents, Biological Hazards.

Our national approach in disaster management received a boost with setting up of National Disaster Management Authority (NDMA) headed by the Prime Minister, through an Act of Parliament. This Act got the consent of the President on 23 December 2005. Its aim is to initiate a holistic and integrated approach to Diaster Management in the country. The holistic, multi-disciplinary and integrated approach of NDMA in DM at all levels aims to mainstream DM into development effort.

The DM Act, 2005, mandates a paradigm shift from a response and relief-centric approach, to a proactive, and comprehensive mindset towards DM covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.

It also provides for:

- The creation of a policy, legal and institutional framework, backed by effective statutory and financial support.
- The mainstreaming of multi-sectoral DM concerns into the developmental process and mitigation measures through projects.

- A continuous and integrated process of planning, organising, coordinating and implementing policies and plans in a holistic, community based participatory, inclusive and sustainable manner.

1.2.3 National Vision

The national vision is to build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for DM. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people. The entire process will centre stage the community and will be provided momentum and sustenance through the collective efforts of all governmental agencies supported by NGOs.

1.2.4 State Vision

Uttar Pradesh State Disaster Management Plan (UPSDMP) on Chemical Leakages or Spillage is a result of this approach of preparedness to face this man-made calamity. UPSDMP on Chemical Leakages or Spillage has been prepared for its operationalisation by various departments and agencies of the Government of Uttar Pradesh and other stakeholders expected to participate in disaster management in case of a Chemical Leakage or Spillage. This addresses the state's response to demands from the district administration and in extraordinary emergency situations at multi-district levels.

1.3 Objectives of UPSDMP on Chemical Leakages or Spillage

The Objectives of UPSDMP on Chemical Leakages or Spillage are as follows:

- To develop plans through a consultative approach involving all the stakeholders that will minimise the damage and disruption in case of Chemical Leakage or Spillage

- To understand socio-economic vulnerability of people and integrate into disaster management activities;

- To strengthen existing organisational and administrative structures for disaster management in case of a Chemical Leakages or Spillage;

- To evolve a system to assess the status of existing resources and facilities available with the various departments and agencies involved in case of a Chemical Leakages or Spillage

- To ensure that the following components of disaster management are organised to facilitate planning, preparedness, operational coordination and community participation.
    - Prevention: the elimination or reduction of the incidence or severity of disasters and the mitigation of their effects.
    - Response: the combating of emergencies and the provision of immediate rescue and relief services;
    - Recovery: the assisting of people and communities affected by disasters to achieve a proper and effective level of functioning.

- To channelise involvement of various government departments, research, specialised agencies, multilaterals, bilaterals, non government organisations training institutes, Community Based Organisations etc.

Chapter-II Profile of the State

2.1 Overview

Uttar Pradesh is the land of multi-hued Indian Culture that has blossomed from times immemorial. Blessed with a variety of geographical land and many cultural diversities,

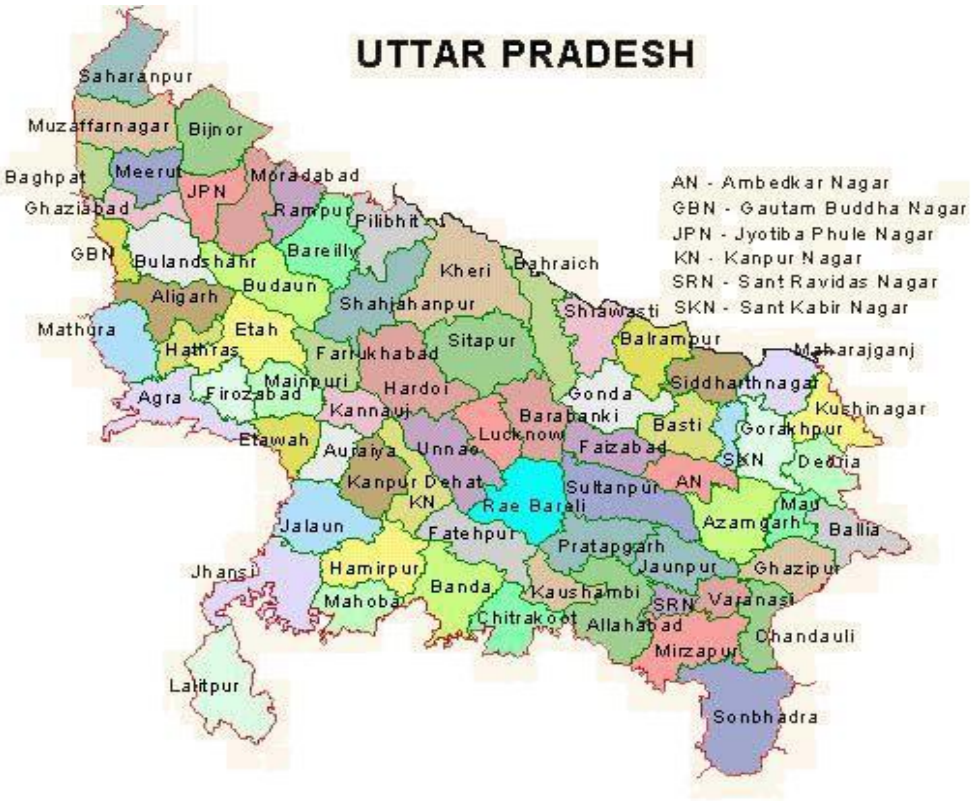
Uttar Pradesh, has been the area of activity of historical heroes like - Rama, Krishna, Buddha, Mahavira, Ashoka, Harsha, Akbar and Mahatma Gandhi. Rich and tranquil expanses of meadows, perennial rivers, dense forests and fertile soil of Uttar Pradesh have contributed numerous golden chapters to the annals of Indian History. Dotted with various holy shrines and pilgrim places, full of joyous festivals, it plays an important role in the politics, education, culture, industry, agriculture and tourism of India.

Its area of 2,36,286 sq km lies between latitude 24 deg to 31 deg and longitude 77 deg to 84 deg East. Area wise it is the fourth largest State of India. In sheer magnitude it is half of the area of France, three times of Portugal, four times of Ireland, seven times of Switzerland, ten times of Belgium and a little bigger than England.

2.2 Location

Uttar Pradesh is a state located in the northern part of India covering a large part of the highly fertile and densely populated upper Gangetic plain. Situated between 23^{o} 52'N and 31^{o} 28 N latitudes and 77^{o} 3' and 84^{o} 39'E longitudes, this is the fourth largest state in the country. It shares an international border with Nepal and is bounded by the states of Uttarakhand, Himachal Pradesh, Haryana, National Capital Territory of Delhi, Rajasthan, Madhya Pradesh, Chhattisgarh, Jharkhand and Bihar.

2.3 Area and administrative division



With an area of 2,36,286 sq. km[1] , Uttar Pradesh is divided into 71 districts under 18 divisions: Agra, Aligarh, Allahabad, Azamgarh, Bareilly, Basti, Chitrakoot, Devipatan, Faizabad, Gorakhpur, Jhansi, Kanpur, Lucknow, Meerut, Mirzapur, Moradabad, Saharanpur and Varanasi.

A district is governed by a District Collector also known as a District Magistrate. DM is an officer from either Indian Administrative Service (IAS) or Uttar Pradesh Public Service Commission (UPPSC), and is appointed by the State Government of Uttar Pradesh. Each district is divided into subdivisions. A subdivision is governed by a sub-divisional magistrate (SDM). Other than urban units such as town municipalities, a subdivision contains 'community development blocks' (also known as CD blocks or blocks). A block consists of urban units such as census towns and rural units called gram panchayats. A block is administered by a Block Development Officer (BDO). The

[1] http://upgov.nic.in/

Panchayati Raj has a three-tier structure with Zilla Parishad, Panchayat Samiti and Gram Panchayat.

A Senior Superintendent/ Superintendent of Police or SP, heads the District Police organization of Uttar Pradesh Police. For every subdivision, there is a Subdivision Police, headed by a Police officer of the rank of Assistant Superintendent of Police or Deputy Superintendent of Police. Under subdivisions, there are Police Circles, each headed by a Circle Officer. A Police Circle consists of Police Stations, each headed by an Inspector or Sub-Inspector of Police. The Allahabad High Court has the jurisdiction of the state of Uttar Pradesh.

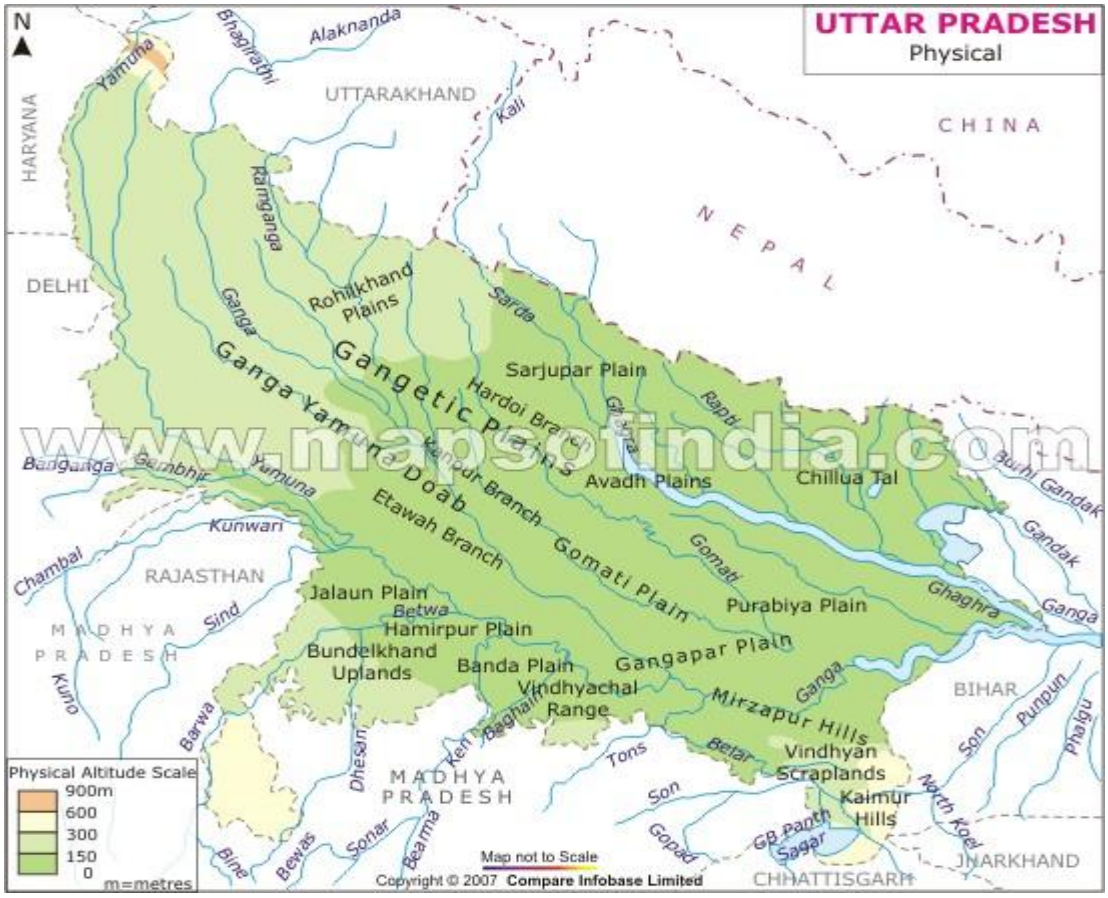
2.4 Physical Regions

Uttar Pradesh can be divided into two distinct hypsographical regions:

1. The Gangetic plain in the centre: The most important area for the economy of the state is the Gangetic plain which stretches across the entire length of the state from east to west. The entire alluvial plain can be divide into three sub-regions. The first in the eastern tract consisting of 14 districts which are subject to periodical floods and droughts and have been classified as scarcity areas. These districts have the highest density of population which gives the lowest per capita land. The other two regions, the central and the western are comparatively better with a well-developed irrigation system. They suffer from water logging and large-scale user tracts. The Gangetic plain is watered by the Yamuna, the Ganga and its major tributaries, the Ramganga, the Gomati, the Ghaghra and Gandak. The whole plain is alluvial and very fertile.

2. The Vindya hills and Deccan plateau in the south: The Southern fringe is demarcated by the Vindhya Hills and plateau. It comprises four districts of Jhansi, Jalaun, Banda, and Hamirpur in Bundelkhand division, Meja and Karchhana tehsils of Allahabad district, the whole of Mirzapur District south of Ganga and Chakia tehsil of

Varanasi District. The Betwa and Ken rivers join the Jamuna from the south-west in this region. It has four distinct kinds of soil, two of which are agriculturally difficult to manage. They are black cotton soil. Rainfall is scanty and erratic and water-resources are scare. Dry farming is practical on a large scale.



2.5 Climate and rainfall

Uttar Pradesh is located in the north-western part of the country. It spreads over a large area, and the plains of the state are quite distinctly different from the high mountains in the north. The climate of Uttar Pradesh can also vary widely, with temperatures as high as 47 °C in summer, and as low as -1 °C in winter.

The climate of Uttar Pradesh is predominantly subtropical, but weather conditions change significantly with location and season.

Tropical Monsoon Climate is marked by three distinct seasons:

- Summer (March-June): Hot & dry (temperatures rise to 45 °C, sometimes 47-48 °C); low relative humidity (20%); dust laden winds.
- Monsoon (June-September): 85% of average annual rainfall of 990 mm. Fall in temperature 40-45° on rainy days.
- Winter (October-Fabruary): Cold (temperatures drop to 3-4 °C, sometimes below -1 °C); clear skies; foggy conditions in some tracts.

Rainfall: Rainfall in the State ranges from 1,000–2,000 mm (40–80 inches) in the east to 600–1,000 mm (24–40 inches) in the west. About 90 percent of the rainfall occurs during the southwest monsoon, lasting from about June to September. With most of the rainfall concentrated during this four-month period, floods are a recurring problem and cause heavy damage to crops, life, and property, particularly in the eastern part of the state, where the Himalayan-origin rivers flow with a very low north-south gradient.

Snowfall: In the Himalayan region of the State, annual snowfall averaging 3 to 5 metre (10 to15 feet) is common between December and March.

2.6 Temperature

Depending on the elevation, the average temperatures vary from 12.5–17.5°C (54.5–63.5°F) in January to 27.5–32.5°C (81.5–90.5°F) in May and June. The highest temperature recorded in the State was 49.9°C (121.8°F) at Gonda on May 8, 1958.

2.7 Demographic profile

U.P. is the largest State in the country in terms of people living in it. Its population, at 16.62 crores in 2001, comprised 16.2% of India's population. Population density is 689 and sex ratio adverse at 898. Only about 60% of the people are literate. Infant

mortality is still high at around 80. About one third of its people live below the poverty line.

The State reflects many contrasts such as fertile lands, very considerable water resources, good rainfall and massive manpower on one hand; and poverty, unemployment, poor incomes, relatively low productivity levels and low quality of life on the other. Per capita income as estimated in 1950-51 was only 3% below the national average. In 2001-2002, it had fallen to as much as 41% below the national average.

U.P. is facing a difficult demographic situation. It has both high people numbers and high population growth rate. During 91-01 decade its population went up by over 25.8%. Literacy rate in 2001 was more than 10% below the national average, at 57.36%. Similarly, sex ration at 898 was lower than the national figure of 933. According to the Economic Survey of India (2003-04) unemployment rate was 4.08%, having gone up in the preceding seven year by about 18%.

The density of population in U.P. at 689 per sq. km is much higher than that obtaining in many other States in the country. The high demographic growth rate has resulted in:

1. Rise in density of population per sq.km from 473 in 1971 to 548 in 1991, and 689 in 2001.
2. Pressure on land has tremendously increased. Land holdings, mostly small and marginal, have been further fragmented making modernisation of agriculture and capital investments on it very difficult.
3. Available financial resources have not matched the needs of sectors like health, education, housing, roads, energy etc., quality of life has remained poor. Unemployment rate is also high in the state.

2.8 Geology

Uttar Pradesh is characterised by rock formations ranging in age from the Archean (the Bundelkhand Graniticgneisses) to the Recent (the Ganga alluvium). The Ganga plain which dominates the landscape and nearly covers three fourth of the geographical area of the State, lies between the rocky Himalayan belt in the north and the southern hilly tract comprised of mainly Pre-Cambrian rocks. Flexing of the Indian lithosphere in response to the compressive forces due to collision, and thrust fold loading produced the Ganga Plain foreland basin. It is filled with recent alluvial

sediments which is at places more than 1,000 m. thick and an amalgam of sand, silt, clay in varying proportions.

The southern hilly tract is roughly parallel to the Ganga-Yamuna lineament. The tract is underlain by granitic complex in Bundelkhand region and in Sonbhadra. It is overlain by rocks Mahakoshal (Bijawar) and Vindhyan Supergroup. The younger rock comprise of coal bearing Gondwana in south Sonbhadra and basaltic rocks in southern part of Lalitpur.

The granitic complex is considered to be potential for the search of metallic minerals like copper, lead, zinc, molybdenum, gold, nickel, Uranium and Platinum group of elements. The overlying sediments of Mahakoshal (Bijawar) and associated Iron Formation show a potential for the search of copper, uranium, and gold in Lalitpur and andalusite, sillimanite, gold, calcite, marble and clay in sonbhadra. The lower Vindhyan sediments of Sonbhadra contain deposits of cement grade limestone, flux grade dolomits, building stone and is also potential for the search of gold and other metals. The Upper Vindhyan sandstones are suitable for making decorative slab/tiles or ballast. Deposits of silica sands and bauxite are available in Allahabad and chitrakoot districts while coal deposits occur in the Gondwana rocks in southwestern corner of Sonbhadra.

2.9 Economy

Uttar Pradesh is the second largest state economy in India after Maharashtra contributing 8.17% to India's total GDP. Between 1999 and 2008, the economy grew only 4.4% per year, one of the lowest rates in India. The major economic activity in the state is agriculture and, in 1991, 73% of the population in the state was engaged in agriculture and 46% of the state income was accounted for by agriculture. UP has retained its pre-eminent position in the country as a food-surplus state. Uttar Pradesh is home to largest number of Small Scale units in the country.

2.10 Education

Female literacy situation in Uttar Pradesh is dismal. Only one out of four in the 7+ age group was able to read and write in 1991. This figure go down to 19 per cent for rural areas, 11 per cent for the scheduled castes, 8 per cent for scheduled castes in rural areas, and 8 per cent for the entire rural population in the most educationally backward districts. The 1981 census figures suggest that in Uttar Pradesh the crude female literacy rate among scheduled castes in rural Uttar Pradesh in 1981 was below 18 per cent in 18 out of Uttar Pradesh's 56 districts and below 2.5 per cent in a majority of districts.

In terms of more demanding criteria of educational attainment on the completion of primary or secondary education, in Uttar Pradesh, in 1992-93 only 50 percent of literate males and 40 per cent of literate females could complete the cycle of eight years of schooling involved in the primary and middle stages. One other distinguishing feature of Uttar Pradesh education system is the persistence of high level of illiteracy in the younger age group. Within the younger age group, the illiteracy was endemic in rural. In the late 1980s, the incidence of illiteracy in the 10-14 age group was as high as 32 percent for rural males and 61 per cent for rural females, and more than two-thirds of all rural girls in the 12-14 age group never went to school.

The problem of education system is exacting. Due to public apathy the school are in disarray, privately run school are functional, but beyond the reach of ordinary people. The State government has taken programmes to make the population totally literate. Steps are being taken with the help of NGOs and other organizations to raise popular participation. At the level of higher education and technical education Uttar Pradesh has 16 general universities, 3 technical universities, one Indian Institute of Technology (Kanpur), one Indian Institute of Management (Lucknow), one Indian Institute of Information Technology and large number polytechnics, engineering

institutes and industrial training institutes. This provides the State with firm basis for providing opportunities for higher education to its youth.

2.11 Health

The Total Fertility Rate of the State is 3.8. The Infant Mortality Rate is 69 and Maternal Mortality Ratio is 517 (SRS 2001 - 03) which are higher than the National average. The Sex Ratio in the State is 898 (as compared to 933 for the country).
Please refer Annexure for figures of major health indicators.

2.12 Forests

Forests constitute about 12.8% of the total geographical area of the state. The Himalayan region and the terai and bhabhar area in the Gangetic plain have most of the forests. The Vindhyan forests consist mostly of scrub. The districts of Jaunpur, Ghazipur and Ballia have no forest land while 31 other districts have less forest area.

Near the snow line there are forests of rhododendrons and betula (bhojpatra). Below them are forests of silver fir, spruce, deodar, chir and oak. On the foothills and in the terai bhabhar area, grow the valuable sal and gigantic haldu. Along river courses the Shisham grows in abundance. The Vindhyan forests have dhak, teak, mahua, salai, chironji and tendu. The hill forests also have a large variety of medicinal herbs. Sal, chir, deodar and sain yield building timber and railway sleepers. Chir also yield resin, the chief source of resin and turpentine. Sisso is mostly used for furniture. Semal and gutel are used as matchwood and Kanju in the plywood industry. Babul provides the principal tanning material of the state. Some of the grasses such as baib and bamboo are raw material for the paper industry. Tendu leaves are used in making bidis and cane is used in baskets and furniture.

2.13 Agriculture

The western region of the state is more advanced in terms of agriculture. Majority of the population depends upon farming as its main occupation. Wheat, rice, sugar cane, pulses, oil seeds and potatoes are its main products. Sugar cane is an important cash crop almost through out the state and sugar mills and other cane crushers who produce gur and Khandsari are common throughout the state. Uttar Pradesh is an important state so far as horticulture is concerned. Apples and mangoes are produced in the state.

2.14 Cropping Patterns

In Uttar Pradesh rice is grown on 19 percent(4.6 m ha) of its cropped area and represents about 12.4 per cent of the all-India area under this crop. Rice is concentrated in the eastern districts of Uttar Pradesh where the alternative crops are pulses, groundnut, sugarcane, bajra and jowar in the decreasing order of their importance. Tobacco is grown in some districts.

2.15 Livestock and Fishery

Uttar Pradesh supports about 15% of the country's total livestock population. Of its livestock in 1961, 15% were cattle, 21% buffaloes, 13% goats and 8% other livestock. Between 1951 and 1956 there was an overall increase of 14% in the livestock population. There are nearly eight lakh hectares of water area, including lakes, tanks, rivers, canals and streams. The fishing area is over two lakh hectares and more than 175 varieties of fish, excluding the ornamental varieties are found. Among them are rohu, hilsa, mahseer, mangar, snow trout and mirror carp.

2.16 Land Use pattern

Land use	Area in ` 000 ha	Percentage
Total Geographical area	29,441	

Land use	Area in ` 000 ha	Percentage
Reporting Area for land utilization	29,794	100.00
Forests	5,150	17.29
Not available for cultivation	3,516	11.80
Permanent Pasture & Grazing land	296	0.99
Land under misc. tree crops & groves	513	1.72
Cultivable waste land	945	3.17
Fallow land other than current fallows	832	2.79
Current fallows	1,067	3.58
Net area Sown	17,475	58.65

Source: Land use statistics at a Glance 1996-97, Ministry of Agriculture, GOI, 2000

2.17 Industry

There are different types of minerals and several industries have come up based on the minerals. There are cement plants in the Mirzapur area in the Vindhya region, a bauxite based aluminium plant in the Banda area. In the hills a number of minerals are to be found, mainly non-metallic minerals which are used as industrial raw materials. Coal deposits are found in the Singrauli area. The industries include a large

printing establishment units engaged in manufacturing of scales, locks, letter boxes, furniture, badges and belts, leather goods, scissors etc. Handloom, carpet, glass, electrical goods, electro plating, building material industries are also found in the city.

2.18 Transport and Communication

Utter Pradesh has a well-defined transport system having an impressive network of roadways and railways that help commuters to move around within and outside the state. Flights also operate between major cities such as Lucknow, Varanasi, Agra, Allahabad and Kanpur.

Intercity Transportation in Uttar Pradesh

The cities of Uttar Pradesh are well linked through a network of road and railways. The best mode of transportation is trains. Almost all the major as well as minor towns in Utter Pradesh are linked through railways. Numerous Express and Super Fast trains ply between these stations. There are Intercity and Passenger trains too that are short distance trains whose routes are generally confined to 200 km. Though cheaper than Express trains, these trains are very slow and crowded. Commuters and smalltime traders generally use these trains. They tend to stop at every other station.

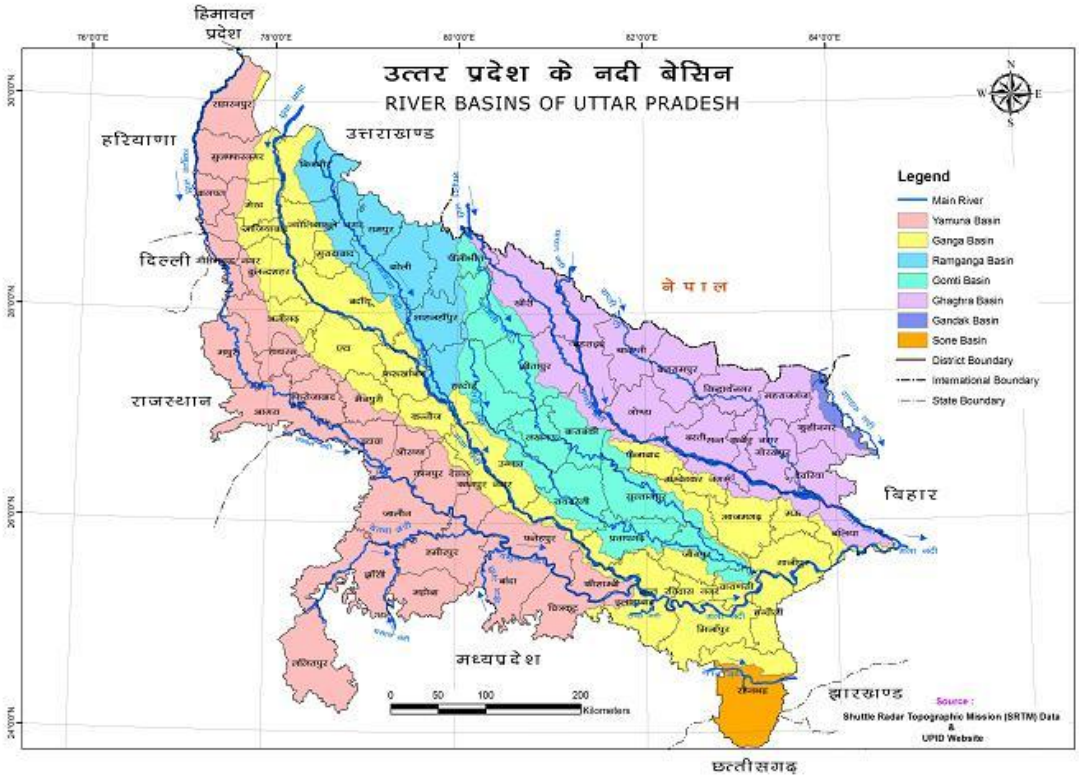
Uttar Pradesh State Transport Corporation has a fleet of buses that ply between different cities. The buses range from uncomfortable coaches for short distance to the Luxury coaches for the longer ones. Apart from that there are luxury coaches run by private operators too. Several Matadors, Mini-Buses and Diesel-run Autos are also available for relatively short distances, say between 50 to 100 km.

Intra-city Transportation in Utter Pradesh

Auto rickshaws and taxis are easily available in bigger cities such as Kanpur, Agra, Mathura, Lucknow, Varanasi, Ghaziabad and Allahabad. In other cities, Autos and Taxis that run on share basis are available. Rickshaws are another good mode to

move around in the city. They are the chief transport option in smaller towns as well as congested alleys of large towns.

2.19 River System and Dams



Major Dams and Reservoirs

- Govind Ballabh Pant Sagar on Rihand River in Sonbhadra
- Kalagarh Dam on Ramganga River in Kalagarh
- Parichha Dam on Betwa River in Parichha (Jhansi District).
- List of Dams in Lalitpur District, Uttar Pradesh

(A) Matatila Dam constructed during 1952-1964 on Betwa River in Lalitpur District, Uttar Pradesh, Length 6.30 km, Height 33.53 Meters, Area 20,720 km^2, Storage 1132.68 m.c.m

(B) Jamni Dam constructed during 1962-1973 on Jamni River in Lalitpur District, Uttar Pradesh, Length 6.40 km, Height 19.18 Meters, Area 414 km^2, Storage 92.89 m.c.m

(C) Rohini Dam constructed during 1976-1984 on Rohini River in Lalitpur District, Uttar Pradesh, Length 1.65km, Height 15.50 Meters, Area 44 km^2, Storage 12.12 m.c.m

(D) Shahzad Dam constructed during 1973-1992 on Shahzad River in Lalitpur District, Uttar Pradesh, Length 4.16 km, Height 18.00 Meters, Area 514 km^2, Storage 130.00 m.c.m

(E) Govind Sagar Dam constructed during 1947-1953 on Shahzad River in Lalitpur District, Uttar Pradesh, Length 3.60 km, Height 18.29 Meters, Area 368 km^2, Storage 96.8 m.c.m

(F) Sajnam Dam constructed during 1977-1990 on Sajnam River in Lalitpur District, Uttar Pradesh, Length 5.15 km, Height 18.78 Meters, Area 290 km^2, Storage 83.50 m.c.m

(G) Sukma-Dukma Dam a below water construction on Betwa River near Jhansi District, Uttar Pradesh, Length 2.15 km, Height 20.78 Meters

Chapter III Chemical Leakages or Spillage

3.1 Introduction

The growth of chemical industries has led to an increase in the risk of occurrence of incidents associated with hazardous chemicals (HAZCHEM). A chemical industry that incorporates the best principles of safety can largely prevent such incidents. Common causes for chemical accidents are deficiencies in safety management systems and human errors, or they may occur as a consequence of natural calamities or sabotage activities.

Chemical accidents result in fire, explosion and/or toxic release. The nature of chemical agents and their concentration during exposure ultimately decides the toxicity and damaging effects on living organisms in the form of symptoms and signs like irreversible pain, suffering, and death. Meteorological conditions such as wind speed, wind direction, height of inversion layer, stability class, etc., also play an important role by affecting the dispersion pattern of toxic gas clouds. In addition to loss of life, the major consequences of chemical disasters include impact on livestock, flora/fauna, the environment (air, soil, and water) and losses to industry.

The Bhopal Gas tragedy of 1984—the worst chemical disaster in history, where over 2000 people died due to the accidental release of the toxic gas Methyl Isocyanate was the watershed event which led to lot of changes in the then existing legal and statutory framework. Such accidents are significant in terms of injuries, pain, suffering, loss of lives, damage to property and environment. A small accident occurring at the local level may be a prior warning signal for an impending disaster. Chemical disasters, though low in frequency, have the potential to cause significant immediate or long-term damage. To think of it more, the tragedy could very well have been prevented in the first place and even if it did occur, with better preparedness the damage would have been significantly lower.

Chemical accidents may originate in:

i) Manufacturing and formulation installations including during commissioning and process operations; maintenance and disposal.
ii) Material handling and storage in manufacturing facilities, and isolated storages; warehouses and godowns including tank farms in ports and docks and fuel depots.
iii) Transportation (road, rail, air, water, and pipelines).

Chemical accidents may be categorised as a major accident or a disaster depending upon the number of casualties, injuries, damage to the property or environment. A major accident is defined in the Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules, 1989, issued under the Environment (Protection) Act, 1986, whereas 'disaster' is defined in the DM Act, 2005.

MSIHC Rules, 1989

Rule 5 - Notification of Major Accidents

(1) Where a major accident occurs on a site or in a pipe line, the occupier shall within 48 hours notify the concerned authority as identified in Schedule 5 of that accident , and furnish thereafter to the concerned authority a report relating to the accidents in installments, if necessary, in Schedule 6.

(2) The concerned authority shall on receipt of the report in accordance with sub-rule 1 of this rule, shall undertake a full analysis of the major accident and sent the requisite information within 90 days to the Ministry of Environment and Forests through appropriate channel.

(3) An occupier shall notify to the concerned Authority, steps taken to avoid any repetition of such occurrence on a site.

(4) The concerned Authority shall compile information regarding major accidents and make available a copy of the same to the Ministry of Environment & Forests through appropriate channel.

(5)The concerned Authority shall in writing inform the occupier, of any lacunae which in its opinion needs to be rectified to avoid major accidents.

3.2 Present Status and Context

The regulatory framework on chemical safety can be traced to the Factories Act, 1948 and chemical class-specific regulations like the Explosives Act, 1884; the Insecticide Act, 1968; and The Petroleum Act, 1934. Later, an umbrella Act, the Environment (Protection) Act, 1986, was enacted, which also deals with chemical Management and safety. A number of regulations covering safety in transportation, insurance, liability and compensations were enacted thereafter. The Government of India has further reinforced the legal framework on chemical safety and management of chemical accidents by enacting new rules and by way of amendments to them.

APELL is a tool developed by the United Nations Environment Programme, Division of Technology, Industry and Economics office (UNEP DTIE) in 1988 to minimise the occurrence of harmful effects of technological accidents and emergencies. The APELL project was timely and eminently suited to address the issues identified under the Major Accident Hazard Control (MAHC) project as the groundwork carried out provided a foundation for building the structure of community awareness and emergency preparedness. The UNEP APELL Programme is being strengthened as a key vehicle for UNEP work, at the local level in preventing and preparing for natural and other disasters, such as industrial disasters.

In February 2006, over 190 countries including India acceded to the SAICM—a voluntary agreement to ensure the safe use of chemicals by 2020. India has decided to contribute to the newly created QuickStart Programme (QSP) trust fund. This initiative of UNEP consists of an overarching policy strategy and a global plan of action.

Chapter IV Vulnerability Assessment and Risk Analysis

4.1 Introduction

Disasters impede socio-economic development. Disasters affect population where there is physical, infrastructural, environmental or socio-economic vulnerability. The higher the individual and other vulnerabilities, the higher are the risks. A comprehensive understanding of the pattern of various hazards is crucial in order to have a focus and prioritise the scarce resources for ensuring sustainable development in areas and populations at risk. Similarly, identification of various disasters and the assessment of the consequent effects of such disasters are essential to adopt preventive, preparedness, response and recovery measures to minimise losses during disasters and ensure quick recovery. For a highly populous state like UP, it is essential to ensure that vulnerability and risk reduction aspects are taken into account for all developmental plans and programmes.

Effective risk management requires information about the magnitude of the risk faced (risk assessment), and on how much importance society places on the reduction of that risk (risk evaluation). Qualification of the level of risk is an essential aspect of both preparedness planning and mitigation.

There are three essential components to the quantification or estimation of risk:

- Hazard Occurrence Probability: the probability of occurrence of a specified natural hazard at a specified severity level in a specified future time period
- Vulnerability: the degree of loss to each element should a hazard of given severity occurs
- Elements at risk: an inventory of those people or things which are exposed to the hazard

Population	Numbers

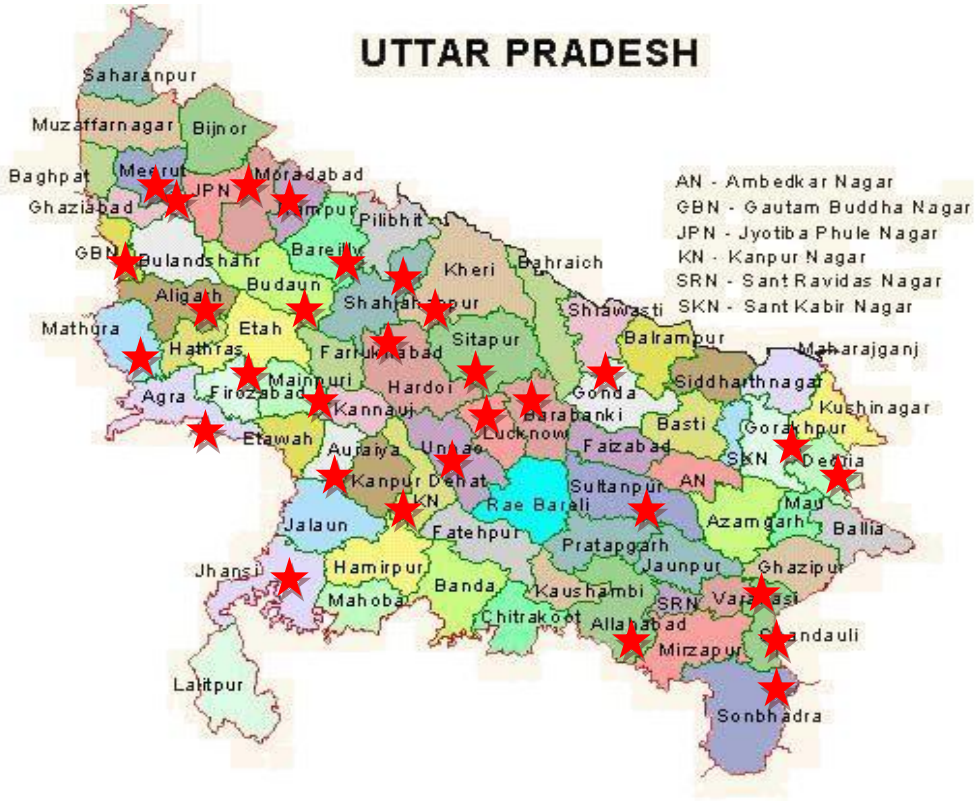
Human	166.2 millions as per Census 2001
Major Cattle Population in Millions as per Cattle Census 2003	
Bulls	10.18
Cows	10.86
Buffalo	17.75
Goat	12.94
Pig	2.28
Sheep	1.4

For measuring these parameters, historical records can be an invaluable source of information. Many aspects of vulnerability cannot be described in monetary terms, such as personal loss of family, home, income and related human suffering and psychosocial problems, but these should not be overlooked.

4.2 Socio-economic Vulnerability

The vulnerability of an area is determined by the capacity of its social, physical, environmental and economic structures to withstand and respond to hazards. An analysis of the vulnerability in a given geographic location, an understanding of the socio-economic factors and the capability of the community to cope with disasters, will give an understanding to the development and disaster managers to plan for risk reduction against future hazards.

4.3 Hazard Vulnerability in UP



Location Map of Vulnerable Districts in Uttar Pradesh

It is significant to note that Uttar Pradesh a significant number of industrial pockets like Kanpur, Ghaziabad etc and specific places where refinery, fertiliser, and other categories of chemical plants are located. Although UP has not seen any major industrial disaster so far, the 'culture of preparedness' will go a long way in preventing any disaster of such nature. The following table shows the location of industries across various parts of UP.

CHEMICAL WISE LOAD ON VARIOUS DISTRICTS OF UP

S.No.	Name of the Chemical	Nature of the Chemical	Name of District	No. of factories
01	**AMMONIA**	Vapors highly toxic Liquid highly corrosive	Kanpur Allahabad Bareilly Badaun Sultanpur Shajahanpur	01 01 01 01 01 01
02	LIQUIFIED PETROLEUM GAS (LPG)	Highly Flammable	Kanpur Allahabad Bareilly	04 03 01

			Sultanpur Shajahanpur Jhansi Auraiya Farrukhabad Lucknow Unnao Lakhimpur-Kheri Gorakhpur Varanasi Mathura Hatras Firozabad Aligarh Bullandsahar Jyotiba Phule Nagar Rampur Ghaziabad Gautambudh Nagar Gonda	02 01 01 01 01 03 01 01 01 02 01 01 01 03 01 01 01 07 06 01
03	PROPANE	Highly Flammable	Kanpur Auraiya Gautambudh Nagar	01 01 02
04	NAPHTHA	Highly Flammable	Kanpur Auraiya Allahabad Badaun Mathura	02 01 01 01 02
05	CHLORINE	Highly toxic & Irritating	Allahabad Bareilly Badaun Shajahanpur Auraiya Lucknow Rai-bareily Sultanpur Sonbhadra Mathura Merrut Bullandsahar Sharanpur Muzzaffar Nagar Rampur Bijnore Ghaziabad Gautambudh Nagar	01 01 01 01 02 01 01 01 01 01 03 16 01 02 01 01 01 01

06	MOTOR SPRIT	Highly Flammable	Kanpur Jhansi Lucknow Deorea Chandauli Mathura Meerut	01 01 01 01 02 03 01
07	HIGH SPEED DEISEL	Highly Flammable	Kanpur Jhansi Lucknow Deorea Chandauli Mathura Meerut	01 01 01 01 01 03 01
08	LIGHT DEISEL OIL	Highly Flammable	Kanpur Lucknow Mathura	01 01 03
09	KEROSENE	Highly Flammable	Kanpur Jhansi Lucknow Deorea Chandauli Mathura Meerut	01 01 01 01 01 02 01
10	HYDROGEN	Highly Flammable & Explosive	Kanpur Mathura	01 01
11	AMMONIUM NITRATE	Explosive	Lalitpur Jhansi	01 01
12	ACETALDEH-YDE	Highly Explosive & Flammable	Barabanki Jyotibaphule Nagar	01 01
13	BENZENE	Highly Flammable & Highly Toxic	Sonbhadra	01 01
11	AMMONIUM NITRATE	Explosive	Lalitpur Jhansi	01 01
12	ACETALDEHYDE	Highly Explosive & Flammable	Barabanki Jyotibaphule Nagar	01 01
13	BENZENE	Highly Flammable & Highly Toxic	Sonbhadra	01 01
14	TOLUENE	Highly Flammable & Highly Toxic	Mathura	01 01
15	XYLENE	Highly Flammable & Highly Toxic	Mathura	01 01
16	METHYL PARATHION	Highly Toxic	Agra	02
17	ETHYL ALCOHAL	Highly Flammable	Jyotibaphule Nagar	01
18	ACRYLONI-TRILE	Highly Flammable	Moradabad	01
19	METHYL ACRYLATE	Highly Flammable	Moradabad	01
20	Benzeldehyde	Highly Flammable	Jyotibaphule Nagar	01
21	Group of Highly	Highly Flammable	Jyotibaphule Nagar	01

	Flammable and Toxic Chemicals	and Toxic Chemicals		

Chapter V Preventive Measures and Preparedness

5.1 Approach for Prevention and Preparedness

Three major functional areas were recognised as necessary components of a comprehensive approach: prevention, response and recovery. The tragedy and the lessons learnt from the past have changed the mindset and the focus of disaster management has shifted from "Rescue, Relief and Restoration" to "Planning, Preparedness and Prevention".

Within these areas, the key responsibilities of agencies include:

- Planning: the analysis of requirements and the development of strategies for resource utilisation.
- Preparedness: the establishment of structures, development of systems and testing and evaluation by organisations of their capacity to perform and their allotted roles.
- Co-ordination: the bringing together of organisations and resources to ensure effective disaster management.

The prevention, preparedness, response, rescue and rehabilitation aspects of hazards in industrial installations and the storages of chemicals have been taken into account while identifying the gaps in this area. Based on the Factories Act, 1948 (amended in 1987), the states have notified their own Factories Rules, which need to be dovetailed with the subjects of accident prevention, preparedness and mitigation.

The regulatory framework is based around providing for the publication of detailed guidelines and institutional mechanisms for better compliance. Transparency in regulations is critical to implementation and therefore, shall be promoted as is done

under various ISO accreditations. This would provide a very important tool and pathway to industries in covering gaps in a time-bound programmes depending upon available technologies and resources.

Procedures for the conduct of safety audits need to be strengthened. Standardized national criteria for risk assessment/management of installations are not currently available. In their absence, a standard method is not available to study and monitor the consequences and draw conclusions. Mechanisms shall be developed on risk assessment/management prescribing a standard criteria and methodology. Such mechanisms will be updated regularly.

5.2 Measures for Prevention and Preparedness for Chemical Leakage or Spillage

Preparedness against chemical leakage or spillage would be structured around:

- Inspection System in Factory Inspectorates
- Safety Audit
- Commissioning and Decommissioning Plans
- On-Site Emergency Plan (testing every six months is mandatory)
- Off-Site Emergency Plans (A yearly mock drill of district Off-Site emergency plans is essential and mandated)
- Preparation of SOPs for rescue teams and other Quick Response Teams
- Medical Emergency Plans
- Information on Chemicals: The disclosure of information via Material Safety Data Sheets (MSDS) by occupiers to workers on chemical hazards is a statutory requirement.
- Technical Information like Hazard and risk assessment information to first responders and Case studies of major accidents including emergency
- Immediate relief under the Public Liability Insurance Act, 1991 needs to be

revisited. SOPs for all the response functions to be performed by all the functionaries of CDM according to the gravity of the chemical accident need to be developed.

- Management of Transport Accidents: Gaps include air, maritime and rail transportation of HAZCHEM needs up-gradation in terms of loading, unloading, containerization.

5.2.1 Evacuation Plans in case a chemical leakage or spillage occurs

Disasters by their very nature will be different and may require evacuation of communities. It is important to understand the nature of threat and the procedures to be adopted. All agencies involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behaviour. Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies.

Only designated government official may order evacuation on the site in consultation with technical personnel or a local official

- For appropriate security and law & order, evacuation should be undertaken with assistance from community leaders
- All such evacuations should be reported to DM or SP within 6 hours.

All other evacuations, that is, threat after three hours or evacuation beyond 1 km can be ordered only by the DM or a competent authority like Industrial Security Officer.

The following steps should be taken for evacuation:

- Shelter sites should be within one hour's walk or 3 miles (5 km) of dwellings.
- The evacuation routes should be away from the affected area.
- Ensure proper evacuation by seeking community participation
- Families should be encouraged to take along water, food, clothing and emergency supplies to last at least three days

- People should listen to a battery-powered radio and follow local instructions
- In case of inadequate transport or limited time, encourage community for emergency evacuation in the following order:
    - Seriously injured and sick
    - Children, women and handicapped
    - Old
    - Disabled persons[

5.2.2 Warning

A warning system is essential to indicate the onset of a disaster. In case of emergency situations in Industrial units, loss of life and property could be significantly reduced by preparedness measures and appropriate warning systems. The importance of warning systems, therefore, hardly needs any emphasis. The district administration is the prime agency responsible for issuing disaster warnings. Additional technical agencies may be authorised to issue warnings.

Important Elements of Warning

- Communities in disaster prone areas are made aware of the warning systems
- Alternate warning systems must be kept in readiness in case of technical failures (eg, power failure).
- All available warning systems should be used.
- The warnings should, to the extent possible be clear about the severity, the duration and the areas that may be affected.
- Warnings should be conveyed in a simple, direct and non-technical language to incorporate day-to-day usage patterns.
- The do's and don'ts should be clearly communicated to the community to ensure appropriate responses.
- Warning statements should not evoke curiosity or panic behaviour. This should be in a professional language devoid of emotions.

- Spread of rumours should be controlled.
- All relevant agencies and organisations should be alerted.
- Wherever possible, assistance of community leaders and organised groups should be sought in explaining the threat.
- Once a warning is issued, it should be followed-up by subsequent warnings in order to keep the people informed of the latest situations.

5.2.3 Medical Preparedness

Health and Medical Care is one of the most vital elements of any preparedness as well as response plan. It extends to activities including response, quick evacuation of casualties, well-rehearsed hospital DM plans, training of doctors and paramedics, knowledge on treatment for effects of chemicals and clinical modalities for management of their toxicities.

Effective medical preparedness and response for a chemical emergency is a priority area. There is a need to address medical preparedness comprehensively at all levels with specific stress on chemical disaster-related aspects. Medical preparedness is the weakest link in the emergency response system and at hospitals.

It is essential to develop mechanisms for creating awareness about impact of chemical disasters, making available trained medical first responders, decontamination facilities, risk and resource inventory, trauma care, plans for evacuation, mechanisms to maintain uniform casualty profiles, proper chemical casualty treatment kits, mobile teams/hospitals, hospital DM Plans and preparing and responding to public health and environmental effects.

Preparedness shall address integration of medicine and public health with On-Site and Off-Site emergency plans, and crisis management at the hospital. It must include problem solving, based on the past experience of disasters. Employee State Insurance Corporation (ESIC) hospitals will also play an important role in the medical

management of chemical disasters. Adequate infrastructure for trained medical and paramedical staff along with SOPs for chemical emergencies shall be ensured. Existing poison control centres, poison information centre, Environmental Information System (ENVIS) centres and ERCs shall be adequately available in close proximity to the disaster-prone area and obligatory capacities should be built.

The psychological impact of a chemical disaster manifested as psychosocial trauma including psychological reactions, post-traumatic stress disorder and other psychological ailments in displaced disaster victims, needs to be addressed. Counseling by psychologists and psychiatrists for those suffering from mental trauma is an essential element of medical rehabilitation.

Following are the key aspects of medical preparedness:

- Medical First Responders
- Medical Assistant Teams
- Mobile Hospital and Mobile Teams: These hospitals can be attached to earmarked hospitals for their in non-disaster periods.
- Proper coordination between peripheral hospitals, private hospitals, blood bank, general hospitals and health services established at transit camps, relief camps and affected areas.
- Adequate medical supplies including stockpile of antidotes
- Hospital preparedness for mass casualties
- Search and Rescue teams
- Trauma counselling

Hospital Disaster Management Plan

Big Hospitals like Civil Hospital Lucknow, Balrampur Hospital, Lucknow have a Disaster Management Plan in place. This plan can be extended to at least one nodal hospital in each district.

The development of disaster plan will take in to account the planning process:

- Analyse the risk and hazards in the geographic location concerned with the hospital
- Carry out vulnerability analysis of the community exposed to the risk and hazards
- The probable demand and nature of work expected during disasters
- Assess the resources available
- Determine response capabilities
- Determine the aim of the disaster plan based on factors enumerated above
- Determine organization structure for disaster
- Development of organization, allocation of role and responsibilities, authority structure should be made clear
- Training of organization
- Testing of the organization
- Testing of the plan
- Periodic revision of both the plan and the organization

The hospital disaster plan provisions will include the following:

- Efficient system of alert and staff assignment
- Conversion of a usable space into clearly defined areas for triage ,patient observations and immediate care
- Removal of Casualties to more appropriate and definitive medical care facilities
- Special medical services for disaster cases
- Procedure for prompt transfer of patients within the hospital
- Security arrangements
- Establishment of a public information centre
- Evaluation of hospital services and its sources of electricity, gas, water, food and medical supplies
- Method of identifying patients who are immediately dischargeable or transferable

- special disaster medical record and medical tag
- Planning use of OT, X-ray, blood bank, and laboratory.

Hospital Disaster Management Committee

The hospital disaster management committee operates at the decision making level and the action decided upon are executed by the medical staff supported by the institution's logistical and general service units. The composition of the committee should include doctors and nurses as well as administrative staff. The number, specialization and seniority of committee members would be decided according to the need.

The membership of the committee generally includes, the following

- The director of hospital
- In charge of accident and emergency services
- Department heads
- The nursing superintendent
- The hospital administrator
- A staff representative

The functions of the hospital disaster committee are:

- To develop the hospital disaster plan
- To develop department plans in support of the hospital plan
- To allocate duties to the hospital staff
- To establish standards of emergency care
- To conduct and supervise training programmes
- To supervise drills to test the hospital plan
- To renew and revise the disaster plan at regular intervals.

Organization, Roles and Responsibilities

The hospital needs a proper organization for disaster management. Ideally the organization chart in effect during a disaster period should be the hospitals regular one, possibly strengthened and improved. The organization chart should specify the levels of command in supervision and administration, so that duplication of effort may be avoided. The organization should provide a definite line of authority established in each area in advance and there should be no question over who is in charge. The organization should include medical staff, nursing staff, administrative staff and department heads.

The effective implementation of the disaster plan would necessarily require clear assignment of the role and responsibilities in all the functional areas essential to support the plans clearly laid down role and responsibilities of the following would be essential:

Disaster coordinator: Organizing, communicating, assigning duties, deploying staff and taking key decisions

Administrator: the responsibilities are extensive and most of the authority is executed through department heads

Department heads: development of departmental plans to meet the requirements of the overall plan of the hospital.

Nursing superintendent: Deployment of nursing staff and augmenting key areas of hospital.

Medical staff: specific authority and responsibility during initial response and reinforcement of important areas.

Nursing staff: role and responsibility to support critical areas.

The following important departments play a crucial role in disaster management and therefore the role and responsibilities be clearly delineated.

- Accident and emergency department
- Operating department

- Laboratory
- Radiology and imaging
- Critical care units

The logistic support becomes crucial during the implementation of a disaster plan. The role and responsibilities of the following department needs to be clearly laid down to support the disaster plan:

- Planning
- Linen and laundry
- Catering department
- House keeping
- Medical records
- Porter staff
- Engineering department
- Medico social worker
- Transport
- Security and traffic control
- Communication
- Media control
- Morgue

ORGANISING DISASTER FACILITIES

To meet the medical care demands of disaster victims, special functional areas should be set up with in the hospital, which includes:

Triage or sorting area: located with accident and emergency service where triage team consisting of emergency physician, surgeon, nursing personnel handle the incoming causalities. Here rapid assessment of the injury and extent of severity of the casualty's injuries are carried out by doctors/nurse and assigns that casualty to an appropriate

Primary treatment areas: immediately after triage casualties are sent to appropriate treatment areas. These areas would include immediate, urgent, non urgent care areas. Those in need of immediate life saving measures are sent to resuscitation room where facilities are available for establishing airway, controlling hemorrhage supporting fractures and treating shock. Casualties should remain in the resuscitation room for the shortest possible time, further investigations and treatment being carried out in another treatment area. Urgent cases needing diagnosis, investigation and initial treatment of their injuries receive attention in an urgent treatment area .non urgent causalities may be investigated, diagnosed and treated in non urgent treatment area. Special treatment areas may be needed for the management of burns, fractures, chemical or nuclear disaster victims

Secondary treatment areas: it includes all the wounds, critical care units and operating and diagnostic dept etc. The causalities requiring important care will be taken from primary treatment area to the intensive care unit, operating theatres or special receiving wards which have been evacuated to house the disaster victims.

In- patient evacuation holding area: the setting up of one or more wards to receive all the admitted victims of a disaster is essential if medical and nursing staff are not to be scattered around hospital. clearing of these designated wards should be carried out at an early stage in preparing the hospital to cope with a disaster, and personnel and equipment can be diverted to the receiving ward. Additional beds are made available in other wards by arranging for suitable patients to be discharged home or transferred to other hospitals

Additional facilities: the additional facilities would be required to be created like:

- control and information centre
- volunteer reception

- relatives waiting area
- media room

The secondary treatment areas would continue to function even when the fresh cases of casualties stop arriving. Hence the staff need of the secondary care area has to be planned. It may require redeployment of staff from other areas. The relieving of the surgical team, intensivist etc. would require attention as no surgical team can carry on without relief for more than 12 hrs. Very often the largest number of casualties fall into non-urgent category hence appropriate staff will be required to care for them.

Disaster Drill may be conducted on regular basis to check the preparedness of emergency plans

The following Table shows the list of some toxic chemicals, its health effects and treatment:

SOME TOXIC CHEMICALS AND THEIR HEALTH EFFECTS			
Name of the Chemical with State :	**Route of Entry**	**Health Effect Symptoms and effect)**	**Antidotes and Primary medical treatment**
Aniline and Amino compounds and dyes intermediates (Crystals, powder, headache, vertigo, liquid)	Skin absorption, respiratory organs, digestive tract.	Pallor followed by cyanosis of lips finger tips, weakness, mental, confusion, blue and Vitamin-C weak pulse, brownish discoloration of blood, Urine & bladder disorder, tamers.	Remove from exposure, remove contaminated clothing's, flushing with water, I.V. inj-methylene And I.V. inj-Glucose, give oxygen.
Amyl Acetate (liquid) and n-Butyl Acetate	Respiratory tract	Irritation of eyes, nose throat, headache, drowsiness	Remove from exposure, give oxygen and supportive treatment.
Benzene (liquid) Naphtha petroleum (liquid)	Skin absorption, vapour through respiration	Headache, bone marrow, injury to blood vessels, nervous system	No further exposure, blood transfusion, and expert opinion of transfusion specialist.
Chloro benzene and nitro benzole,	Vapour-respiration	Loss of consciousness with cyanosis of face and lips,	Remove from further exposure, treatment as

trichloromethane (liquid)	skin absorption.	headache vertigo, vomiting, anemia, visual, disturbances.	per aniline.
Ethylene dichloride (liquid)	Respiratory tract	Irritation to eyes, unconsciousness, death if prolonged exposure	Remove from further exposure, give oxygen, Eye wash; antibiotics.
Hydrofluoric acid, fluorine and its compounds	Gas through respiratory tract, direct action on skin, mucous membranes	Irritation of skin and respiratory system, conjunctivitis, degeneration of lever, destriclien of nails	Immediately remove from exposure, oxygen, Bronchodilators, cortisone, antibiotics, Eye wash antibiotics, observe for 3 to 4 days.
Ethylene oxide (GAS)	Vapour through respiratory tract	Headache vomiting, dyspenea, diarrhea irritation to nose and eyes, vertigo nausea. Lymphocytes, dullness disturbances of respiration and heart pulmonary edema.	Remove from exposure, give oxygen bronchoclilaters, artisan, antibiotics
Hydro cyanic Acid (liquid)	Fumes through respiration	Effect grit prostration, feeble, pulse and voice and cold swats nose itching with water discharge. Large exposure instantly fatal.	Remove clothing, give artificial respiration, Amyl Nitrite to be inhaled, give oxygen, inj. Of sodium nitrite and supportive treatment.
Lead and Lead compound (solid)	Through respiration and digestive tract.	Weakness, pallor, metallic test in mouth, fetid breath lack of appetite lead line deposit on gum. Urine contains lead, gastritis, constipation, teeth loosening, pain in joints paralysis, stippled red blood.	Remove from exposure, give chelating agents, Haematinics, calcium injection and supporting medical treatment.
Mercury and its compound	Respiration, skin	Chronic inflammation of the gum and mucous membranes of mouth loss of teeth necrosis of the jaw, mouth ulcers, chromic gastritis skin ulcer, metal depression.	Remove from exposure, hospitalization observe for 3 days, inj. BAL.
Methanol (liquid)	Vapour inhalation and skin absorption.	Irritation of eyes, respiratory passages vomiting, dyspnea, paralysis of heart, chills thirst, blindness abdominal, cramps, delirium, coma, death occurs in certain	Wash the effected parts immediately with water, hospitalization

		condition.	
Nitric Acid and nitrous fumes	Respiration and direct skin contact	Irritation and chronic inflammation of air passage, cough, dyspnea, pulmonary edema bronchitis, suffocations, chest pain, digestive disturbances, depression of central nervous system, teeth corrosion, sever burns on skin, sleeplessness, constipation, lips and mouth ulcers	-
Nitro benzene and its other compounds (liquid)	Respiratory system absorption through skin	Cyanotic face and lips, same as aniline, headache vertigo, nausea and vomiting, muscular twitching anemia, visual disturbances, methemoglobin, formation free palsan in urine eruptions.	-
Phenol (carbolic acid) compound (crystals)	Vapour through digestive tract, respiration, direct action on skin absorption	Erosion of skin eczema, gangrene, eyes and respiration irritation, acute poisoning, headache, vertigo, nausea fainting respiratory paralysis.	Flush the affected parts immediately with Warm Water and Ethyl Alcohol, Methyl Alcohol, methylated spirit, remove clothing's dressing with 12% of sodium sulphate solution-stimulants, inj. Cortisone and antibiotics.
Phosphorus and its compound (crystals)	Vapour through respiration solid through digestive system.	Severe tooth ache, digestive disturbance, swelling and ulceration out of gums, teeth loosening and falling out of the teeth destruction of jawbone, necrosis of bone	Wash the effected parts remove from further contamination, hospitalization.
Phosphine (Gas phosphoretted hydrogen)	Through respiration	Oppression in chest, headache, gastro intestinal irritation, pain in the region of diaphragm and feeling of chill. Phosphorous poisoning in prolonged exposure.	Remove from exposure, hospitalization, treatment- symptomatic
Toluene (liquid) and (trichloroethylene)	Through respiration	Acuter poisoning include excitement drunkness, dullness, vomiting.	Remove from further exposure. Treatment-symptomatic

Phosgene (liquid) (carbonyl chloride)	Through respiration	Irritation of eyes, bronchitis, lungs, corrosion, cyanosis, Feeble heart, death in coma.	Immediate removal from exposure Broncholators. Cortisone and antibiotics, immediate hospitalization observe for 48 hours, swimming prohibited.

5.2.4 Preparation of On-Site and Off-Site Emergency Plans

Essential elements of the framework of the On-Site emergency plan shall be kept in mind while designing the DM Plan. The pre-defined framework would be useful for a medium to large-scale industry. The framework may be modified depending upon whether it is a small-scale unit or mega-scale complex. Every On-Site emergency plan will have a section for use in preparation of Off-Site emergency plans. The district emergency authorities have a statutory responsibility for the preparation of the district Off-Site emergency plan based on inputs from the On-Site emergency plans of the industries in the district/industrial pockets. The district collector is required to prepare and update the Off-Site emergency plans for the industrial pockets. However, in practise they are not made by involving all the stakeholders including the community. A process of discussion with all stakeholders represented on these bodies, for consensus to develop an appropriate Off-Site plan for proper execution during an emergency is essential.

The off-site Emergency Plan will consist of three parts :-

- *TECHNICAL PLAN*
- *MANAGEMENT PLAN*
- *CONTINGENCY PLAN*

The results of risk analysis and vulnerable zones should be kept in tabular form, showing the standard distances and population distribution within the each distances. The risk imposed on the district must be shown on a scaled plan of the respective district, as to have clear vision and assessment of exposed area, population and

evacuation routes around the Major Accident Hazard Units.

CONTENT OF OFF-SITE EMERGENCY PLAN AND STRATEGY FOR ITS DOCUMENTATION

S NO.	CONTENTS AS PER SWCHEDULE-12 OF MISHC RULES,1989(AMENDED 2000)	ORDER OF PREPN.	STATUS OF DOCUMENT
01-	The types of accidents and release to be taken into account.	03	TECHNICAL PLAN
02-	Organisations involved including key personnel and responsibilities and liaison arrangements between them.	04	MANAGEMENT PLAN
03-	Information about the site including likely locations of dangerous substances, personnel and emergency control rooms.	01	TECHNICAL PLAN
04-	Technical information such as chemical and physical characteristics and dangers of the substances and plant.	02	TECHNICAL PLAN
05-	Identify the facilities and transport routes.	07	MANAGEMENT PLAN
06-	Contact for further advice e.g. meteorological information, transport, temporary food and accommodation, first aid and hospital services, water and agricultural authorities.	09	MANAGEMENT PLAN
07-	Communication links including telephones, radios and standby methods.	08	MANAGEMENT PLAN
08-	Special equipment including the fire fighting, materials damage, control and repair items	10	CONTINGENCY PLAN
09-	Details of emergency response procedures	05	MANAGEMENT PLAN
10-	Notify the public	11	MANAGEMENT PLAN
11-	Evacuation Arrangements.	06	CONTINGENCY PLAN
12-	Arrangements for dealing with the press and	12	MANAGEMENT PLAN

	other media interests.		
13-	Longer term clean-up	13	CONTINGENCY PLAN

Responsibility for the preparation of off site emergency plans

The MSIHC rules, 1989 via its schedule-5 assigns responsibility of preparation of the off –site emergency plan of a district to the district collector of the district or the district emergency authority (DEA), if such is explicitly designated by the state government. The Chief Inspector of Factories (CIF) appointed under the factories act, 1948 is required to assist the district collector in the preparation of the offsite emergency plan. The other authorities whose assistance shall be sought by the district collector wherever applicable in the preparation of off-site emergency plan are the Chief Inspector of dock safety appointed under the dock workers(safety health and welfare) act 1986,Chief Inspector of Mines appointed under the mines act,1952, Atomic Energy Regulatory Board appointed under Atomic Energy Act, 1972, the Chief Controller of Explosives appointed under Atomic Energy Act,1972 the Chief Controller of Explosives appointed under the Indian Explosives Act and Rule,1983.

Future course of off-site emergency plans post Disaster Management Act, 2005

The offsite emergency plans envisaged as per schedules 12s of the MSIHC rules provide for good control and management over chemical disaster in the country. The off-site emergency management plan is vital tool to keep a check on occurrence of a chemical disaster, to enable effective planning fore resources and act as handy reference in case of an emergency.

The Disaster Management act 2005(DMA) now provides for preparation of disaster management plan for every district. An off–site emergency falls within the purview of 'disaster' as defined in the DMA. The distinguishing feature between off-site emergency such as toxic gas release and a natural disaster such as earthquake is that the former can averted by implementation of proper controls while the latter a matter of

providence. The off site emergency plan needs to focus on the industrial hazards with due consideration to the technical aspects of response and mitigation while it shall adopt itself to the general character of the district disaster management plan under the DMA.

Essential authorities and agencies:

Primary responders

- The district collector
- The Police
- The fire department
- The technical experts group
- The medical department including state medical officers, medical and hospital associations, doctors associations among others
- The transport department including state transport authority ,road transport services ,railways among others
- The inspectorate of factories
- The pollution control board

Secondary Responders

- The electricity board
- The civil defence
- NGO bodies
- Animal husbandry department
- Other members of DCG.

Rules and regulations pertaining to off site emergency plan

Important regulations for management of chemical (and other) disasters:

The MSIHC, Rules,1989, the CA(EPPR) Rules,1996(both made under the Environmental Protection Act, 1986) and the Disaster Management Act,2005 are the important regulations providing for the management of chemical disasters in the country.

Salient features of important regulations

The MSIHC rules, 1989 provide for identification of hazards and lay down provisions for their control. It defines the MAH unit via its schedule 2 and 3 based on quantities of hazards chemicals stored or handled at an industrial unit. It provides for preparation of onsite and off site emergency plans. It essentially establishes three–tier control on industrial units of hazardous nature.

5.2.5 Key Importance of Proper Community Awareness for Preventing Chemical leakage/ Spillage

Due to the statutory provisions, the industry is obliged to provide appropriate information to the community living in the vicinity of a hazardous plant/installation. It is important to realise that a well-informed community is an asset to both the industry and local authorities as it would offer willing cooperation not only during an emergency but also in other development programmes. Communication with the public is a joint responsibility of government, industry and the community. Rapport between them creates tremendous goodwill for industry. Communication channels need to be a two-way initiative. Further, members of the community should participate in the development and implementation of such communication programmes.

Suggested Strategy

To be effective, community awareness activities should be undertaken as per the strategy developed after due deliberations among the stakeholders. The essential features of such a strategy are:

Credibility — It is absolutely necessary to ensure that the information provided to the community and the activities undertaken for its propagation are absolutely credible.

Need-based — The information provided should be need-based relating to HAZCHEM handled and the type of accidents/emergencies encountered in the industrial area to which the community belongs. Too much detail should be avoided.

Regularity - An on-off approach must be avoided. A regular system should be in place so that the community can seek information on its own as and when required. Further, a visible difference can only be ensured if awareness/education activities are undertaken regularly.

Effective Communication

The information released should be simple, supported by pictorial representations as far as possible and issued in the local languages, Hindi and English. Further, for effective communication, it is not enough to issue only written information through leaflets. It should be supplemented by regular awareness sessions. A required number of community educators can be trained in making the communication effort more effective. Besides general information, specific information on chemicals used in the industrial area should be given to individuals who ask for such information.

Target Groups

Groups in Industrial Areas such as college/school teachers, students, office bearers of Mahila Mandals and residential cooperative societies, hospital representatives, etc., can play an important role in developing community awareness and should be selected. The number of people to be exposed to such training and awareness programmes should be estimated carefully.

Supplementary Activities

To supplement the above activities, community awareness information could be displayed in industrial areas at the places frequently visited by the public, such as the municipal ward office, rationing office, hospitals/ dispensaries, school/colleges, bus stops, railway stations, etc. Various other innovative/creative means such as shopping bags, inserts in the telephone directory etc.

5.2.6 Preparedness through Steps for Industrial (Chemical) Installations

and Storages

This is a prime area of concern is the strengthening of the industrial systems for the prevention and management of chemical accidents. Such provisions shall be established to continuously re-engineer (improve and upgrade) the system. As a part of government policy, it is envisaged that the present regulatory inspection and monitoring framework will evolve measures to encourage self-regulation, public consultation and Public Private Partnership. These activities would develop credibility at all levels.

Some areas of concern:

1. Good Engineering for Safety: This is applicable for the prevention and minimisation of all disasters—both man-made and natural. In the context of industrial disasters, good engineering is the first step in achieving safety. The setting up of new industries by an occupier shall be done in consultation with the state inspectorate, considering all parameters including geographical, seismological, demographic and environmental factors.
2. Accident Reporting, Investigation and Analysis
3. Safety Promotional Activities

Storages

The storages of HAZMAT in an installation or isolated storages are major sources of chemical disasters. The existing legal regulatory requirement provided through The Petroleum Act, 1934 and The Explosives Act, 1884, the Static and Mobile Pressure Vessels (Unfired) Rules 1981, the Gas Cylinder Rules, 2004, the MSIHC Rules, 1989, and the Factories Act, 1948, and various rules framed by the states give comprehensive guidelines to all installations and storages for the purpose of maintenance and operation of storage, tank farms and vessels. However, there are some glaring gaps with regard to safety, containment and neutralisation of toxic spill and release at the installation and storage site. Necessary provisions need to be enacted for fail-safe safety measures.

5.2.7 Preparedness for Preventing Transport Accidents

HAZCHEMs are transported across international borders. Hence, there is a need to comprehensively address the safe transportation of hazardous substances whether they are transported via air, ship, railways, roads or pipelines etc.

Air Transportation

Air transport of dangerous goods is required to conform to the International Air Transport Association (IATA) Dangerous Goods Regulations which govern the packaging and labeling of HAZCHEM.

Maritime Transportation

Maritime transportation of dangerous goods follow The Merchant Shipping (Carriage of Cargo) Rules, 1995, under The Merchant Shipping Act,1958, and the conventions of the International Maritime Organization (IMO); Maritime Pollution (MARPOL) Conference; and Safety Of Life At Sea (SOLAS) Convention. There is also a UN committee of experts, which is part of the international efforts to standardise handling and carriage of dangerous goods. An International organisation has provided the definition of containers and type of containers under which tanks are also defined for bulk liquid and compressed gases transport.

Rail Transportation

Railways have their own safety manual for the transportation of hazardous goods containing the necessary information as well as resource contacts en route, such as the Red Tariff No. 20 prepared by the Indian Railways Conference Associations. The same needs to be strengthened keeping all requirements for management of transport accidents in view. There will be increased awareness of railway personnel dealing with transportation of HAZCHEMs. Rail transport of dangerous goods, especially petroleum products, also follow the international code of labeling in transportation. However, toxic and hazardous gases/ liquid are not generally

permitted in bulk quantities in transportation as practised in developed countries.

Road Transportation

Road transport carries the bulk of dangerous goods in India while sea transport handles the import and export of dangerous goods. Presently, road transportation of dangerous goods is a very weak area under prevention and management of chemical disasters and, therefore, needs to be adequately addressed by the Ministry of Shipping Road Transport & Highways, with the help of the Ministry of Environment and Forests in fine-tuning the present legislative framework by introducing fresh rules, guidelines and facilities for the prevention and management of transportation emergencies through a focused approach of all the responders including the community, in the proximity of highways.

Recommendations for Major Accident Hazard (MAH) Units

MAH units are not only the recipients but also the consignors of HAZCHEM. It is in their business interest that the goods dispatched, reach the destination safely, in time and without any problem en route. Their role is by far the most important in terms of improving the status of implementing various legal requirements.

Recommendations for Transporters

Need to take a proactive role in keeping their vehicles fit, providing necessary fire extinguishers, PPE, antidotes, emergency kits, spark arrester and training to drivers for safe transportation of hazardous goods.

Recommendations for Drivers

Trained and experienced personnel of MAH units are not normally available at accident site en route to transport. The response of driver, cleaner, public and response teams are therefore, of very high significance. Drivers on the other hand, are the weakest link in the entire process of HAZCHEM transportation due to the lack of proper training, low level of education, lack of awareness of the applicable legal

requirements and a host of other factors such as rash driving, drinking habits, tendency for pilferage to make a quick buck, etc.

Recommendations for Authorities

The primary concern regarding non-compliance by the consignors, transporters and drivers is the lack of enforcement of the applicable legal requirements and also lack of awareness amongst the stakeholder.

The Ministry of Shipping Road Transport & Highways has introduced ambulances en route on some of the major highways to operate point-to-point transfer of casualties for first-aid and treatment. This facility requires further strengthening and extension on all the highways across the country under a time-bound programme with a maximum target of seven years. The implementation of the Rules 131-133 of CMVR, 1989, providing details of responsibility of consignors, transporters and drivers of the goods carriage transporting HAZCHEM shall be strengthened. Further, the states can also put additional restrictions in the permit condition while granting permits to the transporters.

Highway Disaster Management Plan

As transportation accidents can occur away from the city limits or from the MAH units where response facilities are available, the results of consequence analysis clearly indicate the need for preparation of highway DM plans.

Transportation by Pipelines

Pipelines are assuming importance as a means of transport of hazardous substances. Crude oil, its derivatives and natural gas are among the main substances transported by pipelines. The advantages of pipeline transport are that they can move large volumes of substances quickly, over long distances at relatively low cost, high reliability and have few transport-associated environmental impact (i.e., exhaust, noise or congestion). However, like fixed installations handling hazardous substances,

they also pose a threat to human health and safety and to the soil, water and environment.

5.3 Resource Inventory

Item Name	Qty	Item Name	Qty
Communication		**Rescue**	
GPS Handsets	27	Control Van	6
Mobile Phone GSM	19982	Hydraulic Platform	4
Mobile Phone CDMA	776	DCP Tender	5
INMARSAT	1	Hazmat Van	1
Mini-M3	10	Extension Ladder	339
V-SAT	13	Clothing - Chemical protective (A, B, C)	66
Video Phone Set	2	Suit - NBC	2
VHF Sets Static	2669	Basket Stretcher	83
VHF Sets Mobile	1724	Pneumatic Rope Launcher	6
UHF Sets Static	103	Defibrillator	26
UHF Sets Mobile	24	Mechanical ventilators	78
Walkie Talkie Sets	2858	Fire Tender	225
HF Sets Static	127	Foam Tender	34
Transport		Rescue Tender	25
Bus	3988		
Tractor	242732	**Drinking Water**	
Trailer	4788	Water Tanker - Medium capacity	2065
Heavy Truck	6357	Water Tanker - Large capacity	133
4 wheel drive vehicle	38104-	Water filter	4240
Matador	613	Water tank	131888
Truck	13765	Reservoirs treatment tank	29
RTV	4068		
Mini Bus	962		
Light Ambulance Van	432		
Medium Ambulance Van	226		
Equipment Toeing Tender	29		
Mobilization Truck	74		

Health Infrastructure of Uttar Pradesh

Particulars	Required	In position	shortfall
Sub-centre	26344	20521	5823
Primary Health Centre	4390	3660	730
Community Health Centre	1097	386	711
Multipurpose worker (Female)/ANM at Sub Centres & PHCs	24181	21900	2281
Health Worker (Male) MPW(M) at Sub Centres	20521	5732	14789
Health Assistant (Female)/LHV at PHCs	3660	2128	1532
Health Assistant (Male) at PHCs	3660	4061	-
Doctor at PHCs	3660	NA	NA
Obstetricians & Gynaecologists at CHCs	386	123	263
Physicians at CHCs	386	123	263
Paediatricians at CHCs	386	13	373
Total specialists at CHCs	1544	413	1131
Radiographers	386	NA	NA
Pharmacist	4046	NA	NA
Laboratory Technicians	4046	NA	NA
Nurse/Midwife	6362	NA	NA

The other Health Institution in the State are detailed as under:

Health Institution	Number
Medical College	16
District Hospitals	74
Referral Hospitals	
City Family Welfare Centre	
Rural Dispensaries	
Ayurvedic Hospitals	1768
Ayurvedic Dispensaries	340
Unani Hospitals	204
Unani Dispensaries	49
Homeopathic Hospitals	1
Homeopathic Dispensary	1482

(Source: RHS Bulletin, March 2007, M/O Health & F.W., GOI)

There are specialized medical institutions like Sanjay Gandhi Post Graduate Institute of Medical Sciences situated at Lucknow, which have all the testing facilities including the advanced ones as well, but this is one of its kind and is already under severe

pressure. More such centres spread over Uttar Pradesh should be set up which take lead in case of disasters.

5.4 Roles and Responsibilities for Preparedness and Mitigation

Lay down policies and plans for Chemical Leakages and Spillage management in the State.	**U.P. Disaster Management Authority (UPDMA)**
Provide policy directions and integration of Disaster Management programmes in the state development framework.	U.P. Disaster Management Authority (UPDMA)
Maintain record of the disaster inputs for the CRF planning. Ensure that the agreed percent is allocated for the vulnerability reduction fund. Deployment of calamity relief fund	Calamity Relief Fund Committee (CRFC) Department of Revenue
Capacity Building of Medical and Para-medical staff	Department of Medical Health and Family Welfare Uttar Pradesh Academy of Administration and Management (UPAAM)
Implementation of State Disaster Management Plan on Chemical Leakages	State Executive Committee for Disaster Management (SEC)
Community Awareness on Chemical Leakages and Spillage	Department of Medical Health and Family Welfare Directorate Industries Department of information
Establishment of Laboratories and Procurement of necessary items	Department of Medical Health and Family Welfare
Maintenance of Stock piles including medicines and antidotes	Department of Medical Health and Family Welfare
Set-up of Vital Installations against Chemical Leakages and Spillage	Department of Science and Technology Department of Home Directorate Industries
Early Warning System, dissemination of education and awareness messages for preparedness actions and coordinated response. Establishment of emergency communication	Department of Information and Communication Department of Medical Department of Industries

systems	
Funds for Training and Capacity Building	Department of Planning Department of Revenue
Training of PRIs on Chemical Leakages and Spillage	Department of Panchayati Raj Institutions

General Action Plan for Preparedness

Actions to be taken by the various agencies during normal times are listed here.

Department of Industries

- Development of disaster management plan for the department
- Ensure that all the industries which are hazardous or using hazardous chemical have the on-site and off-site plans prepared and approved by the experts at Department of Industries.
- Build capacity of the people living around the hazardous industries on how to respond to the event of chemical or gas leaks.
- Carry out regular safety audit of the hazardous chemical industries.

Department of Health & Family Welfare

- Plan and implement mass health awareness programmes.
- Develop Disaster Management Plan for the Department of Health & Family Welfare.
- Develop Disaster Management Plan for each hospital in the State.
- Organise disaster management trainings for staff of the public health department.
- Organise disaster management trainings for hospital staff.
- Ensure that all new health facility structures are designed and constructed disaster-safe.
- Carryout safety audit of all health facilities in the State and identify weak structures.
- Undertake structural retrofitting of weak structures

Department of Animal Husbandry

- Develop Disaster Management Plan for the Department of Animal Husbandry
- Develop Disaster Management Plan for each Veterinary Hospital in the State
- Organise disaster management trainings for staff of the Department of Animal Husbandry.
- Organise disaster management trainings for relevant staff.
- Identify the need and procure necessary equipment for ensuring safety of health facility structures from disasters.

Department of Home

- Develop Disaster Management Plan for the Department of Home.
- Organise disaster management training for the staff.
- Maintain a list of disaster prone areas
- Designate an area, within police station to be used as public information centre

Uttar Pradesh Fire Service

- Develop Disaster Management Plan for the Uttar Pradesh Fire Service.
- Organise disaster management training for the staff.
- Ensure that all new structures under the department are designed and constructed disaster-safe.
- Carryout safety audit of all existing structures under the department in the State and identify weak structures.
- Undertake structural retrofitting of weak structures.
- Identify the need and procure necessary equipment for fire fighting, and rescue.
- Maintain a list of disaster prone areas.

Energy Department

- Develop Disaster Management Plan for the Department.

- Organise disaster management training for the staff.
- Establish at each sub-station a disaster management tool kit comprising cable cutters, pulley blocks, jungle knives, axes, crowbars, ropes, hacksaws and spanners. Tents for crews should also be in storage.
- Designate an area, within the sub-station to be used as public information centre.

Rural Engineering Services (RES) and Public Works Department

- Train officials on disaster safe construction.
- Ensure that all new structures are designed and constructed disaster-safe.
- Carryout safety audit of all health facilities in the State and identify weak structures.
- Undertake structural retrofitting of weak structures.
- Identify or create damage proof rooms and buildings that can be used as evacuation.
- shelter during an emergency.
- Develop Disaster Management Plan for the Department.
- Organise disaster management training for the staff.
- Plan and procure necessary equipment for use in disaster management.

Department of Urban Development

- Develop Disaster Management Plan for the Department.
- Organise disaster management training for the staff.
- Ensure that all new structures under the department are designed and constructed disaster-safe.
- Review layout of cities and towns and make necessary changes to facilitate disaster management.
- In developing new settlements, give adequate considerations to disaster management.
- Organise training to staff for including disaster management in all developmental activities.

- Plan and procure necessary equipment for use in disaster management.
- Designate an area, within the office premises to be used as public information centre.

Jal Nigam

- Develop Disaster Management Plan for the Department.
- Organise disaster management training for the staff.
- Ensure that all the water supply systems are disaster resistant.
- Ensure all overhead tanks and other high rise structures are safe and disaster resistant.
- Procure all necessary equipments to be used in case of disaster

NGOs

- IEC activities on disaster management
- Community mobilization
- Ensure regular meetings of NGO coordination cell
- Disseminate all government aided programmes to the community
- Ensure regular mock drill
- Ensure regular bleaching / use of disinfectants in the drinking water sources
- Organise workshops / seminars / meetings / trainings on community based disaster management
- Long term mitigation strategies

Chapter VI Response

6.1 Response Management Arrangements

The response management task is to optimise the outputs, given the resource constraints. Response management is based on the three key management tasks of command, control and coordination. These roles and responsibilities are defined as follows:

Command depicts the hierarchical managerial order. It elucidates the type and amount of resources that would be handled at different levels in the performance of that organisation's roles and tasks. Command structure will be decided as per the nature of the accident.

Control provides the direction for best possible utilisation of resources and most advantageous deployment of manpower. Control system will be developed on the basis of laid down policy of the Govt.

Coordination involves the bringing together of agencies and elements to ensure effective response to emergencies. It is primarily concerned with the systematic acquisition and application of resources (agencies, personnel and equipment) in accordance with the requirements imposed by emergencies. Co-ordination aims at bringing out synergy in operation.

Support Agency A support agency is defined as a government or non-government agency, which provides essential services, personnel, or material to support or assist a control or another support agency or persons affected by an emergency.

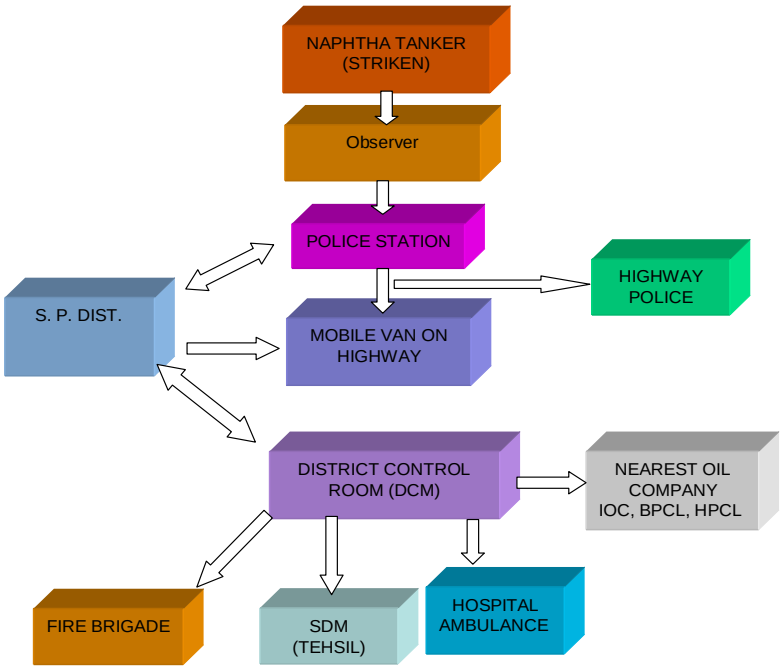
6.2 Short Term Response Plan

Short-term response plan contains the actions to be taken immediately after a disaster. Once information reaches designated officers, it has to be verified soon for authenticity and if found correct, it has to be reported to the Incident Commander who will take the following actions:

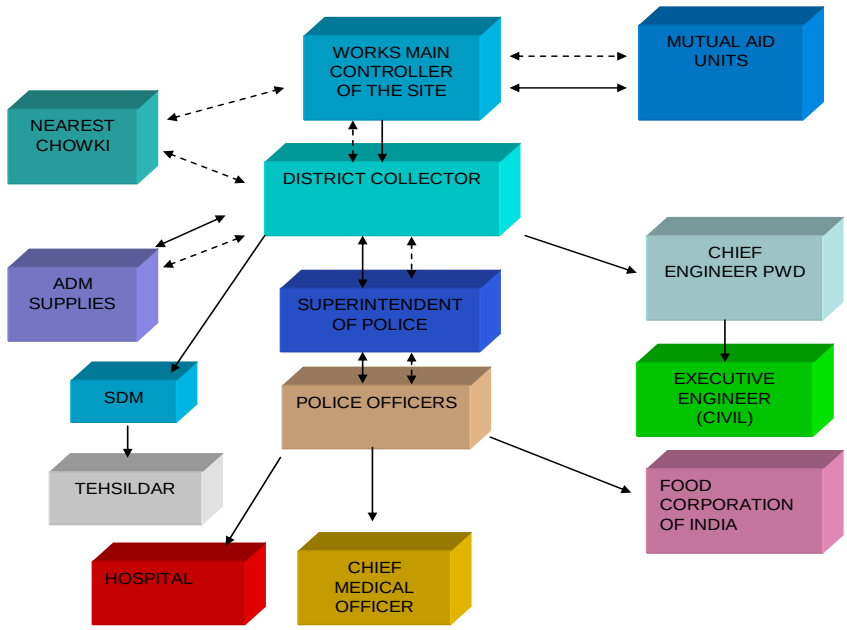
1. Disseminate warning/alert to the potential victims
2. Disseminate information to vertical and horizontal administrators for Disaster management
3. Declare disaster based on severity / vulnerability

The Chart below shows the Response Arrangement in the following cases:

ACCIDENT INFORMATION FLOW (NAPHTHA)



NATURAL EMERGENCY INFORMATION FLOW



The hospital may receive the disaster alert on telephone or through casualty staff when casualties arrive. The details regarding the disaster event, estimated number and type of casualties be ascertained as far as possible, by the person receiving the alert. The designated staff should then take action for alerting and recall of the staff.

Staff alert and recall is first step in implementation of plan. A number of hospitals plans have failed in the past because the alerting procedure has been too defuse. Therefore the alerting procedure needs to be frequently tested as failure at this level will inevitably mean failure of the rest of the plan.

Method of alerting hospital staff will vary from hospital depending on type, size, communication facilities and location of the hospital. Public address system, coded light system, personal paging system and telephone system are usually used. In smaller places messenger may have to be used. Some hospitals use a siren system. There are many methods used to save time in alerting head of the department who in turn inform other members of the department hospital switch board operators can play a key role in alerting the staff once the disaster plan activation is announced.

A hospital's ability to respond rapidly to a disaster depends on the time of the day and the day of the week. During working days hospitals are fully staffed but condition will be very different during the night holidays and weekends. A separate staff alert and recall plan will be required by the hospitals.

Action Plan for First 24 hours

First assessment team will be constituted, which will mainly comprise of senior officers who will be required to make a first/preliminary assessment of damage. Items required by the first assessment team are:

1. Survival kit
2. Formats for First Assessment
3. Media Release

4. Assessment Report, which will contain
    - Geographic estimate of damage area (administrative units and divisions)
    - Estimated total population affected
    - Worst affected areas
    - Areas currently inaccessible
    - Injury and fatality report,
    - Resource needs for response operations
    - Priority needs (search and rescue, clothing, food items with quantity and specifications, cattle feeds and fodder, Sanitation, Health, Education, Crop/agriculture, Infrastructure)

Emergency Medical Response

Emergency Medical Response at the site would depend on the quick and efficient response of teams deputed from the district, reinforced by those from the state. They would triage the patient, provide basic life support if required at the site, and transport patients to nearest identified health facility. If the incident command system is implemented, the relief teams will be integrated with the ICP and function under the overall directions of the incident commander.

The graded response system in vogue is as under:

Green alert: should there be a sudden influx of casualties it mobilizes on duty medical, nursing and other paramedical staff to support the accident and emergency department. it is used at frequency intervals with minimal interference With hospital activity.

Amber alert: prepares the hospital to admit a large number of casualties. it is an extension of green alert, which must be completed first. Receiving wards is cleared, staffed and prepared together with ICU and OT.

Red alert: it prepares hospitals for a major community disaster. an extension of the green and amber alert mainly in time scale involved.

In smaller hospitals only two categories of plan- a minor plan for small case load and major plan which involves stoppage of normal work of the hospital to cope with rush or disaster victims.

Evacuation & Rescue

- In case of chemical leakage or spillage, evacuation would be immediately required. Expertise of fire brigade and defence services may be essential for rescue operations. The rescue team should be equipped with special masks
- In case of missing people, information counters would be set up
- Livestock assessment or damage inspection may be undertaken in order to avoid litigation or delay in relief compensation.

Relief and Restoration

- Provision of basic amenities including food, shelter etc
- Providing medical care and attention
- Police may have to cordon off affected area to enable timely relief operations
- Restoration of communication and transmission line

In a scenario where large scale disaster strikes, the state machinery may become insufficient in handling the disaster. To overcome such obstacle, Govt. of India has developed disaster management portals which facilitate the disaster managers and administrates to track down resource stocks in the country or at least in the neighbouring areas. This website, called **www.idrn.gov.nic.in** is intended to gather data from the government resources. Data are collected from local units and line departments and uploaded by the District Administration after verification and scrutiny.

6.3 Emergency Response Structure

Emergency Response

Declare emergency situation in case of State level disaster and the end of it.	U.P. Disaster Management Authority (UPDMA)
Department of Revenue and Relief	Overall coordination, implementation of the EOC activities and documentation and reporting to the CMG.
Deployment of Team of Experts from State Head Quarters	Department of Medical Health and Family Welfare
Monitoring Emergency Plans	EOC Department of Medical Health and Family Welfare
Maintenance of public infrastructure, safer places for evacuations and isolation of victims	Department of Public Works (PWD)
Maintenance of hygiene, cleanliness and civic facilities	Department of Urban Development
Security, evacuation, emergency assistance, search and rescue, first aid, law and order, communication, shifting of people to hospitals, traffic management and burial work of dead bodies.	Department of Home
Power supply for public facilities such as hospital, police stations, telecommunication building, and meteorological stations.	Department of Power and Energy
Critical communication links with disaster sites	Department of Information and Communications
Arrangement of Ambulances, medical care, staff, medical professionals, equipments, vaccines, medicines and para-medical staff	Department of Health
Financial Arrangements	Department of Revenue
Fodder needs assessments, supply and management during disaster	Department of Animal Husbandry Department of Panchayati Raj District Administration
Ensure that Standard Operating Procedures are adhered to	Department of Health
Management of the disaster at district level including mobilising resource, recovery and implementation of district disaster management plan	The District Disaster Management Authority (DDMA) International Agencies/NGOs
Assistance in response	NGOs and INGOs

6.4 Disaster Management during Post - Disaster Phase

Each disaster could be considered as an opportunity to reinforce resilience of the communities and resistance of the infrastructure, so that adversity of future disasters could be minimised. Bhopal Disaster was the watershed event which not only led to strengthened legal mechanism but led industries to set up mechanisms in place to avert such disasters.

Post-impact Disaster Management will include the following tasks:

- Assessing primary and secondary impacts due to disaster on the actual site and in adjacent locations

- Monitoring immediate assessment of physical, environmental, social, economic, and psychological impacts on various socio- economic groups at affected locations;

- Monitoring emergency response activities at different levels including rescue and search, food relief, medical aid, emergency shelter, emergency needs of vulnerable individuals/ families /social groups;

- Monitoring quality of emergency response activities and quality of relief aid provided;

- Monitoring deployment of emergency agencies and equipment; & Monitoring role of external/non-government agencies involved in emergency management process;

- Documentation of all response activities and compilation of data/information for rehabilitation and recovery activities;

- Management of necessary data and information for post-impact rehabilitation/recovery planning;

- Monitoring all recovery/rehabilitation activities carried out by different departments and agencies; and

- Documentation of response and recovery activities for learning.

General Action Plan for Response

Actions to be taken by the various agencies on receipt of warning about an emergency situation are listed here.

Department of Industries

- Immediately call in the expert to stop the chemical leakage or take necessary actions to avoid disaster.
- Inform the Crisis Management Group about the incident.
- Provide data on storage and other details about the Industries where incident has taken place to the Crisis Management Group.
- Provide equipment and safety gears to the emergency teams visiting the sites.

Department of Home

- Enhance surveillance and intelligence measures to ascertain the cause of mass destruction.
- Instruct district police force to maintain law and order and prevent rumour mongers.
- Establish radio communications (and assist in precautionary evacuation activities) with
    - Emergency Operations Centre
    - Divisional Commissioner / Collector
    - District control room and
    - Departmental offices within the division.
- All district level officials of the department would be asked to report to the Collector/SP
- Appoint one officer as "NODAL OFFICER - Police" at the State Level

- Appoint one officer as "Officer-in-Charge - Police" at the District Level
- Review and update precautionary measures and procedures and, review with staff the precautions that have been taken to protect equipment and the post-disaster procedures to be followed.
- Provide guards, as needed for supply depots such as cooperative food stores and distribution centres.
- Provide convoys for relief materials.
- Identify anti-social elements and take necessary precautionary measures for confidence building.

Department of Health & Family Welfare

- Appoint one person as "NODAL OFFICER – Health Services at the State Level.
- Establish Surveillance and Early Warning Systems at the Epidemic Cell of the State.
- All district level officials of the department would be asked to report to the District Collector.
- Coordinate with the Incident Commander (Chief Secretary) with respect to the following:
    - Recruiting casual staff
    - Issuance of orders to ensure treatment by the private hospitals
    - Procuring locally required emergency tools, equipment and materials
    - Expending funds for emergency needs
- Review and update precautionary measures and procedures, and review with district staff, the precautions that have been taken to protect equipment and the post-disaster procedures to be followed.
- Stock emergency medical equipments, which may be required after a disaster.
- Determine type of injuries illnesses expected and drugs and other medical items required, and accordingly ensure that extra supplies of medical items can be obtained quickly.

- Provide information to all district hospitals about the disasters, likely damages and effects, and information about ways to protest equipment and property.
- Keep mobile medical units in preparedness.
- Check stocks of equipments and drugs, which are likely to be most needed after the disaster. These can be categorized generally as:

o Drugs used in treatment of cuts and fractures, such as tetanus toxoid, analgesics and antibiotics

o Drugs used for the treatment of diarrhoea, water-borne diseases and flu (including oral rehydrating supplies)

o Drugs required to treat burns and fight infections

o Drugs needed for detoxication including breathing equipments.

- Assess the level of medical supplies in stock, including:
  - o Fissure materials
  - o Surgical dressings
  - o Splints
  - o Plaster rolls
  - o Disposable needles and syringes
  - o Local antiseptics.
- Ensure immediate dispatch of supplies likely to be needed to hospitals on an emergency priority basis.
- Ensure provision of appropriate number of hospitals for receiving large number of casualties in the affected areas.
- Develop emergency admission procedures (with adequate record keeping)
- Orient District level staff with EMRP standards of services and procedures including tagging.
- Fill-up the vacancies and appoint appropriate number of medical and para-medical professionals to ensure their availability during emergencies.
- Coordination with National and International NGOs

Department of Animal Husbandry

- Establish communications with Veterinary aid Centres and Hospitals (including private practitioners) within the state.
- Appoint one officer as "Nodal Officer - Veterinary Services" at the State Level
- Review and update precautionary measures and procedures and review with district level officers the precautions that have been taken to protect equipments and the post-disaster procedures to be followed.
- Stock emergency medical equipments, which may be required after a disaster.
- Determine what injuries illnesses may be expected, and what drugs and other medical items will be required, in addition to requirements of setting up cattle camps, and accordingly ensure that extra supplies of medical items and materials can be obtained quickly.
- Provide information to veterinary hospitals and centres about the disasters, likely damages and effects, and information about ways to protect life, equipment and property.
- Identify and prepare the hospitals for receiving large number of livestock in each district
- Organise capacity building programmes for the veterinary staff in each district with respect to the disaster management.

Uttar Pradesh Fire Service

- Appoint one officer as "NODAL OFFICER – Fire Service" at the State Level
- Review and update precautionary measures and procedures and, review with staff the precautions that have been taken to protect equipment and the post-disaster procedures to be followed.
- Ensure required number of vehicles and fire fighting equipment are there in each district.
- Fill the vacant post to ensure adequate number of trained professionals at the time of disaster.
- Ensure fire engines are in good running condition.

- Organise capacity building programmes for the district level officials and staff with regard to response in disaster situations.

Energy Department

- Appoint one officer as "NODAL OFFICER - Power Supply" at the State Level.
- Ensure all arrangements for power during emergencies.
- Assist the authorities to make arrangements for stand by generators in the following public service offices from the time of receipt of alert warning:
  - o Hospitals and Laboratories
  - o Water Supply and Drainage Board
  - o District Court Premises
  - o Police Stations
  - o Telecommunications buildings
  - o Meteorological stations
- Inspect and ensure proper working of :
  - o High tension lines towers
  - o Substations
  - o Transformers
  - o Insulators
  - o Poles and
  - o Other equipment.

Rural Engineering Services (RES)

- Appoint one officer as "NODAL OFFICER-RES" at the State Level.
- Develop quick recovery plans for the reconstruction and repair of roads if required after an emergency.
- Heavy equipments, such as front-end loaders, should be moved from areas likely to be damaged and secured in a safe place.
- Identify sites for dumping debris cleared from disaster sites in each district.

- Inspect all roads, road bridges including underwater inspection of foundations and piers. A full check should be made on all concrete and steelworks.
- Inspect all buildings and structures of the state government (including PHC) by a senior engineer and identify structures, which are endangered by the impending disaster.
- Emergency tool kits should be assembled for each division, and should include:
  - o Crosscut saws
  - o Axes
  - o Power chain saw with extra fuel, oil
  - o Sharpening files
  - o Chains and tightening wrenches
  - o Pulley block with chain and rope.
- The designation of routes strategic to evacuation and relief should be identified and marked, in close coordination with police and district control room. Establish a priority listing of roads, which will be opened first. Among the most important are the roads to hospitals and main trunk routes.
- Organise capacity building programmes for the key staff and engineers likely to be placed in service in the event of disaster.

Public Works Department

- Appoint one officer as "NODAL OFFICER-PWD" at the State Level.
- Appoint one officer as "NODAL OFFICER-RES" at the State Level.
- Develop quick recovery plans for the reconstruction and repair of roads if required after an emergency.
- Heavy equipments, such as front-end loaders, should be moved from areas likely to be damaged and secured in a safe place.
- Identify sites for dumping debris cleared from disaster sites in each district.
- Inspect all roads, road bridges including underwater inspection of foundations and piers. A full check should be made on all concrete and steelworks.

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- Organise capacity building programmes for the key staff and engineers likely to be placed in service in the event of disaster.

Department of Urban Development

- Appoint one officer as "NODAL OFFICER-UD" at the State Level.
- Identify sites for dumping debris cleared from disaster sites in advance in each district and map the same on the district map.
- Prepare list town wise list of emergency personnel required in the case of disaster to assist the authorities in maintaining cleanliness.
- Identify site and prepare list for burial of dead bodies and dead cattle.
- Check the equipment and vehicle most crucial in the time of disasters.
- Maintain stock of necessary equipment and vehicle in operation conditions.
- Identify buildings and government properties that may be used for shelter and show them on the map of the city/town to ensure easy identification.
- Organise capacity building programmes for the officials and staff of the ULBs and other personnel that may be required to respond to the disasters.

Department of Agriculture

- Appoint one officer as "NODAL OFFICER-Agriculture" at the State Level.
- Prepare a GIS map of the state showing cropping pattern in different district of the state.
- Maintain surveillance for any unusual event damaging crops in larger areas not resulting from natural events.
- Establish a disaster management cell in the department to implement the disaster management plan in the state.
- Organise capacity building programmes for the officials and staff

Department of Food and Civil Supplies

- Appoint one officer as "NODAL OFFICER-Civil Supplies" at the State Level.
- Ensure appropriate stock of food grains, kerosene and other necessary items at the state level to meet the demands in the time of disasters.
- Inspect and review wheelhouses and godown in the entire state to ensure safe storage of food items.
- Instruct district officials to maintain certain amount of food and other materials as inventory to be used in the time of disasters and check the validity of all the items stored in the warehouses and godown.
- Establish a disaster management cell in the department to implement the disaster management plan in the state.
- Prepare and share the mobilisation (transportation) plan with the State Disaster Management Authority and Department of Transport to ensure speedy transport of food and other items to the site of disaster.
- Organise capacity building programmes for the officials and staff.

Department of Transport

- Appoint one officer as "NODAL OFFICER-Transport" at the State Level.
- Establish a disaster management cell in the department to implement the disaster management plan in the state.
- Establish appropriate wireless communication system in the control room at the state headquarters to mobilise resources and communicate with the Incident Commanders at the State and district levels.
- Prepare list of vehicles, both heavy and light, and their owners to ensure availability of vehicle for transportation of casualties, injured persons, stocks, rescue teams, etc.
- Inspect all the government vehicles for its roadworthiness every year as these may be deployed immediately in the time of disaster.
- Organise capacity building programmes for the officials and staff.

Jal Nigam

- Appoint one officer as "NODAL OFFICER-Jal Nigam" at the State Level.
- Review and update precautionary measures and procedures, and review with district level officials the precautions that have been taken to protect equipment, and the post-disaster procedures to be followed.
- Stock of vehicles such as water tankers, sintex tanks, chlorination tablets, etc should be maintained at the state level to be dispatched from headquarters and stationed at safe strategic spots along routes likely to be affected.
- Instruct all the districts to check all installations for water treatment plants, water supply systems including water tanks, pumping stations, sewage treatment plants, and drains are in working conditions. Take action to rectify any damages and repairs.
- Establish a disaster management cell in the department to implement the disaster management plan in the state.
- Organise capacity building programmes for the officials and staff.

Department of Science and Technology

- Appoint one officer as "NODAL OFFICER-S&T" at the State Level.
- Prepare GIS map of the state with the village wise demographic, physical, geographical detail and share the same with all the departments and crisis management group.
- Identify disaster prone areas in the state and mark the same on the GIS maps.
- Establish advanced laboratories to conduct tests such as for radiation, biological and chemical agents.
- Collaborate with agencies such as ISRO, DRDO, Metrological Departments, and other national and international organisation to collect relevant information and early warning signs for any disaster which may impact the state.
- Organise capacity building programmes for the officials and staff.

Department of Revenue

- Appoint one officer as "NODAL OFFICER-Revenue" at the State Level.
- Ensure funds for disaster preparedness, response and recovery in the state.
- Prepare district wise list of resources such as vacant state lands, government buildings, parks, etc. that can be used for temporary shelters, assemblies and camps.
- Prepare and share with the State Disaster Management Authority list of relevant physical and physical resources available with the revenue department that can be mobilised during or after disasters.
- Organise capacity building programmes for the officials and staff.

Department of Rural Development and Panchayati Raj

- Appoint one officer as "NODAL OFFICER" at the State Level.
- Instruct all the blocks and village to develop disaster management plans.
- Ensure that all the Zila Parishads have copies of the district disaster management plans.
- Build the capacity of the PRI members and officials in disaster management.

- Establish communication system with the district and state level disaster management authorities.
- Incorporate disaster mitigation plans in all the development proposals sent to the state for funding under various schemes.

Actions During Disaster

Actions to be taken by the various agencies during a disaster are listed here.

Department of Home

Evacuation

- Request support from the Army, Territorial Army and other Para-Military Forces for the rescue and evacuation operations.
- Order police force to assist the disaster management teams in evacuation.
- For appropriate security and law and order evacuation should be undertaken with assistance from community leaders.
- Immediately after the disaster, dispatch officers to systematically oversee the evacuations.
- Ensure that the police stations are functioning immediately after the disaster at all required locations, as may be requested by the district control room, and that staff are available for the variety of needs that will be presented.
- Order assistance to the PWD and RES teams in road-cleaning operations.
- Ensure traffic flow to allow relief teams to reach the disaster hit areas immediately.
- Ensure security to transit and relief camps, affected villages, hospitals end medical centres and identify areas to be cordoned off.
- Order diversions for the traffic to avoid disaster hit areas.
- Assist district authorities to take necessary action against black marketers and those found manipulating relief material.
- In conjunction with the Crisis Management Group , activate a public information centre to:

o Respond to personal inquiries about the safety of relatives in the affected areas.

o Statistics about affected communities, deaths, complaints and needs

o Respond to the many specific needs that will be presented

o Serve as a rumour control centre

o Reassure the public.

- Make officers available to inquire into and record deaths, as there is likely to be neither time nor personnel available, to carry out standard post-mortem procedures.
- Monitor the needs and welfare of people sheltered in relief camps.
- Coordinate with military service personnel in the area.

Department of Health & Family Welfare

Evacuation

- Ensure that the evacuations have been done as per the operating procedures.
- Ensure appropriate arrangement of medical and para-medical professionals is in place.
- Ensure that the experts are mobilised to assist the district disaster management teams.
- Coordination with the community leaders for evacuations, vaccination etc.
- Ensure that the first aid and transportation of the injured is done.

Relief

- Transport should be arranged for the transfer of seriously injured patients from villages and peripheral hospitals to general hospitals. If roads are blocked, a method should be established to request helicopter transport.
- Establish health facility and treatment centres at disaster sites. Ensure there is sufficient medical facilities including private is available to meet the demands in the disaster struck areas.

- The provision of medical services should be coordinated by the Nodal Officer with the district control rooms.
- Procedures should be clarified between
  o Peripheral hospitals
  o Private hospitals
  o Blood banks
  o General hospitals and
  o Health services established at transit camps, relief camps and affected villages.
- Maintain check posts and surveillance at each railway junction, bus depots and all entry and exit points from the affected area, especially during the threat or existence of an epidemic.
- An injury and disease monitoring system should be developed to ensure that a full picture of health risks is maintained. Monitoring should be carried out for epidemics, water and food quality and disposal of waste in transit and relief camps, feeding centres and affected villages.
- Plan for emergency accommodations for auxiliary staff from outside the area.
- Information formats and monitoring checklists should be used for the monitoring and reporting to Emergency Operations Centre. This is in addition to existing reporting system in the department.
- Seek security arrangements from district police authorities to keep curious persons from entering hospital area and to protect staff from hostile actions.
- Establishment of a public information centre with a means of communication to assist in providing an organized source of information.
- Ensure supply of medicines, equipment and other necessary aids to the affected areas.
- Assess the number of causalities and injured in the state.

Uttar Pradesh Fire Service

Evacuation

- Ensure that the fire service department responds to the disaster situation.
- Ensure that search and rescue operations are carried out to minimise the casualties and transport the injured to the nearest hospitals as soon as possible after the disaster.

Relief

- Ensure that the fire stations are functioning immediately after the disaster at all required locations, as may be requested by the district control room, and that staff are available for the variety of needs that will be presented.

Department of Animal Husbandry

- Ensure transfer of seriously injured livestock from villages to veterinary aid centres wherever possible.
- The provision of medical services should be coordinated with District Control Room, SOCs and cattle camps.
- Establish cattle camps and additional veterinary aid centres at disaster sites and designate an Officer-in-Charge for the camp.
- Carryout culling of birds if necessitated.
- An injury and disease monitoring system should be developed, to ensure that a full picture of risks is maintained.
- Plan for emergency accommodations for veterinary staff from outside the area.
- Information to Emergency Operations Centre about the morbidity and mortality and arrangements at the disaster site.
- Establishment of a Public Information Centre with a means of communication, to assist in providing an organized source of information.

Energy Department

- Ensure uninterrupted power to all vital installations and facilities.

- Arrange personnel on an emergency basis for clearing of damaged poles and salvage of conductors and insulators.
- Order repair/reconstruction.
- Arrange temporary electricity supplies for other key public facilities, public water systems, etc.
- Arrange temporary electricity supplies for transit camps, feeding centres, relief camps and sac, district control room and on access roads to the same.
- Compile an itemised assessment of damage, from reports made by various electrical receiving centres and sub-centres.
- Plan for emergency accommodations for staff from outside the area.
- Send cables, poles, transformers and other needed equipment
- Send vehicles and any additional tools needed.
- Provide additional support as required.
-

Rural Engineering Services (RES) and Public Works Department

- Order quick restoration of roads to their normal condition.
- Sanction repair/reconstruction works of public utilities and buildings.
- Issue two way communication link to the vital staff such as executive engineers.
- Ensure provision of sufficient number of tools and equipment such as
  o Towing vehicles
  o Earth moving equipments
  o Cranes etc.
- Order installation of adequate road signs should be installed to guide and assist the drivers.
- Sanction construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.

- On the request of the district control room, sanction construction of temporary structures required, for organising relief work and construction of relief camps, feeding centres, medical facilities, cattle camps and SOCs.
- Reporting of damage to the Crisis Management Group

Department of Urban Development

- Assist District Authorities in handling emergency situation.
- Supervise the location of sites of camps and ensure provision of safe places for temporary shelters, storage of relief materials, and transit camps.
- Ensure cleanliness and hygiene in the town cities.
- Report to the CMG about the damages and assistance provided to other agencies in managing the response.
- Ensure that suitable land or buildings that can be used as temporary relief camps and feeding centres are available to the district disaster management teams.
- Supervise sites for dumping debris cleared from disaster areas, removal and disposal of carcasses of dead animal and removal and mass cremation of unclaimed dead bodies.

Department of Agriculture

- Ensure that district level agencies are activated and coordinating with the district disaster management teams.
- Order destruction of contaminated crops in the field to avoid effect on the human and cattle population.

Department of Civil Supplies

- Ensure that the stock is transported to the affected areas
- Supervise distribution of the food items, kerosene and other necessary items
- Check and maintain the standard in the distribution of relief materials.

- Ensure that the relief materials reaches to the most disadvantaged and weaker sections of the society without any discrimination.

Department of Transport

- Ensure that the required number of vehicles are arranged and deployed for the rescue and relief work by the regional transport departments.
- Order mobilisation of additional resources from the neighboring areas to the affected districts.

Jal Nigam

- Ensure public water supply is available without much interruption.
- Order quick restoration of water supply if affected.
- Arrange and mobilise additional resources such as tankers and staff to the affected areas.
- Supervise quality of water supplied to the camps and affected areas.
- Check the quality of water supplied for the public use as it may be contaminated as result of disaster. I this case, order preventive measures to be taken and make alternate arrangements

Department of Science and Technology

- Carry out preliminary assessment of the damage and loss using remote sensing and GIS techniques and report to the CMG about the same.
- Collect sample for tests and other studies in case of biological, chemical and nuclear disasters.
- Collaborate national and international agencies to prevent explosion of situation to the neighbouring areas.

Department of Revenue

- Ensure budgetary provisions for meeting the cost of rescue and relief works.
- Arrange additional resources required to carry out relief and rescue operations.

- Declare emergency situation for acquisition of land, vehicles and other resources if required.
- Coordination with the Armed Forces, National Disaster Management Authority, and other Central Government Agencies if required.

NGOs and CBOs

- Community mobilization
- Disseminate all government aided programmes to the community
- Help the community for taking precaution needed for water and proper health and sanitation measures
- Provide information of evacuees sheltered in different locations to the medical teams
- Ensure medicines are reached to the affected areas with the help of volunteers
- Ensure proper treatment of the victims or injured
- Facilitate charitable organisations to work hand in hand with the government medical teams
- Arrange transport – both road and water ways – to the outside medical teams and volunteers, if required
- Record keeping

Chapter VI Recovery Plans

The State Disaster Recovery Plan places the affected community as the focus of recovery management and provides a structure for the management of all the inputs into the recovery process in a way that is appropriate to the needs of the community.

7.1 Definitions of Recovery

Recovery can be defined as "the assisting of persons and communities affected by emergencies to achieve a proper and effective level of functioning". Recovery is an enabling and supportive process that allows individuals, families and communities to attain a proper level of functioning through the provision of information, specialist services and resources. Recovery includes all aspects of mitigation and also incorporates the continuation of the enabling process, which assists the affected persons and their families not only to overcome their losses, but also to achieve a proper and effective way to continue various functions of their lives. The Recovery process is therefore a long-terms process in which everyone has a role – the Government including the self-government institutions, the NGOs, and especially the affected people, their families and the community.

7.2 Recovery after a Chemical Leakage or Spillage

In case of a Chemical Leakage or Spillage, toxic elements would spread in the atmosphere leading to casualties as well as mass exodus. The displaced people would require support, both in tangible and intangible form, to regain normalcy and start life afresh from where it got disrupted.

Assistance provided will be adapted to meet the basic needs as well as over a period restoring livelihood opportunities of those affected. After disasters, special recovery measures are necessary for affected population. Assistance will require include advance medical care, material aid, financial assistance, counselling and personal services, information and community support and can come from a range of sources.

7.3 Recovery Management at State Level

UPDMA will be in charge of recovery management at State level. Its overall responsibility will be:

- Develop policy issues on recovery management
- Conceive and solicit programmes from Govt. departments, District administration and NGOs.
- Prioritise projects Decide on the terms and conditions of execution Mobilize resource for operations
- Liaise and co-ordinate with the implementing agencies
- Facilitate and Monitor operations
- Suggest norms for the recovery projects at GP and Block level
- Represent the Government in the affected community
- Present the interests, concerns and needs of affected communities to the State Government;
- Support the local management of recovery by ensuring State co-ordination of resources from all sources;

Chapter VIII Capacity Building

8.1 Capacity Building for Preparedness

The important components of preparedness include planning, capacity building, well-rehearsed hospital DM plans, training of doctors and paramedics, and up-gradation of medical infrastructure at various levels to reduce morbidity and mortality. The primary objective of preparedness is to have a better response mechanism from all stakeholders, that is, participation of health officials, doctors, various private and government hospitals, and the public at the national, state and district levels.

Capacity in terms of adequate skilled man power, material logistics and infrastructural facilities are grossly inadequate at various levels required in the management of chemical disasters.

Capacity development requires the all round development of human resources and infrastructure for establishment of a well-focused and functional organisation and the creation of a supportive socio-political environment. Proper attention is to be paid in development of infrastructural facilities in terms of trained manpower, mobility, connectivity, knowledge enhancement, and scientific up-gradation for all stakeholders concerned with the management of chemical leakage or spillage.

8.2 Components of Capacity Building

Establishment of Command, Control and Coordination Functions

At the operational level, C&C is clearly identifiable at the district level where the district collector is vested with certain powers to requisition resources, inspect premises, seek help from the Army, state or centre, etc. The incident command system needs to be encouraged and instituted so that the overall action is brought within the ambit of an incident commander who will be supported by logistics, finance, and technical teams etc. The Emergency Medical Relief Division (of DGHS) at

the centre coordinates and monitors all crisis situations. A similar mechanism needs to be developed in states also. Emergency Operation Centres need to be established in all the state health departments with an identical nodal person as Director (Emergency Medical Relief) for coordinating a well orchestrated response.

District hospitals at Meerut and Gorakhpur will be upgraded with the laboratory and other equipment facilities similar to the Sanjay Gandhi Post Graduate Institute, to response and provide necessary medical support to the affected population from nearby districts in case Chemical Attack.

All-round development of human resources and infrastructure for establishing a well-focused and functional organization and creation of a supportive socio-political environment. Development of infrastructural facilities includes trained manpower, mobility, connectivity, knowledge enhancement, and scientific up-gradation for all stakeholders concerned with the management of chemical disasters.

8.3 Human Resource Development

Control rooms would be nominated/established at different levels in order to get all the relevant information and transmit it to the concerned official. The addresses and telephone numbers of the district collector, hospitals, specialists from various medical disciplines like paediatrics, anaesthesia, microbiology etc., and a list of all stakeholders from the private sector should be available in the control room.

8.4 Training and Education

A proforma would be developed to standardise the inspection procedures and reporting mechanism by each state factory inspectorate. Dos and don'ts and periodic training capsule on relevant chemicals would be given to all stakeholders including the local police and municipal fire brigades and industry.

The necessary training/refresher training would be provided to medical officers, nurses, emergency medical technicians, paramedics, ambulance drivers etc to handle chemical specific disasters which may arise in a particular area.

Community Preparedness: Community members including public and private health practitioners are usually the first responders. These people would be sensitized through public awareness and medical campaigns about various effects as well as treatment against toxic effects of chemicals produced or handled by industries in those areas.

Areas of emphasis for Community participation

a. The creation of public awareness by industries and the district administration/DDMA and local authorities regarding possible accidents is a statutory requirement.
b. Public awareness about HAZCHEM, their effects, dos and don'ts during an accident and remedial measures will help in preventing as well as responding effectively to such disasters. Community participation would also generate goodwill for industry.
c. Community-level social workers who can help in rebuilding efforts, create counseling groupsimparted proper training and education.
d. NGOs and Private Voluntary Organizations would be involved in educating and sensitizing the community.
e. Supporting activities like street shows, dramas, posters, distribution of reading material, school exhibitions, electronic media and publicity etc. would be undertaken.

8.5 Research and Development

Innovative technologies will enhance the ability to respond quickly and effectively. This will require targeted and balanced fundamental research, as well as applied research for technology development to acquire medical capabilities. In case of

chemical disasters it is necessary to collaborate, update and adopt developing new approaches to detect, evaluate and decontaminate chemical toxicants.

R&D is mandatory to revisit, revise and update information at regular intervals, to capture the knowledge at national and international levels, and provide it to the different stakeholders involved in Chemical Disaster Management. This is also applicable to updating of equipment; industrial technologies; need-based equipment and knowledge about newly emerging toxicants and their clinical management.

This can be achieved through participation in national and international conferences, consultation with technical and professional bodies and making arrangements to impart this knowledge to different stakeholders.

8.6 Communication and Networking

Information and monitoring tools for agencies during preparedness, alert or warning, activation of plan, damage assessment and relief and recovery stages are crucial for effective DM. The tools are evolved keeping in view the requirements of an effective administrative response, efficiency in decision making, evaluation and assessment of on-going disaster stages and requirements of future preparedness. These tools are also expected to help administration in identification and reaching out to the most vulnerable and devastated groups.

Emergency communication network- establishment of control rooms at the district and state level and inclusion of private practitioners in the network. The flow of information calls for accountability and the source provides the authenticity. The Information and Monitoring Tools are given in a different document. Mobile tele-health- based on the concept of tele-medicine, it can be used in case of chemical leakages.

Chapter IX Institutional Arrangements and Roles and Responsibilities

9.1 Institutional Arrangement at the Centre

In accordance with the provisions of the DM Act 2005, the central government will take all such measures, as it deems necessary or expedient, for the purpose of DM and will coordinate actions of all agencies. It will ensure that central ministries and departments integrate measures for the prevention and mitigation of disasters into their developmental plans and projects, make appropriate allocation of funds for pre-disaster requirements and take necessary measures for preparedness to effectively respond to any disaster situation or disaster.

- **National Disaster Management Authority**

The Disaster Management (DM) Act 2005 lays down institutional, legal, financial and coordination mechanisms at the national, state, district and local levels. The new institutional framework is aimed at ensuring operationalisation of the national desire for a paradigm shift in DM from a post event and relief-centric syndrome to a regime that lays greater emphasis on preparedness, prevention and mitigation, leading to a more prompt and effective response to disasters.

NDMA concentrates on prevention, preparedness, mitigation, rehabilitation, reconstruction and recovery and also formulate appropriate policies and guidelines for effective and synergised national disaster response and relief. It will also coordinate the enforcement and implementation of policies and plans.

- **National Executive Committee**

The National Executive Committee (NEC) comprises the secretary to the GoI in the ministry or department having administrative control of the subject of DM, as the chairperson and the secretaries to the GoI in the ministries/departments of Agriculture, Atomic Energy, Defence, Drinking Water Supply, Environment and

Forests, Finance (Expenditure), Health, Power, Rural Development, Science and Technology, Space, Communications, Urban Development, Water Resources and the Chief of the Integrated Defence Staff to Chairman of the Chiefs of Staff Committee as members.

It is the executive committee of the NDMA, and is statutorily mandated to assist the Authority in the discharge of its functions and ensure compliance of the directions issued by the central government, apart from preparing the National Plan and securing its approval by the NDMA and performing such other functions as required by the NDMA. Based on the policy and guidelines, the NEC will be responsible for preparing the national plan, getting it approved by the NDMA and then operationalising it. The NEC will also require any department or agency of the government to make available such men or material resources for the purposes of handling threatening disasters, emergency response, rescue and relief, as required by the NDMA. It will coordinate the response in the event of any threatening disaster situation or disaster. It will also perform such other functions as the NDMA may require it to perform.

- **National Disaster Response Force**

For the purpose of specialised response to a threatening disaster situation or disasters both natural and man-made, the DM Act, 2005 has mandated the creation of a National Disaster Response Force (NDRF). The general superintendence, direction and control of this force shall be vested in and exercised by the NDMA and the command and supervision of the NDRF shall vest in an officer to be appointed by the central government as the Director General of the NDRF.

- **National Institute of Disaster Management**

The National Institute of Disaster Management (NIDM), which functions within the framework of the broad policy and guidelines laid down by the NDMA, has capacity development as one of its major responsibilities, along with training, research,

documentation and the development of a national level information base. It networks with other knowledge-based institutions and assist in imparting training to trainers, DM officials, etc. It is also be responsible for synthesizing research activities and will be geared towards emerging as a 'centre of excellence' at the national and international levels.

9.2 Institutional Arrangement at the State-level

State Guidelines on Disaster Management Road Map

- Setting up a State Disaster Management Authority
- State Relief & Rehabilitation Department to be converted to department of Disaster management
- State/District/Block/village Disaster Management plans
- Setting up of Emergency operations Centre
- Having Specialised Search & Rescue teams---each team consisting of one coy of State Armed Police trained in Rescue & Relief operations, one mobile engineering unit with necessary equipment, one Medical assistance team, to function as a single unit under a designated officer
- Control rooms in State and Districts to coordinate both law& order as well as disaster management
- Annual Plans, Five-year plans to specifically address disaster mitigation concerns and such plans to be given priority.
- Funds available for ongoing schemes to be used for mitigation preparedness.
- State on-line inventory of resources, both private & public to be made available for easy mobilization of resources in time of emergencies.
- Development of early warning systems
- GIS based database for Disaster Management
- Both in service training as well as initial training Curriculum to include Capsules on disaster management.

- Disaster management in school curriculum, engineering courses, certification for practicing engineers, builders, architects
- Hospital Preparedness and Emergency Health Management in Medical Education
- Strengthening of Civil Defence

Keeping in view the above guidelines, the Govt. of UP has initiated major steps towards disaster preparedness.

Uttar Pradesh Disaster Management Authority (UPDMA)

The Authority set up under the UP Disaster Management Act, 2005, is headed by the Chief Minister as its Chair person and has a 14 member Governing Body, The Authority clearly allocates responsibilities among various stakeholders and is primarily responsible for the following:

- Promoting an integrated and coordinated system of disaster management and acts as a central planning, coordinating & monitoring body for disaster management and post disaster reconstruction, rehabilitation, evaluation and assessment as well as promoting general awareness /education.
- Evolving a total Disaster Management Support System by making use of Satellite Remote Sensing and imagery data, GIS. The UP Remote Sensing Agency, Lucknow has been designated as the special Advisor to the Authority.
- Allocation of responsibilities to the various stakeholders and coordination in carrying out their responsibilities.
- Acting as repository of information concerning disasters & disaster management
- Ensuring establishment of communication links and setting up of emergency communication and early warning systems in the State
- Developing guidelines for preparation of disaster management plans at all levels -state, district, block & village level.
- Dissemination of information and awareness building among the public.
- Setting up Crisis Management Group

- Supervising state of preparedness
- Laying down guidelines for subordinate plans
- Establishing disaster management information systems
- Coordinating disaster management training

Members of the UP Disaster Management Authority

1 The Chief Minister of Uttar Pradesh
2 The Minister for Revenue Department
3 The Minister for Agricultural Department
4 The Chief Secretary, Uttar Pradesh
5 The Principal Secretary and Agriculture Production Commissioner
6 The Principal Secretary, Revenue
7 The Principal Secretary, Finance
8 The Principal Secretary, Home
9 The Principal Secretary, Energy
10 The Principal Secretary, Urban Development
11 The Principal Secretary, Health
12 The Principal Secretary, Irrigation
13 The Director General of Police
14 The Relief Commissioner

Special Invitees

1 The Principal Secretary, Agriculture
2 The Principal Secretary, Panchayati Raj
3 The Principal Secretary, Forest
4 The Principal Secretary, Environment
5 The Principal Secretary, Science and Technology
5 The Director Remote Sensing Application Centre, Uttar Pradesh
6 Directorate Factories

Major Initiatives by Govt. of UP

- **UP Disaster Management Act, 2005, enacted**--- third State do so after Gujarat and MP. It provides legal backing to all preparatory and post disaster measures and responses & allocates major responsibilities to all the stakeholders.
- **Setting up Uttar Pradesh State Disaster Management Authority**
- **Emergency Operations Centres** has been set up at State level in Bapu Bhawan & in 13 district HQs.
- **Closed User Group Mobile Phone Network** of the Police Department has been extended to cover all Revenue Officials at the State, Commissionery, District and Tehsil level and Fire Services etc. so that there is better connectivity during relief operations.
- Natural Resources related **GIS mapping** of districts.
- **UP Academy of Administration and Management**, Lucknow, is the Nodal Institute for all Training programmes related to Disaster Management.
- **Disaster Management Module** adopted for all in-service training programmes in the State.
- **Fire Service Training Institute**, Unnao, declared as the Nodal Institute for training in specialized Search & Rescue operations.
- **Emergency Operations Centres** has been set up at State level in Bapu Bhawan & in 13 district HQs.

Emergency Operation System

The State Emergency Operation Centre (SEOC) is the hub of all disaster related activities. The primary function of the SEOC is to implement the State Disaster Management Plan which includes coordination, data collection, operation management, record keeping, public information and resource management. Emergency Operations Centres at the State (SEOC) and the District (DEOC) and Incident Command Post (ICP) at the disaster site are the designated focal points that will coordinate overall activities and the flow of relief supplies from the State.

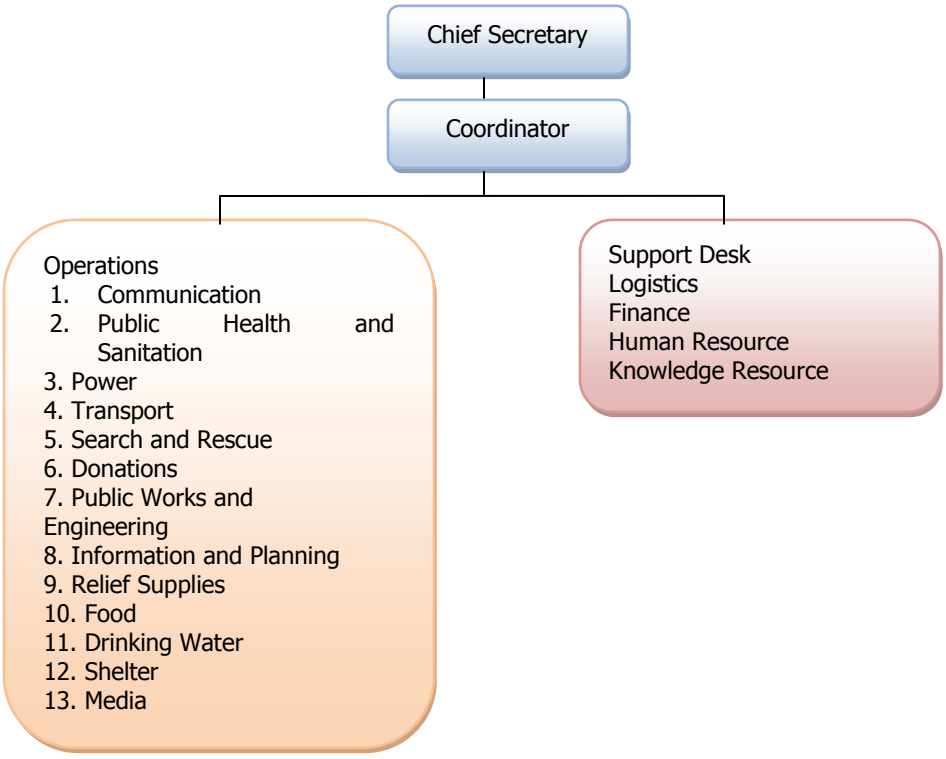
SEOC has representatives of State Departments - Public Works, Irrigation, Energy, Home, Revenue, Health, Agriculture, Industries, Animal Husbandry and Science & Technology form SEOC. During non-disaster times, the SEOC works under the supervision of the Relief Commissioner. In a disaster situation, the SEOC will come under direct control of the Chief Secretary or the person designated by him as the

Chief of Operations. He is the primary role player in the EOC, and is responsible for the overall coordination and decision-making. He will also report the status of the SEOC operations and the disaster situation to the Chief Secretary.

The layout of the SEOC is given below.

- Activation of the SEOC should immediately follow the declaration of a State Level Emergency.
- The individuals staffing the SEOC are responsible for establishing communications with their respective departments through radio, landline and telephone, mobile network and wireless.
- The SEOC Chief or designee will determine what staff he/she deems necessary to effectively operate the SEOC apart from the prescribed staff.
- The designated officers of the Police will provide security at the SEOC.
- It is recommended that an alternate SEOC must also be established. It is suggested to setup the backup SEOC within the secretariat building, as most of the departmental heads sits there.

Structure of the Emergency Operation System



Emergency Support Functions

This would help in proper coordination among different agencies involved in DM:

S. No	Function	Responsibility
1	Communications	• Will ensure the provision of state wide telecommunication, support to the state, and district in response efforts
2	Public health and sanitation	• Provide coordinated assistance to supplement state and local resources in response to public health and medical care needs following significance natural or man made disaster. • Resources will be furnished when the state and district resource are overwhelmed and medical and public health assistance is requested from the State government.
3	Power	• Power To facilitate restoration of energy systems after a natural disaster
4	Transport	• Provide coordination of state transport support and local government. • Coordinate the use of transportation resources to support the need of emergency support forces requiring transportation capacity to perform their emergency response, recovery and assistance missions. It will works with outside agencies for transportation, coordination and preparedness resource request for assistance when needed.
5	Search and Rescue	• Provide specialized life saving assistance to state and local authorities. In the event of a major disaster or emergency. Its operational activities include locating, extricating and providing on site medical treatment to victims trapped in collapsed structures.
6	Donations	• Donation management is necessary to control the flow of goods and services into a disaster area. If trucks, trains, and planes are allowed into the disaster area to draw their donations, they can easily interfere with other ongoing disaster response operation. Uncontrolled donations can also put undue burden on disaster response operations, as they required scarce response resources. Above all it is necessary to manage the flow of donated gods to be sure that the needs of disaster victims are being met as effectively as possible. • Expedite delivery of voluntary goods and services to support relief effort in a coordinated manner
7	Public works and Engineering	• Provides technical advice and evaluation engineering services, contracting for construction management and inspection, contracting for emergency repair of water, and waste water treatment facilities, potable water, emergency power, real state support to assist the states in meeting the goals related to life sustaining actions, damage mitigation and recovery activities following a major disaster. Provide PW and engineering support to assist need related to life saving or protecting prior to, during and immediately following an event. Perform immediate damage assessment of the infrastructure
8	Information and Planning	• To collect, process and disseminate information about an actual or potential situation. To facilitate the overall activities of all responders in providing assistance to an effected area. Should maintain a

		database of all related disaster related information inform of GIS that will allow easy access and retrieval of information during a disaster.
9	Relief Supplies	• Coordinate activities involved with emergency provisions of temporary shelters, emergency mass feeding, and bulk distribution of coordinated relief supplies for victims of disasters. In some instances services may also be provided to disaster workers and logistical and resource support to local entities involved in delivering emergency and recovery efforts, shelter, food and emergency first aid following a disaster. • Operate disaster welfare information, to collect receive and report the status of victims and assist family reunification; and coordinate bulk distribution of emergency relief supplies.
10	Food	• To identify the basic needs of food in the aftermath of a disaster or emergency. To obtain appropriate supplies and transporting such supplies to the disasters area and identify secure, and arrange to transport food assistance to the affected areas and authorize food stamp assistance following a major disaster or emergency requiring state response
11	Drinking water	• To provide a minimum quantity of clean drinking water and to reduce the spread of diseases through water during disaster times and to allow to people to perform daily task.
12	Shelter	• To meet the physical needs of individuals, families and communities for safe. Secure and comfortable living space. To meet primary social needs incorporating self-management in the process.
13	Media	• To provide and collect reliable information on the status of disaster and disaster victims for effective coordination of relief work at sate level.
14	Help lines	• To collect, process and disseminate information about of the welfare of citizens of the affected area and managing the tremendous flow of information. The speed with which information is received with which it changes requires that assistance be developed to ensure accuracy as well as easy and appropriate access. The help lines will be responsible for providing, directing, and coordinating, logistical resource operations.

- *During non-disaster times the ESF will operate in preparedness mode for their respective departments.*
- *Each ESF is headed by a primary agency, which has been selected based on its authority, resources and capabilities to support the functional area.*
- *Each ESF is headed by a lead department for coordinating the delivery of goods and services to the disaster area, and it's supported by various departments and agencies.*

Role of SEOC

During non-disaster times	During Disaster times
SEOC stays operational through-out the year in preparedness mode, in order to take care of the following: • Ensure that all districts prepare and regularly update the District Disaster Management Plans.	The aim of the SEOC will be to provide centralized direction and control of all the following functions • Emergency operations • Communications and warning, which includes handling of 24 hrs emergency toll free numbers.

During non-disaster times	During Disaster times
• Encourage districts to prepare area-specific plans for areas prone to specific disasters. • Monitor training imparted to state level officials, private sector and NGOs. • Keep record of the State and district disaster management plans. • Disseminate information about the State DMP to other departments. • Ensure that the warning and communication systems and instruments in the SEOC are in working conditions round the clock. • Keep and update state level disaster resource inventory • Establish functional facility of Toll free emergency numbers • Report on Status of preparedness/vulnerability data of the district Training, monitoring support and budget allocation if required.	• Handle requests for emergency personnel, equipment, state level disaster resource database and other resources • Requesting additional resources during the disaster phase from neighbouring districts of the affected Area • Coordinating overseas support and aid • Issuing emergency information and instructions specific to departments, consolidation, analysis, and dissemination of Damage Assessment data and preparation of consolidated reports • Maintain documentation of resource inventories, allocation and availability • Manage finances for SEOC operations

Equipment Requirements

The SEOC will need to operate round the clock, and may itself be subjected to adverse conditions due to the impact of disaster. It needs to be equipped with the following hardware and software for its efficient functioning:

- Resource inventories and databank of maps and plans at block, district and state level on a GIS platform for quick retrieval and analysis.
- State-of-art communication equipment for staying linked with the Chief Secretary's office, headquarters of line departments, district collectors, field teams, media, and national and international support agencies.
- A mobile command vehicle with communication equipment.
- Workstations and communication lines for all representatives of the line ministries.
- Radios and television sets tuned to different news channels and coverage.
- Video conferencing facility.

- Projection equipment and screens.

Incident Command System

The SEOC will therefore need to field its own field teams and through them establish an Incident Command System. The system will comprise:

- Field command
- Field information collection
- Inter agency coordination at field level
- Management of field operations, planning, logistics, finance and administration

Rapid Assessment Teams and Quick Response Teams will be fielded by the SEC through the SEOC as part of the Incident Command System.

Activation Procedure of the EOC

Once the Sub-Divisional officer/SDM deems a disaster to be beyond the management capacity of local authorities, the District Disaster Management Authority (DDMA) will declare it as a District Level Disaster and activate the DEOC. Once the DDMA deems a disaster magnitude to be beyond its management capability, it will forward the report to the SEOC for deliberation at the SDMA and subsequent appropriate State intervention. On verification of the magnitude of the disaster, and the scale of response required, the State Emergency Operations Centre will get activated and after declaring a State Disaster, will take control.

Step 1: The State EOC is activated on orders from the SDMA. On receipt of a disaster warning, the Chief Minister, after verification that the situation merits declaration of a State Disaster, will convene a meeting of the State Disaster Management Authority. Based on the ratification of the Authority, the Chief Minister, will declare a State Disaster.

Step 2: SEOC is upgraded to emergency mode. The SEOC, till then operating in the preparedness mode, will be upgraded to the emergency mode. Concerned line

departments will be informed to post their representatives at the SEOC on a round the clock basis with immediate effect. SEOC will be activated and all community preparedness measures will be put into operation and the ESF to be on full alert and activate their SOPs. The activation of the SEOC should be followed after the DDMA declares a major disaster.

Step 3: Field Assessment Reports. The Chief Secretary/Relief Commissioner will assume the role of the Chief of Operations for Disaster Management. The Chief of Operations of the EOC will coordinate for setting up the ESFs and are asked to prepare and send the Field Assessment Report to the SEOC. The Chief of Operations of the SEOC will spell out the priorities coordinate services of the ESFs, including national and aid agencies.

Quick response teams of specialized personnel will have to be sent for effective management of disaster. Depending on the magnitude of the disaster, two different types of teams will be fielded by the SEOC: (i) Rapid Assessment Teams; (ii) Quick Response Teams

Rapid Assessment Teams

The Rapid Assessment Teams will be multi-disciplinary teams comprising four or five members. They will mainly comprise senior level specialized officers from the field of health, engineering, agriculture, animal husbandry, search and rescue, communication and one who have knowledge of disaster affected area, physical characteristic of the region, language etc. These officials should share a common interest and commitment. There should be a clear allocation of responsibilities among team members. To make a first / preliminary assessment of damage, the assessment report will contain the following basic elements or activities:

- Human and material damage
- Resource availability and local response capacity
- Options for relief assistance and recovery

• Needs for national / international assistance

Quick Response Teams / Rapid Response Teams

Deployment of search and rescue teams can help in reducing the number of casualties. A quick response to urgent needs would never be delayed for the reason that a comprehensive assessment has yet to be completed. The following teams would be sent to the disaster site or disaster affected area as early as possible, even prior to First Information Report.

• First Aid Team
• Search and Rescue team
• Communication Teams
• Power Team
• Relief Teams
• Rehabilitation teams
• Transport Team

All other focal departments will keep ready their response teams, which may be deployed after receiving the first information report.

Crisis Management Group

Crisis Management Groups at the State Level as well as at the District level have been formed with the following composition and roles.

Crisis Management Group at State Level: Composition

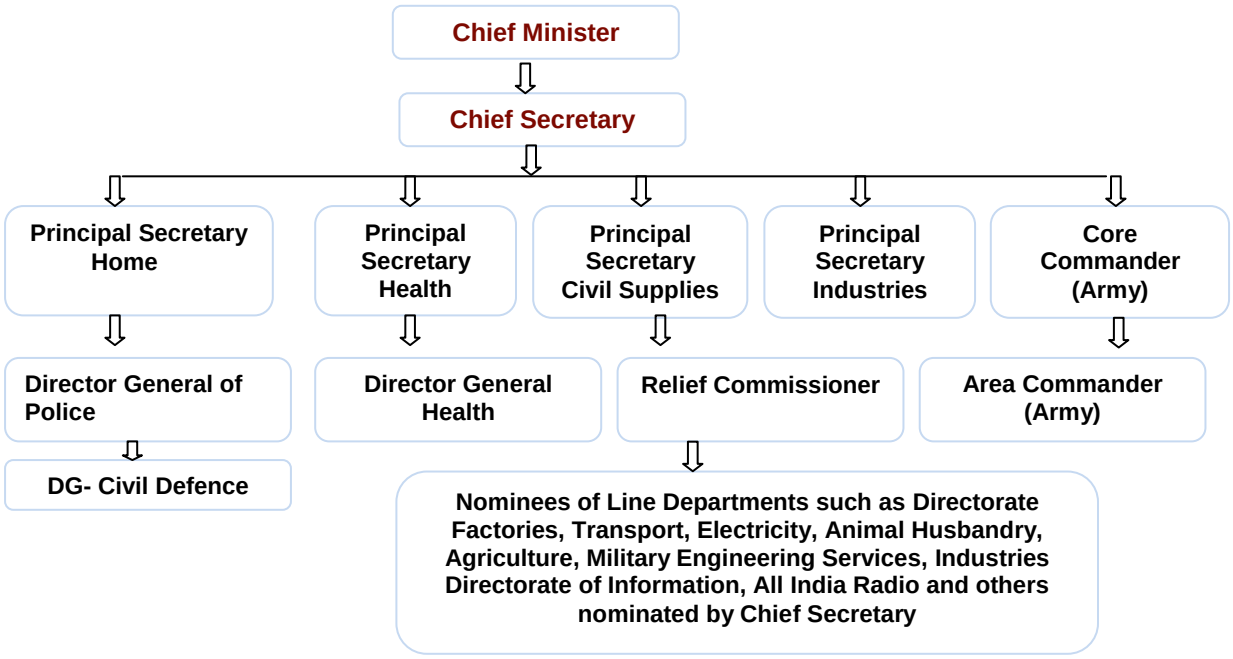
(1) Chief Minister Uttar Pradesh, Chairperson
(2)Chief Secretary, Uttar Pradesh
(3) Principal Secretary, Home: Coordinator (Defence related emergencies)
(4)Principal Secretary, Revenue & Natural Disaster: Coordinator (Natural Disasters)
(5) Director General Police, U.P: Member
(6) Additional Director General Police (Information): Member
(7) Joint Director (I.P) Lucknow: Member

(8) Relief Commissioner: Member

(9) Head, Directorate Factories

(10) Any alternative officer can also be nominated as a member of the Group by a member in case of his/her absence

Crisis Management Group should have a representative from Army.



The State Crisis Group shall be the apex body in the State to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents.

It shall

(a) review all district off-site emergency plans in the State with a view to examine its adequacy in accordance with the Manufacture, Storage and Import of Hazardous Chemicals, Rules and forward a report to the Central Crisis Group once in three months;

(b) assist the State Government in managing chemical accidents at a site;

(b) assist the State Government in the planning, preparedness and mitigation of major chemical accidents at a site in the State;

(c) continuously monitor the post accident situation arising out of a major chemical accident in the State and forward a report to the Central Crisis group;

(e) review the progress report submitted by the District Crisis groups;

(f) respond to queries addressed to it by the District Crisis groups;

(a) publish a list of experts and officials in the State who are concerned with the management of chemical accidents.

Crisis Management Group at District Level: Composition

(1) District Magistrate: Chairperson

(2) Superintendent of Police / Inspector General Police: Member

(3) Representative of Directorate Factories: Member

(4) Additional District Magistrate (Finance & Revenue): Co-ordinator

(5) Representative of Local Intelligence Unit

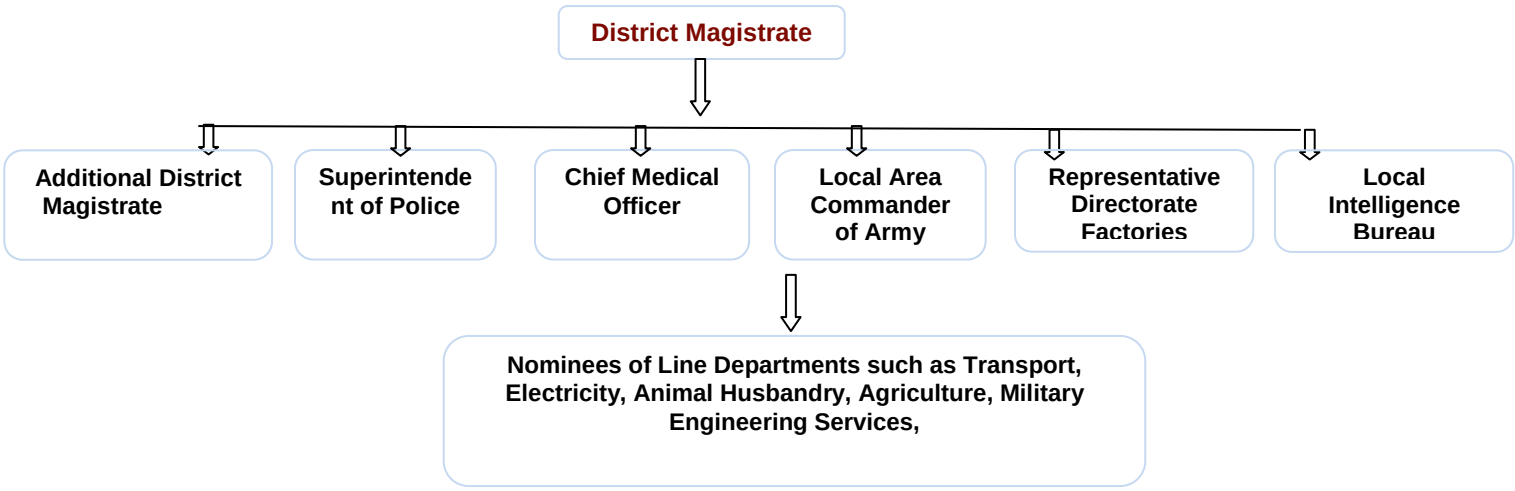
(6) Task Force Commander of NSG is also to be co-opted in case NSG's support is taken

Crisis Management Group at District Level: Functions

•District Crisis Management Group is responsible for managing the situation in case of any Emergency/Crisis.

•The group will arrange for required assistance from all concerned agencies in case of any emergency.

•If some specialist team has been engaged for assistance by District/State Crisis Management Group, then the group has to consider the advice of the team. But the final decision rests with the District/State Crisis Management Group.



Representatives of the Local NGOs and Social Organisations, Coordinators of NCC and NSS may also be co-opted as Members

District Disaster Management Authority

The District Disaster Management Authority (DDMA) headed by the District Magistrate, with the elected representative of the local authority as the co-chairperson, acts as the planning, coordinating and implementing body for DM and take all necessary measures for the purposes of DM in the district in accordance with the guidelines laid down by the NDMA and SDMA. It is responsible for preparing the district DM plan including the response plan for the district, coordinate and monitor the implementation of the national policy, the state policy, the national plan, the state plan and the district plan and ensure that the guidelines for prevention, mitigation, preparedness and response measures laid down by the NDMA and the SDMA are followed by all departments of the government at the district level and the local authorities in the district.

Local Authorities

These include Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs), such as municipal corporations, municipalities, district and cantonment boards and town planning authorities for control and management of civic services. PRIs and ULBs will ensure capacity building of their officers and employees in DM, carry out relief,

rehabilitation and reconstruction activities in the affected areas and will prepare DM plans in consonance with the guidelines of the NDMA, SDMAs and DDMAs.

Chapter X Partnerships with other Stakeholders

Role of Community

While all the stakeholders do have some role or the other to play in all the four stages, the role of the community is most pronounced in all the stages. Particularly, the communities have to meet the challenges on their own during and immediately after a disaster. The community during a disaster has a shared responsibility of providing physical and psychological support to each individual, particularly to the vulnerable sections.

NGOs

They will be involved for community education and sensitization. They could play a role in rumour surveillance, reporting of events, implementation of non-pharma interventions, and sensitization of public through the supporting role of the media. Community-based social workers can assist in first aid, psychosocial care, distribution of food, water, and organization of community shelters under the overall supervision of elected representatives of the community.

International Cooperation

Agencies like World Health Organisation (WHO) and Red Cross play an important role in mobilizing relief work. They provide help with the following:

- Establishment of a mechanism to enhance the level of interaction between state and non-state actors, NGOs, and pharma companies
- A web-based forum for continuous interaction of experts to develop necessary strategic measures that need to be integrated with present global practices
- Stockpiling of various vaccines, antidotes and essential drugs under the guidance of global health organizations will become more cost effective by regional level planning

- Conducting joint international mock exercises, based on vulnerability assessment of different areas to enhance the level of coordination between various national and global players
- Pooling of medical logistics, trained human resource, and essential supplies

Public Private Partnership

The private sector has substantial infrastructure capabilities and can play a major role in enhancing the nation's preparedness by integrating its capacities with government organizations such as DRDE and NICD. They may also provide facilitation for:

- Collaboration with international pharma agencies and other technical laboratories for meeting the peak requirement of drugs, antidotes and vaccines during chemical disasters
- Sourcing and procurement of counter measures available with manufacturing capacities in a ready state to enable their continuous supply
- Developing a PPP system for stockpiling, distribution and cold chain system for sophisticated diagnostic kits, vaccines and antibiotics
- Private sector facilities are required to be included in district-level DM plans and collaborative strategies evolved to effectively utilize their manpower and infrastructure.

Mass Media

The role of media is vital in educating the people about disasters; warning of hazards, gathering and transmitting information about affected areas, alerting government officials, relief organisations, and the public to specific needs and facilitating discussions about disaster preparedness and response leading to greater transparency in the whole operation. A regular and effective working relationship with the media will be developed. Regular, routine interaction, before a disaster is important for effective working relationships in the aftermath of a disaster. Media and the disaster

mitigation organisations will be encouraged to take advantage of opportunities to work together, to provide relevant training for reporters and field personnel to enhance disaster preparedness, mitigation and relief efforts and the timeliness, quality, and accuracy of reporting about natural hazards.

Chapter XI Financial Arrangements

Financial Resources for Implementation

Expenditure on relief, rescue and rehabilitation far exceeds the expenditure on prevention and management. This should therefore, be the underlying principle for allocation of adequate funds at industry and government level for prevention, mitigation and preparedness rather than concentrating on their management at the time of a disaster. The basic principle of return on investment may not be applicable in the immediate context but the long-term impact would be highly beneficial. Thus, financial strategies should be worked out such that necessary finances are in place and flow of funds is organised on a priority basis by the identification of necessary functions, both in the phases of preparedness and response, relief and rehabilitation respectively.

Finance Commissions

After Independence, the history of funding relief expenditure is intertwined with the awards of the Finance Commissions. These Commissions were appointed under Article 280 of the Constitution of India every five years. They were mandated, amongst others things, to assess the funding needs (non developmental) of the States, and to figure out grants to the States. The Finance Commissions make recommendations on the mechanisms by which the Central Government can assist States in funding expenditure on relief. Earlier, the Commission was restricted to suggesting the pattern of financial assistance by the Center. Now, the recommendations even cover the "scheme of financing relief expenditure".

It was recognized that the primary responsibility of handling disasters vested with the States. The Central Government however, was expected to provide financial support. The First Finance Commission (1952) provided for Central assistance equivalent to 50% of the requirements for relief works. This was in the form of loans and a grant

(not exceeding $ 0.45 million annually per State) for gratuitous relief to destitute. Further assistance could be provided to States to handle severe natural calamities through advances.

The Fourth Finance Commission introduced the system of Central Team visits to affected States. It was necessary where the Relief Expenditure on a calamity was expected to exceed $ 200000. Emphasis was usually placed on funding relief expenditure, as far as possible, within the Plan allocations. The Central Government was expected to fund only half of the expected expenditure. Since most States in India were under fiscal stress, a need was realized to make available recurring funds to States to fund immediate relief effort in routine calamities. This was popularly known as "margin money". Each State was sanctioned a certain amount based on its past expenditure on relief. Any amounts in excess of this margin money, after severe calamities were to be assessed by Central Teams. Additional Central assistance was envisaged only, where relief requirements of a severe calamity could not be met from state resources.

The Ninth Finance Commission (1991) through the Calamity Relief Fund (CRF) extended the concept of "margin money". The CRF provided for contributions of the Central and State Governments in the ratio of 3:1. The Fund was to be kept outside the Government Account. This was to avoid cash flow difficulties in initiating relief operations. The contributions of the Central and State Governments credited twice a year. The Chief Secretary of the state operates this fund with a committee. The CRF concept was only different from margin money in that it prescribed a larger contribution by the Central Government.

The fundamental shift was in the introduction of the 'normative approach' to relief expenditure. This approach entailed expenditure from CRF on predetermined items, at predetermined rates. This system is there, despite procedural changes suggested by later Finance Commissions. For calamities of a severe nature, where the relief expenditure could not be funded from the CRF, the Eleventh Finance Commission in 2001, constituted a National Calamity Contingency Fund (NCCF).

Although the primary responsibility of DM is of the State Governments, the Central Government plays a key role in providing financial and logistic assistance to the states in tackling both natural and man-made disasters. The administration of Biological attacks would be responsibility of Ministry of Health and Family Welfare.

Sources of Finances

Financing of will be explored from the following sources:

- From budgetary provisions for recovery plans and programmes in normal developmental activities; at State, District and village level
- Calamity Relief Fund
- National Calamity Contingency Fund
- Prime Minister's Relief Fund
- Chief Minister's Relief Fund
- Special programmes of Govt. of India
- Loans and assistance from national and international funding agencies

Immediate Financial Resources

At present the required amount for training and capacity building of the field staff and medical professionals may be allocated from the Calamity Relief Fund. However in future the National Disaster Mitigation Fund proposed by Government of India can be explored to meet the cost of maintaining inventory, establishment of labs, provision of equipments, capacity building of staff, and awareness and education.

Chapter XII Follow Up

12.1 Follow up Actions

The UPSDMP has evolved out of secondary sources and consultation with departments involved with DM in UP. Various mechanisms of disaster preparedness, responses, and recovery followed in different parts of the world were also taken into account while preparing the document. This chapter discusses follow up actions that have to be undertaken by various agencies/departments to operationalise the Plan.

12.2 Priority Areas for Follow Up action

Some of the priority areas which need immediate attention or updating from time to time are:

• Preparation of district, block, municipality and Gram Panchayat plans (based on village as the unit of planning)

• Preparation of Standard Operation Procedures and field manuals

•Preparation of handbooks and checklists for prevention, preparedness, response, mitigation activities

•Review existing developmental schemes/ projects and incorporate disaster management principle in all schemes and all plans

• Ensuring sensitivity and incorporation of environment, gender, ethnicity, vulnerability of socio-economically disadvantaged groups (Children, elders and the physically challenged), food and income security, disaster proofing measure in all development, response and recovery plans

• Modernisation of existing control rooms and strengthening of infrastructure in disaster prone areas keeping in mind the vulnerability to different hazards

• Preparation and updating technical and quality control aspects of all civil constructions and non civil installations based on review of past disasters

• Updating existing Laws, Rules and Codes for better administration of relief and recovery

measures to the affected people during and after a disaster.

• Similarly enforcement of other relevant Laws and Rules has considerable significance in reducing the risk and impact of disasters.

The response to a disaster requires both indigenous systems as well as effective planning and preparedness strategies. Since the damage and effect of the disasters are so extreme, in case of a response situation, multiple players have to effectively coordinate and communicate with each other for a quick and efficient recovery and control over the emergency situation. However, both the response and recovery measures require detailed and unique planning and implementation strategy from all the stakeholders keeping in mind the local economic, social and cultural variables.

Primarily, all concerned departments/agencies or authorities will have to further detail out their operations in respect of Emergency Support Functions, emergency preparedness, mitigation and recovery measure as per the guidelines given in this document.

12.3 List of Checklists and Handbooks

Documents Required for Quick Assessment and Response

1. Declaration of Format of Disaster
2. Deployment of Assessment Team-Format
3. SRC Responsibilities-Handbook
4. Survival Kit-Checklist
5. Assessment Equipment – Checklist
6. Damage Assessment – Format
7. Format for Media Release
8. Handbooks for International NGOs, NGOs, Media personnel, Researchers/Students, Field/Relief Workers, Volunteers and Government Functionaries
9. Emergency Operation Centre Checklists
10. Layout and dimensions, equipment, etc.,

11. ESF Desk – Checklist
12. Do's and don'ts to be followed during disaster times
14. Regular staff – Schedule and Checklist
15. Staff on Call – Schedule and Checklist
16. Staff on Disaster Duty – Schedule and Checklist

Documents for Disaster Management Teams

1. Communication
2. Checklist of tool kits
3. Handbook on Disaster Telecommunication Assistance
4. Handbook on Team Equipment and Inventory
5. Responsibilities of Primary Agency
6. Responsibility of each Support Agency
7. Emergency tool kits
8. Equipment Damage Assessment Operational checklists
9. On-site operations
10. Planning checklist
11. Deactivation checklist
12. List of PSUs and Private Agencies

Public Health and Sanitation

1. Detailed checklist of symptoms of common diseases along with medicine dosages for each disease
2. Checklist of doctor's tool kit for specialised doctors
3. Checklist for maintaining hygienic conditions
4. Disaster Health Assistance and emergency services
5. Team Equipment and Inventory
6. Responsibilities – Primary /Support Agencies
7. Minimum standards of health facilities
8. Location of health facilities in disaster area (map)

9. Information manual for biological disaster
10. Doctor's manual for emergency relief
11. Emergency toolkits
12. Operational checklists for health officials
13. Planning checklist - Qualification of health personnel –
14. Checklist of doctor's tool kit - Symptoms of common ailments
15. Deactivation checklist ¤ Dosages checklist for common epidemics and ailments during a disaster

Power

1. Handbook on Disaster Power Assistance (alternative power supply arrangements and quick restoration of electrical installations)
2. Handbook on Team Equipment and Inventory
3. Responsibilities of Primary Agency
4. Responsibility of each Support Agency
5. Manuals on handling of equipment which is unique to a particular disaster
6. Emergency toolkits
7. Operational checklists
8. Equipment Damage Assessment
9. On-site operations
10. Planning checklist
11. List of PSUs and private agencies

Transport

1. Inventories of available transport facilities ¤ Responsibilities of Primary Agency
2. Responsibility of each Support Agency
3. Handbook on transport assistance
4. Handbook on Team equipment and Inventory
5. Emergency tool kits
6. Operational checklists

7. Equipment Damage Assessment
8. On-site operations
9. Formats for check of roads, bridges and other civil works
10. Planning checklist
11. List of PSUs and private Agencies

Search and Rescue

1. Training handbooks on Search & Rescue
2. Inventory of professionally trained volunteers in Search & Rescue
3. Handbook on team Equipment and Inventory
4. Responsibilities of Primary Agency
5. Responsibility of each Support Agency
6. Emergency toolkits, search & rescue kits/equipments
7. Operational checklists ¤ Medical tool kits
8. On-site aerial surveys
9. MFR and CSSR kits
10. Deactivation checklist
11. List of PSUs and Private Agencies/NGOs working in the area

Relief Supplies

1. Handbook on Relief Supplies Assistance ¤ Handbook on Team Equipment and Inventory
2. Responsibilities of Primary Agency and each Support Agency
3. Guidelines on specific types of items for each type of disaster
4. Guide for developing relief supplies needs list
5. Manual on disaster-specific relief operations Emergency tool kits
6. Emergency tool kits
7. Operational checklists for team leaders and team members
8. Handling/Storage of relief supplies
9. On-site operations ¤ Planning checklist

10. Deactivation checklist
11. List of PSUs and Private Agencies

Shelter

1. Inventories of manufacturing agencies
2. Procedures of storage
3. Minimum standards for relief camps
4. Minimum requirement of space per person
5. Handbook on Team Equipment and Inventory
6. Responsibilities of Primary Agency
7. Responsibility of each Support Agency
8. Handbook on tent structure and other collapsible structures
9. Handbook on assembling of structures
10. Inventories of agencies that can be used for putting up tents

Annexure -1

Alphabetical listing of divisions

Division	Headquarters	Districts
Agra division	Agra	Agra Firozabad Mainpuri Mathura
Aligarh division	Aligarh	Aligarh Etah Mahamaya Nagar Kanshiram Nagar
Allahabad division	Allahabad	Allahabad Fatehpur Kaushambi Pratapgarh
Azamgarh division	Azamgarh	Azamgarh Ballia Mau
Bareilly division	Bareilly	Badaun Bareilly Pilibhit Shahjahanpur
Basti division	Basti	Basti Sant Kabir Nagar Siddharthnagar
Chitrakoot division	Chitrakoot	Banda Chitrakoot Hamirpur Mahoba
Devipatan division	Gonda	Bahraich Balarampur Gonda Shravasti
Faizabad division	Faizabad	Ambedkar Nagar Barabanki Faizabad Sultanpur
Gorakhpur division	Gorakhpur	Devaria Gorakhpur Kushinagar Maharajganj
Jhansi division	Jhansi	Jalaun Jhansi

		Lalitpur
Kanpur division	Kanpur	Auraiya Etawah Farrukhabad Kannauj Kanpur Dehat Kanpur Nagar
Lucknow division	Lucknow	Hardoi Lakhimpur Kheri Lucknow Raebareli Sitapur Unnao
Meerut division	Meerut	Bagpat Bulandshahr Gautam Buddha Nagar Ghaziabad Meerut
Mirzapur division	Mirzapur	Mirzapur Sant Ravidas Nagar Sonbhadra
Moradabad division	Moradabad	Bijnor Jyotiba Phule Nagar Moradabad Rampur
Saharanpur division	Saharanpur	Muzaffarnagar Saharanpur
Varanasi division	Varanasi	Chandauli Ghazipur Jaunpur Varanasi

Alphabetical listing of districts

Code [9]	District [10]	Headquarters [10]	Population As of 2001[update] [10]	Area (km2) [10]	Density (/km2 [10]
AG	Agra	Agra	3,611,301	4,027	897
AH	Allahabad	Allahabad	4,941,510	5,424	911
AL	Aligarh	Aligarh	2,990,388	3,747	798
AN	Ambedkar Nagar	Akbarpur	2,025,373	2,372	854
AU	Auraiya	Auraiya	1,179,496	2,051	575
AZ	Azamgarh	Azamgarh	3,950,808	4,234	933
BB	Barabanki	Barabanki	2,673,394	3,825	699
BD	Badaun	Badaun	3,069,245	5,168	594
BG	Bagpat	Bagpat	1,164,388	1,345	866
BH	Bahraich	Bahraich	2,384,239	5,745	415
BI	Bijnor	Bijnor	3,130,586	4,561	686
BL	Ballia	Ballia	2,752,412	2,981	923
BN	Banda District	Banda	1,500,253	4,413	340
BP	Balrampur	Balrampur	1,684,567	2,925	576
BR	Bareilly	Bareilly	3,598,701	4,120	873
BS	Basti	Basti	2,068,922	3,034	682
BU	Bulandshahr	Bulandshahr	2,923,290	3,719	786
CD	Chandauli	Chandauli	1,639,777	2,554	642
CT	Chitrakoot	Chitrakoot	800,592	3,202	250
DE	Deoria	Deoria	2,730,376	2,535	1,077
ET	Etah	Etah	2,788,270	4,446	627
EW	Etawah	Etawah	1,340,031	2,287	586
FI	Firozabad	Firozabad	2,045,737	2,361	866
FR	Farrukhabad	Fatehgarh	1,577,237	2,279	692
FT	Fatehpur	Fatehpur	2,305,847	4,152	555
FZ	Faizabad	Faizabad	2,087,914	2,765	755
GB	Gautam Buddha	NOIDA	1,191,263	1,269	939

Code [9]	District [10]	Headquarters [10]	Population As of 2001[update] [10]	Area (km2) [10]	Density (/km2 [10]
	Nagar				
GN	Gonda	Gonda	2,765,754	4,425	625
GP	Ghazipur	Ghazipur	3,049,337	3,377	903
GR	Gorkakhpur	Gorakhpur	3,784,720	3,325	1,138
GZ	Ghaziabad	Ghaziabad	3,289,540	1,956	1,682
HM	Hamirpur	Hamirpur	1,042,374	4,325	241
HR	Hardoi	Hardoi	3,397,414	5,986	568
HT	Mahamaya Nagar	Hathras	1,333,372	1,752	761
JH	Jhansi	Jhansi	1,746,715	5,024	348
JL	Jalaun	Orai	1,455,859	4,565	319
JP	Jyotiba Phule Nagar	Amroha	1,499,193	2,321	646
JU	Jaunpur District	Jaunpur	3,911,305	4,038	969
KD	Kanpur Dehat	Akbarpur	1,584,037	3,143	504
KJ	Kannauj	Kannauj	1,385,227	1,993	695
KN	Kanpur Nagar	Kanpur	4,137,489	3,029	1,366
-	Kanshi Ram Nagar	Kasganj	-	-	-
KS	Kaushambi	Manjhanpur	1,294,937	1,837	705
KU	Kushinagar	Padarauna	2,891,933	2,909	994
LA	Lalitpur	Lalitpur	977,447	5,039	194
LK	Lakhimpur Kheri	Kheri	3,200,137	7,680	417
LU	Lucknow	Lucknow	3,681,416	2,528	1,456
MB	Mau	Mau	1,849,294	1,713	1,080
ME	Meerut	Meerut	3,001,636	2,522	1,190
MG	Maharajganj	Maharajganj	2,167,041	2,948	735
MH	Mahoba	Mahoba	708,831	2,847	249
MI	Mirzapur	Mirzapur	2,114,852	4,522	468
MO	Moradabad	Moradabad	3,749,630	3,648	1,028
MP	Mainpuri	Mainpuri	1,592,875	2,760	577

Code [9]	District [10]	Headquarters [10]	Population As of 2001[update] [10]	Area (km2) [10]	Density (/km2 [10]
MT	Mathura	Mathura	2,069,578	3,333	621
MU	Muzaffarnagar	Muzaffarnagar	3,541,952	4,008	884
PI	Pilibhit	Pilibhit	1,643,788	3,499	470
PR	Pratapgarh	Pratapgarh	2,727,156	3,717	734
RA	Rampur	Rampur	1,922,450	2,367	812
RB	Rae Bareli	Rae Bareli	2,872,204	4,609	623
SA	Saharanpur	Saharanpur	2,848,152	3,689	772
SI	Sitapur	Sitapur	3,616,510	5,743	630
SJ	Shahjahanpur	Shahjahanpur	2,549,458	4,575	557
SK	Sant Kabir Nagar	Khalilabad	1,424,500	1,442	988
SN	Siddharthnagar	Navgarh	2,038,598	2,751	741
SO	Sonbhadra	Robertsganj	1,463,468	6,788	216
SR	Sant Ravidas Nagar	Gyanpur	1,352,056	960	1,408
SU	Sultanpur	Sultanpur	3,190,926	4,436	719
SV	Shravasti	Shravasti	1,175,428	1,126	1,044
UN	Unnao	Unnao	2,700,426	4,558	592
VA	Varanasi	Varanasi	3,147,927	1,578	1,995

Demographic, Socio-economic and Health profile of Uttar Pradesh State as compared to India figures

S. No.	Item	Uttar Pradesh	India
1	Total population (Census 2001) (in million)	166.20	1028.61
2	Decadal Growth (Census 2001) (%)	NA	21.54
3	Crude Birth Rate (SRS 2007)	29.5	23.1
4	Crude Death Rate (SRS 2007)	8.5	7.4
5	Total Fertility Rate (NFHS-III)	3.8	2.7
6	Infant Mortality Rate (SRS 2007)	69	55
7	Maternal Mortality Ratio (SRS 2001 - 2003)	517	301
8	Sex Ratio (Census 2001)	898	933
9	Population below Poverty line (%)	31.15	26.10
10	Schedule Caste population (in million)	35.15	166.64
11	Schedule Tribe population (in million)	0.11	84.33
12	Female Literacy Rate (Census 2001) (%)	42.2	53.7

Economic Infrastructure of Uttar Pradesh

Power

Installed Capacity (96-97) :	5,575 MW
Production :	2,282 crore KWH
Consumption :	2,667 crore KWH
Per capita consumption :	209 KWH
No. of electrified villages :	87,891

Telecommunication

Number of phones	5,75,867
People per phone	241.4
Phone services	DOT, HFC Bezeq
Cellular services	UP(East): Airtel, Koshika; UP(West): Escotel, Koshika
Radio paging	IXL, Modi Tel

Railways

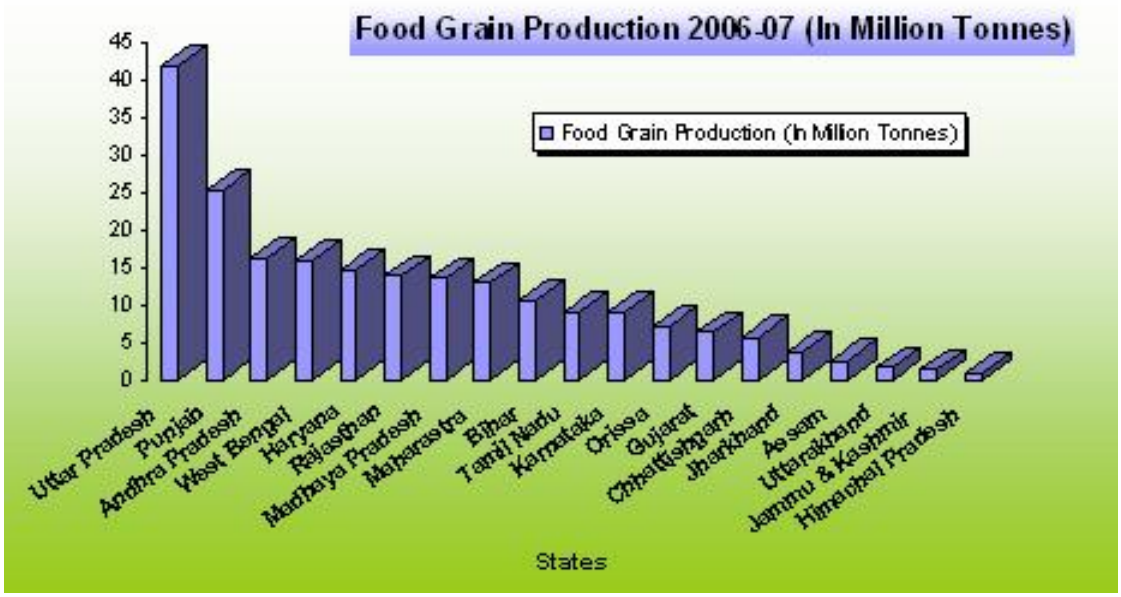
Railway track length	8,901 km

Roads

Road length	1,84,000 km
National Highway length	2,613 km

Airports

Domestic airports	5 (Agra, Kanpur, Lucknow, Varanasi and Gorakhpur)
International airports	None



Detailed Information about important Departments and Institutions

Administrative Department	
Administrative Reforms Department	Agriculture Production Commissioner
Ambedkar Gram Vikas Vibhag	Animal Husbandry & Fisheries
Appointment Department	Backward Welfare - Citizen Charter
Banking & Institutional Finance	Board of Revenue
Chief Minister Office	Civil Aviation
Cooperative Department	Customs and Central Excise Kanpur
Election : Office of Chief Electoral Officer	Entertainment Tax
Excise Department	Externally Aided Projects Department
Finance Department	Fisheries Department
Food & Civil Supplies	Forest Department
Geology & Mining Directorate	Handicap Welfare Department
Handloom Directorate	Higher Education Department
Horticulture Department	Housing Department
Industrial Development	Information Directorate
Information Technology & Electronics	Irrigation
Land Records	Mahila Kalyan
Medical, Health & Family Welfare	Minor Irrigation Department
Planning Department	Prantiya Rakshak Dal & Youth Welfare
Public Works Department (PWD)	Rajya Sampatti Vibhag
Revenue (Scarcity)	Rural Engineering
Rural Development	Ruralsoft
Sarvjanik Udyam Vibhag	Sericulture
Sports Directorate	Town and Country Planning Department
Trade Tax	Transport Department
Treasuries	Uttar Pradesh Budget
Uttar Pradesh Ganna Vikas Vibhag	Uttar Pradesh Police
Vidyut Suraksha	Vigilance Department
E-mail Directory	Raj Bhawan, Uttar Pradesh
Vidhan Sabha, Uttar Pradesh	High Court, Allahabad, Uttar Pradesh
Etawah Court	Kanpur Dehat Court
Lok Ayukta, Uttar Pradesh	Sankhikiya Patrika
State Election Commission, U.P.	State Information Commission, U.P.

Source: http://www.upgov.nic.in

Central Government Offices	
Accountant General, Uttar Pradesh and Uttaranchal	Advanced Level Telecommunication Training Centre(ALTTC)
Aligarh Muslim University(AMU)	Artificial Limbs Manufacturing Corporation of India(ALIMCO)
Bal Vikas Pariyojana Parishad, Uttar Pradesh	Banaras Hindu University(BHU)
Birbal Sahni Institute of Palaeobotany	Cantonment Board, Jhansi
Central Avian Research Institute(CARI)	Central Drug Research Institute(CDRI)
Central Government Health Scheme(CGHS), Allahabad	Central Ground Water Board, Northern Region, Lucknow
Central Institute for Research on Goats(CIRG)	Central Institute of Higher Tibetan Studies(CIHTS)
Central Institute of Medicinal and Aromatic Plants(CIMAP)	Chief Electoral Officer, Uttar Pradesh
Competent Authority, Customs and Narcotics, Lucknow	Customs and Central Excise, Kanpur
Department of Computer Science and Engineering, Indian Institute of Technology, Kanpur	Diesel Locomotive Works(DLW)
Educational Consultants India Limited(EDCIL)	Fertilizer Corporation of India Limited(FCIL)
Field Gun Factory, Kanpur	Giri Institute of Development Studies(GIDS)
Homoeopathic Pharmacopoeia Laboratory(HPL)	India Government Mint, Noida
Indian Institute of Information Technology, Allahabad(IIITA)	Indian Institute of Management, Lucknow(IIML)
Indian Institute of Pulses Research(IIPR)	Indian Institute of Sugarcane Research(IISR)
Indian Institute of Technology, Kanpur(IITK)	Indian Institute of Vegetable Research(IIVR)
Indian Veterinary Research Institute(IVRI)	Indira Gandhi Rashtriya Uran Academy(IGRUA)
Industrial Toxicology Research Centre(ITRC)	Inland Waterways Authority of India(IWAI)
Institute of Technology, Banaras Hindu University	Kendriya Hindi Sansthan
Krishak Bharati Co-operative Limited(KRIBHCO)	Mehta Research Institute of Physics and Mathematical Physics
Motilal Nehru National Institute of Technology(MNNIT), Allahabad	National Academy of Sciences
National Botanical Research Institute(NBRI)	National Centre for Medium Range Weather Forecasting(NCMRWF)
National Commissioner for Linguistic Minorities	National Handloom Development Corporation Limited(NHDC)
National Institute for Entrepreneurship and Small Business Development(NIESBUD	National Internet eXchange of India(NIXI)
National Research Centre for Agroforestry(NRCAF)	National Research Laboratory for Conservation of Cultural Property(NRLC
National Sugar Institute	Noida Special Economic Zone(NSEZ)
North Central Zone Cultural Centre(NCZCC)	North Eastern Railway
Northern India Textile Research Association(NITRA)	Northern Railway Carriage and Wagon Workshop(NRC&W)
Principal Controller of Defence Accounts(Central Command	Principal Controller of Defence Accounts(Pensions

Projects and Development India Limited(PDIL	Railway Recruitment Board, Allahabad
Railway Recruitment Board, Gorakhpur	Rampur Raza Library
Research Designs and Standards Organisation(RDSO	Small Industries Service Institute(SISI), Kanpur
State Institute of Education Technology, Lucknow	Uttar Pradesh(East) Telecom Circle
Uttar Pradesh(West) Telecom Circe	V. V. Giri National Labour Institute(VVGNLI

Source: http://www.juteworld.com

Educational Institutions/Institutes	
Aligarh Muslim University (AMU), Aligarh	Allahabad University
Amity University	Banaras Hindu University (BHU), Varanasi
Birbal Sahni Institute of Palaeobotany, Lucknow	Board of High School & Intermediate Education, U.P., Allahabad
Board of Technical Education, U.P., Lucknow	Bundelkhand Institute of Engineering & Technology, Jhansi
Chhatrapati Shahuji Maharaj University, Kanpur	Community Development Scheme of U.P. Polytechnics
Department of Computer Science & Engineering, IIT Kanpur	Footwear Design and Development Institute, Noida
Govind Ballabh Pant Social Science Institute	Harcourt Butler Technological Institute (HBTI), Kanpur
Harish Chandra Research Institute, Allahabad	Indian Institute of Information Technology, Allahabad (IIITA)
Indian Institute of Management, Lucknow (IIML)	Indian Institute of Sugarcane Research, Lucknow (IISR)
Indian Institute of Technology, Kanpur (IITK)	Indian Veterinary Research Institute, Izatnagar, Bareilly
Indira Gandhi Institute of Cooperative Management	Indira Gandhi Rashtriya Uran Academy
Institute of Engineering & Technology (IET), Lucknow	Institute of Judicial Training and Research, Lucknow
Institute of Research, Development and Training, Kanpur	Jaipuria Institute of Management (JIM), Lucknow
Joint Entrance Examination Council, U.P., Lucknow	Kendriya Hindi Sansthan, Agra
King George Medical University, Lucknow	Lucknow University
MJP Rohilkhand University	Motilal Nehru National Institute of Technology (MNNIT), Allahabad
NIC Training Division, UPSU, Lucknow	Raza Library, Rampur

Sampurnanad Sanskrit Vishwa Vidyalaya	Uttar Pradesh Combined Pre Medical Test (UPCPMT)
Small Industries Service Institute, Kanpur	State Institute of Educational Technology, U.P.
V.V. Giri National Labour Institute, Noida	Uttar Pradesh Technical University (UPTU), Lucknow
Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS), Lucknow	

Source: http://www.juteworld.com

CLASSIFICATION OF SOME DANGEROUS CHEMICALS

CORROSIVE CHEMICALS

Amyl Trichorosilane, Anisoyl Chloride, Antimony Pentafluoride, Benzoyl Chloride, Benzyl Bromide, Benzyl Chloride. Benzyl Chloroformate, Boron Trichloride, Bromine, Bromine Pentu Fluoride, Bromine Trifluoride, Caustic Potash, Caustic Soda, Clorocetyl Chloride, Chlorine Trifluoride, Chlorosulfonic Acid, Chromic Acid Solution, Diethyl Dichlorosilane, Ethyl Chloroformate, Formic Acid, Flourine, Hexafluorophoric Acid, Hydrazine, Hydrobromic Acid, Hydrochloric Acid, Hydrofluoric Acid, Methly Chloroformate, Nitric Acid, Perchloric Acid, Oxybromide Oxychloride, Tribromide; Trichloride of Phosphorous, Tetrachloride, Sodium Aluminates, Spent Sulfuric Acid, Sulfur Chloride (Mono and Di), Sulfuric Acid, Sulfuryl Chloride, Thioyl Chloride, Titanium Tetrachloride, Phenol etc.

OXIDIZING AGENT

Aluminium Nitrate, Ammonium Nitrate, Ammonium Perchlorate, Ammonium Permaganate, Barium Chlorate, Barium Nitrate, Barium Perchlorate, Barium Peroxide, Benzoyl Peroxide, Nitrate Peroxide Permanganate of Calcium, Chlorate and Magnesium Chloride Mixture, Chlorate of Potash and Soda, Chromic Acid, Dimethyl Hexane, Lead Nitrate, Lithium Peroxide, Nitrate, Perchlorate, peroxide of Magnesium, and Potassium Permanganate, Permanganate of Soda, Potassium Bromate1 Nitrate and Nitrite and Perchlorate and Permanganate and Peroxide of Potassium. Silver Nitrate, Chlorate, Chlorite Permanganate Peroxide Nitrate, - Nitrate of Sodium, Zinc Ammonium Nitrite, Zinc Chlorate, Zinc Permanganate, Zinc Peroxide etc.

CARCINOGENS

Asbestos, Acrolein, Aniline, Acrylonitrile, Alpha, Napthylamine, Beta, Naphtyalamine, Beta Naphtylamine, Benzidine, Benzene, Benzylchloride, Carbon Tetra Chloride, chloroform, Chloropropanee, Dioxine, Epichlorohydrin, Ethylene Oxide, Formaldehyde, Perchloroethylene, Beta-Propiolactone, Styrene, Tetra Chloroethane, Toluidine (Ortho Pera Meta) Toluenediamine, Trichloroethane, Trichloroethylene, Vinyl Chloride, Pyridine, Phenol, 4. Aminodiphenyl, etc.

POISONOUS CHEMICALS

Cyclohexane, Dinitrophenol, Ethyldichloroarsine, Hexaethyl tetraphosphete, Hydrocyanic Acid and its fumes, Mercuric Acetate, Mercuric Ammonium Chloride and Benzoate, Mercuric Cynide - Bromide - Oxide - Iodide, Mercury Cyanide Methyl Bromide, Methyl Dichloro Arsine, Mustard Gas, Nickle Cynide, Nitrobenzol, Nitrogen Peroxide, Phosgene, Thio Phosgene, Zinc Arsenate, MIC (Metyl Iso-cynaate) Carbon Monoxide, Cadmium, D.D.T., Methanol, Phosphine and Dangerous Pesticides such as Parathion, Diazeomon, Tetra Ethyl Pyrophosphate, Tetra Ethyl destroy Pyrophosphate, Demeton, Scheadan, Methyl Perantion, Cryolite, Pentachlorophenol, Dinitro-O-Cresol, Endrin etc.

EXPLOSIVE CHEMICALS

Amyl Acetate, Carbon Dust, Aluminium Dust, Wood Saw Dust, Hydrogen, Sodium Metal,

Sodium Nitrate, Potassium Nitrate, Ammonium Nitrate, Benzoyl Chloride, Nitro Glycerine, Phosphorous Trichloride, Titanium Powder, Hexane, Trinitro Toluene, Carbon Disulphide, Ethylene Oxide, Cellulose films etc.

SOLVENTS

Benzene, Acetone, Methanol, Ethanol, Toluene, Carbon Tetrachloride, Methyl Chloride, Methylene Chloride, Ethyl Acetate,
Ethyl Ether, Methyl Bromide, Nitro Propane; Propyl Acetate, Spirit, Petrol, Carbon Disulphide, Ethyl Beneze, Methyl-propyl, Terpentine, Chloroform, Aniline Benzyl Chloride, Bromobenzene, Chlorobenzene, Ethyl Benzene, Ethylamide. Formic Acid, Heptane, Glycerol, ISO Propyl Acetate, Methoxybenzene (Anisole), Methyl Oleate, Naphthalene, Nitrobenzene, Oleic Acid, Phenol, Styrene, Vinyl Acetate, Xylene, Ether etc.

OTHER FLAMMABLE CHEMICALS

Acetonitrile, Acrylonitritic, Aluminium Triethyl, Amyl Acetate-Amyl Chloride-Amyl Mercaptanamyl Nitrate, Benzoyl Peroxide, Butadiene, Calcium Phosphate, Carbon Disulfide, Carbon Monoxide, Coal Tar Naphtha, Lacquer, Paint, Varnish, Diethyl Aluminium Chloride, Diethylamine, Dimethylamine, Ethyl Aluminium Dichloride, Ethyl Chloride, Ethylene, Ethylene Dichloride, Ethylene Oxide, Ethyl Nitrate, Ethyl Nitrite, Heptane, Hexane, ISO Octane, Liquefied Petrolium Gas (LPG), Lithium Metal, Methane, Methyl Acetone, Monoethylamine, Naphtha, Nickel Carbonyl, Pentane, Petroleum Naphtha, Phosphorous, Phosphorous Anhydride, Photographic Film, Sodium Aluminium Hydride, Sodium Metal, Sodium Methylate Dry, Titanium Metal Powder, Vinyl Chloride, Vinyl Fluoride, X-rays film scrap etc.

REACTIVE CHEMICALS

Acetic Acid, Acetone, Acetylene Sodium, Potassium, Lithium, Magnesium, Calcium, Aluminium Powder, Anhydrous Ammonia, Ammonium Nitrate, Aniline, Bromine, Chlorates, Chromic Acid and Chromium Trioxide, Chlorine, Flouorine, Hydrocarbons (Benzene, Butane, Propane, Terpentine etc.), Hydrocyanic Acid, Hydrofluoric Acid (HF), Hydrogen Peroxide, Hydrogen Sulphide, Iodine, Mercury, Nitric Acid (Conc.), Oxalic Acid, Peroxides, Organic, Phosphorous (White), Potassium Chlorate, Potassium Permaganate, Solvent, Sodium, Sodium Nitrite, Sodium Peroxide, Sulphuric Acid.

Some Major Chemical Accidents in India (2002-06)

S. No.	Name of Unit	Date Of Accident	Source	Death/Injury/missing; Losses
1.	GACL, Vadodara, Gujarat	05.09.2002	Chlorine gas explosion	4/20/nil
2.	IPCL, Gandhar, Gujarat	20.12.2002	Chlorine gas release	Nil/18 workers & 300 villagers in Jageshwar affected/nil
3.	IOC Refineries, Digboi, Assam	07.03.2003	Fire in motor spirit tank	Nil;Product loss Rs11.55crore
4.	Orient Paper Mills, Amla, Shahdol, Madhya Pradesh	13.10.2003	Liquid Chlorine	Nil/88/nil; 5 m pipe affected
5.	IDL Gulf Oil, Kukkatpally, Hyderabad, Andhra Pradesh	25.11.2003	Explosion Hexane release-fire	8/5/1
6.	Chemical Factory, Dombivilli, Maharashtra	31.05.2004	Chlorine leak	1/8/Nil
7.	Chemplast, Mettur, Tamil Nadu	18.07.2004		Nil/27/nil
8.	Gujarat Refinery, Vadodara, Gujarat	29.10.2004	Explosion in slurry Settler	2/13/nil
9.	Orchid Chemicals and Pharmaceuticals Ltd., Alathur, Kancheepuram District, Tamil Nadu	03.11.2005	Explosion with Fire	2/4/nil
10.	Kanoria Chemicals and Industries Ltd. Renukoot, Sonebhadra, Uttar Pradesh	29.03.2006	Chlorine release	6/23/nil

List of Relevant Statutes on Management of Hazardous Substances

- The Environment (Protection) Act, 1986 (amended 1991) and following Rules there under:
    - The Environment (Protection) Rules, 1986 (amended 2004).
    - The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (amended, 1994 and 2000).
    - The Hazardous Wastes (Management and Handling) Rules, 1989 (amended 2000 and 2003).
    - The Environment Impact Assessment Notification, 2006.
    - The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996.
    - Bio-medical Wastes (Management and Handling) Rules, 1989.

- The Factories Act, 1948 (amended 1987)

- State Factory Rules.

- The Inflammable Substances Act, 1952.

- The Motor Vehicles Act, 1988 (amended 2001)

- The Central Motor Vehicles Rules, 1989 (amended 2005).

- The Public Liability Insurance Act, 1991 (amended 1992)

- The Public Liability Insurance Rules, 1991 (amended 1993).

- The Petroleum Act, 1934.

- The Petroleum Rules, 2002.
- The Insecticide Act, 1968 (amended 2000)
- The Insecticide Rules, 1971 (amended 1999).
- The National Environment Tribunal Act, 1995.
- The Explosives Act, 1884 (amended till 1983)
- The Gas Cylinder Rules, 2004
- The Static and Mobile Pressure Vessels (Unfired) Rules, 1981 (amended 2002)
- The Explosives Rules, 1983 (amended 2002).

List of Selected BIS Standards on HAZCHEM

Standard	Title
IS 646: 1986	Liquid Chlorine, Technical (Second Revision).
IS 662: 1980	Anhydrous Ammonia (First Revision).
IS 1446: 2002	Classification of Dangerous Goods (Second Revision).
IS 4155: 1966	Glossary of Terms Relating to Chemical and Radiation Hazards and Hazchem.
IS 4209: 1987	Code of Safety in Chemical Laboratories (First Revision).
IS 4263: 1967	Code of Safety for Chlorine.
IS 4262: 2002	Sulphuric Acid—Code of Safety (First Revision).
IS 4544: 2000	Ammonia—Code of Safety (First Revision).
IS 4607: 1968	Code of Safety for Hazchem.
IS 4644: 1968	Code of Safety for Benzene, Toluene and Xylene.
IS 5184: 1969	Code of Safety for Hydrofluoric Acid.
IS 5513: 1984	Ethylene Oxide.
IS 5571: 1979	Guide for Selection of Electrical Equipment for Hazardous Areas.
IS 5572: 1994	Classification of Hazardous Areas (Other than Mines having Flammable Gases, Vapours for Electrical Installation).
IS 5685: 1970	Code of Safety for Carbon Disulphide.
IS 5931: 1970	Code of Safety for Handling Cryogenic Liquids (First Revision).
IS 6044 (Part I): 1971	COP for LPG Cylinder Installations.
IS 6044 (Part Ii): 2001	COP for LPG Storage Installations.
IS 6156: 1971	Code of Safety for Chlorosulphonic Acid.
IS 6164: 1971	Code of Safety for Hydrochloric Acid.
IS 6269: 1971	Code of Safety for Ethylene Oxide.
IS 6270: 1971	Code of Safety for Phenol.
IS 6818: 1973	Code of Safety for Phosphoric Acid.
IS 6819: 1973	Code of Safety for Calcium Carbide.
IS 6953: 1973	Code of Safety for Bromine.
IS 6954: 1973	Code of Safety for Caustic Potash.
IS 7415: 1974	Code of Safety for Aniline.
IS 7444: 1974	Code of Safety for Methanol.
IS 7445: 1974	Code of Safety for Acetone.
IS 8185: 1976	Code of Safety for Phosgene.
IS 8388: 1977	Code of Safety for Nitrobenzene.
IS 9277: 1979	Code of Safety for Monochlorobenzene.
IS 9279: 1979	Code of Safety for Aluminum Phosphide.

BIS Standard Code Of Practice On Occupational Health Ans Safety Audit Is-14489:1998

BIS Standard 'Occupational Safety and Health Management Systems' (IS-18001:2000)

BIS Standard 'Hazard Identification and Risk Analysis—Code of Practice' (IS: 15656.2006).

Provisions for Emergency Preparedness

ISO9000:2000		ISO14001		OHSAS18001	
Measurement, analysis and improvement	**8**	4.5	Checking and corrective action	Checking and corrective action	4.5
General Monitoring and measurement Customer satisfaction	8.1 8.2 8.2.1	4.5.1	Monitoring and measurement	Performance measurement and monitoring	4.5.1
Internal audit	8.2.2	4.5.4	Environmental management system audit	Audit	4.5.4
Monitoring and measurement of Processes Monitoring and measurement of product	8.2.3 8.2.4	4.5.1	Monitoring and measurement	Performance measurement and monitoring	4.5.1
Control of nonconforming product	8.3	4.5.2	Non-conformance and corrective and preventive action	Accidents, incidents, non-conformance and corrective and preventive action	4.5.2
		4.4.7	Emergency preparedness and response	Emergency preparedness and response	4.4.7
Analysis of data	8.4	4.5.1	Monitoring and measurement	Performance measurement and monitoring	4.5.1
Improvement	8.5	4.2	Environmental policy	OH&S policy	4.2
Continual improvement	8.5.1	4.3.4	Environmental management programme (s)	OH&S management programme(s)	4.3.4
Corrective action Preventative action	8.5.2 8.5.3	4.5.2	Nonconformance and corrective and preventative action	Accidents, incidents, non- conformance and corrective and preventive action	4.5.2

Oil Industry Safety Directorate Standards

Standard\Std-112.doc	Safe Handling of Air Hydrocarbon Mixtures and Pyrophoric Substances Rev. 1.
Standard\Std-113.doc	Classification of Area for Electrical Installation at Hydrocarbon and Handling Facilities.
Standard\GDN-115.doc	Guidelines on Fire Fighting, Equipment and Appliances in Petroleum Industry.
Standard\Std-116.doc	Fire Protection Facilities for Petroleum Refineries and Oil/Gas Processing Plants.
Standard\Std-117.doc	Fire Protection Facilities for Petroleum Depots and Terminals (Amended Edition).
Standard\Std-129.doc	Inspection of Storage Tanks Rev. I.
Standard\Std-138.doc	Inspection of Cross Country Pipelines—Onshore.
Standard\Std-142.doc	
Standard\Std-144.doc- I Design	Inspection of Fire Fighting Equipments and Systems.
Standard\Std-150.doc Standard\Std-157.doc Standard\Std-158.doc	Liquefied Petroleum Gas (LPG) Bottling Plant Operations Rev. I. Vol Philosophies. Vol - II Operating Practices. Vol - III Inspection and MaintenancePractices. Vol-IV Safety and Fire Protection.
Standard\Std-159.doc Standard\Std-160.doc	Design and Safety Requirements For Liquefied Petroleum Gas Mounded Storage Facility.
Standard\Std-163.doc	Recommended Practice for Transportation of Bulk Petroleum Products.
Standard\Std-168.doc Standard\Std-180.doc	Recommended Practices on Storage and Handling of Bulk Liquefied Petroleum Gas

Standard\Std-194.doc	LPG Tank Trucks—Requirements of Safety on Design/Fabrication and Fittings. Protection to Fittings Mounted on Existing LPG Tank Trucks. Process Control Room Safety. Emergency Preparedness Plan for Marketing Locations of Oil Industry. Lightning Protection. Standard For the Storage and Handling of Liquefied Natural Gas (LNG).

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LIST OF MAZOR HAZARD FACTORIES COVERED UNDER MISHC RUELS, 1989/ CIMAH RULES, 1996 IN STATE OF UTTAR PRADESH

Sl. No.	Distt.	Name & Address of the factory Private/Public	Name of Hazardous Chemical	Storage Capacity (MT)	Threshold Qt. (MT)	Emergency Plan	Safety Report	Safety Policy	Safety Audit	Mock Drills Conducted	
										Once	Twice
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
1.	Kanpur	M/s. Duncon Industries Ltd. (Fertilizer Division), Panki Industrial Area, Panki, Kanpur. Private.	Amonia, Hydrogen Naptha	3171.000 27.000 1500.000	50.000 2.000 1500.000	Yes	Y	Y	**N**	**N**	**N**
2.	Kanpur	M/s. Indian Oil Corporation Ltd., Indane Bottling Plant Gangaganj, Panki, Kanpur. Public	L.P.G.	4300.000	15.000	Yes	Y	Y	**Y**	**Y**	**Y**
3.	Kanpur	M/s. Indian Oil Corporation Ltd. (Marketing Division), Panki, Kanpur. Public	M.S. H.S.D S.K.O. L.D.O Naphtha	11036.000 43385.000 8428.000 12601.000 35634.000	1000.000 2500.000 2500.000 5000.000 1500.000	Yes	Y	Y	**Y**	**Y**	**N**
4.	Kanpur	M/s. I. C. I. Katalco-I.C.I. India Ltd. Panki Works, Panki, Kanpur. Private	L.P.G.	40.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
5.	Kanpur	M/s. L.M.L. Ltd., C-10, Panki Industrial Area, Site-II, Panki, Kanpur, Private	L.P.G.	60.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
6.	Kanpur Dehat	M/s Kanodia Petroleum Ltd. B-3, UPSIDC Ind. Area, Jainpur, Kanpur Dehat. Private	L.P.G.	80.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
7.	Kanpur Dehat	M/s Reliance Industries Ltd. Village-Jalalpur, Mati, Kanpur Dehat. Private	M.S. HSD	1589KL 9534KL	1000.000 2500.000	Yes	NR	Y	**NR**	**Y**	**N**
8.	Auraiya	M/s. Gail (India) Ltd. U.P. Petro-Chem Complex, Pata, Auraiya Public	Chlorine LPG Propane Ethylene Propylene Mix C4 Mix C2/C3 Butene-1 CycloHexane Hexane	35.7000 8400.00 2000.00 7703.00 756.00 580.00 4800.00 1160.00 304.00 124.00	10.000 15.000 15.000 15.000 15.000 15.000 15.000 1000.000 1000.000 1000.000	Yes	Y	Y	**Y**	**Y**	**Y**

Sl. No.	Distt.	Name & Address of the factory Private/Public	Name of Hazardous Chemical	Storage Capacity (MT)	Threshold Qt. (MT)	Emergency Plan	Safety Report	Safety Policy	Safety Audit	Mock Drills Conducted	
										Once	Twice
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
9.	Auraiya	M/s N.T.P.C. Ltd., Auraiya Gas Power Station, P.O. Dibiapur, Etawah Public	Neptha Chlorine	2100.000 10.800	1000.000 10.000	Yes	NR	Y	**NR**	**Y**	**N**
10.	Etawah	M/S Indian Oil Corporation Ltd. (L.P.G. Bottling Plant) Gram- Keshawpur Kala, Bharthana Road, Etawah Public	LPG	600.300	15.000	Yes	Y	Y	**Y**	**Y**	**Y**
11.	Jhansi	M/S Indian Oil Corporation Ltd. Village & Post – Ambabai Jhansi Public	Petrol S.K.O. H.S.D. Ethanol	3620 Kl 4400 KL 13320KL 70KL	1000.000 2500.000 2500.000 1000.000	Yes	Y	Y	**Y**	**Y**	**N**
12.	Jhansi	M/S Bharat Petroleum Corporation Ltd. (L.P.G. Bottling Plant), Ambabai, Jhansi. Public	L.P.G	520.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
13.	Jhansi	M/S Bharat Petroleum Corporation Ltd. (Petroleum Depot) Gram Ambabai, Distt. Jhansi Public	M.S. H.S.D S.K.O	1819.000 3576.000 1572.000	1000.000 2500.000 2500.000	Yes	NR	Y	**NR**	**Y**	**N**
14.	Lalitpur	M/s. Bharat Explosive Ltd. 9-K.M. Lalitpur, Jhansi Road, Lalitpur Private	Oleum Ammonium Nitrate N.G.	191.000	15.000 10.000	Yes	NR	Y	**NR**	**N**	**N**
15.	Farrukhabad.	M/s. Indian Oil Corporation Ltd. (L.P.G. Bottling Plant), Gaisinghpur, Farrukhabad. Public	L.P.G.	960.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
16.	Lucknow	M/s Bharat Petroleum Corporation Ltd., (LPG Bottling Plant), Kursi Road, Lucknow Public.	L.P.G.	620.000	15.000	Yes	Y	Y	**N**	**Y**	**Y**
17.	Lucknow	M/s. Tata Motors Ltd., Chinhat, Lucknow Private	L.P.G.	18.100	15.000	Yes	NR	Y	**NR**	**Y**	**Y**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**

01	04	05	06	08	09	10	11	12	13	15	16
18.	Lucknow	M/s. India Pesticides Ltd., E-17-23, Industrial Estate, Chinhat, Lucknow. Private	Chlorine	60.000	10.000	Yes	Y	Y	**Y**	**Y**	**N**
19.	Lucknow	M/s. India n Oil Corporation Ltd. LPG Bottling Plant, Amausi, Lucknow. Public	L.P.G	2400.000	15.000	Yes	Y	Y	**Y**	**Y**	**Y**
20.	Lucknow	M/S Indian Oil Corporation Ltd. Pipeline Terminal, Amausi, Lucknow Public	M.S. H.S.D. S.K.O L.D.O.	6107.000 8898.000 1983.000	1000.000 2500.000 2500.000 5000.000	Yes	Y	Y	**Y**	**Y**	**Y**
21.	Lucknow	M/S Hindustan Petroleum Corpn. Ltd. Near Amausi Railway Station, Amausi, Lucknow. Public	M.S. H.S.D. S.K.O. H.E.X.	5550KL 13500KL 3300KL 120KL	1000.000 2500.000 2500.000 1000.000	Yes	Y	Y	**N**	**Y**	**N**
22.	Lucknow	M/S I.B.P. Co. Ltd. (Bulk Petroleum Depo) Near Amausi, Railway station, Amausi, Lucknow. Public	M.S. H.S.D.	1860.300 6482.540	1000.000 2500.000	Yes	Y	Y	**N**	**Y**	**Y**
23.	Lucknow	M/S Bakebihari Chemicals Pvt. Ltd. D-12, Industrial Aarea, Sarojni Nagar, Lucknow. Private	Chlorine	13.500	10.000	Yes	NR	Y	**NR**	**Y**	**N**
24.	Barabanki	M/S J.R. Organics Ltd. Somaiya Nagar, Barabanki Private	Acetaldehyde	100.000	15.000	Yes	NR	Y	**NR**	**N**	**N**
25.	Unnao	M/s. Hindustan Petroleum Corporation Ltd. L.P.G. Bottling Plant, Plot No. B-8/40, Rd. No.13, Unnao. Public	L.P.G.	203.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
26.	Rai Bareilly	M/s. Shree Bhawani Papers Mills Ltd., Industrial Area-1, Sultanpur Road, Rai Bareilly, Private	Chlorine	45.000	10.000	Yes	Y	Y	**Y**	**Y**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**

27.	Lakhimpur Khiri	M/s. Indian Oil Corporation Ltd. (L.P.G. Bottling Plant), Lakhimpur Khiri Public	L.P.G.	1850.000	15.000	Yes	Y	Y	**Y**	**Y**	**Y**
28.	Sultanpur	M/s. Indian Oil Corporation Ltd. (LPG Bottling Plant), Trisundi Tehsil Amethi, Sultanpur, Public	L.P.G.	100.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
29.	Sultanpur	M/s. Agro Papers Moulds Ltd., A-5 Sector-14, Industrial Area, Jagdishpur, Sultanpur Private	Chlorine	22.500	10.000	Yes	NR	Y	**NR**	**N**	**N**
30.	Sultanpur	M/s. Bharat Petroleum Corporation Ltd., (LPG Bottling Plant), Tikaria, Sultanpur. Public	L.P.G.	80.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
31.	Sultanpur	M/s. Indo Gulf Corporation Ltd., (Unit fertilizers), P.O. Jagdishpur, Sultanpur, Private	Ammonia	10000.000	50.000	Yes	Y	Y	**N**	**Y**	**Y**
32.	Gonda	M/s Bharat Petroleum Corporation Ltd., (Micro LPG Bottling Plant) Rudrapur Visen,Janki Nagar, Bahraech Road,Gonda Private	L.P.G.	40.000	15.000	Yes	NR	Y	**Y**	**N**	**N**
33.	Gorakhpur	M/s. Hindustan Petroleum Corporation Ltd., Bokta, Sahjanwa, Gorakhpur, Public	L.P.G.	200.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
34.	Gorakhpur	M/s. A. B.R Petro Product Ltd. LPG Botling Plant, Plot No.-AL-1,Sector-15, Gorakhpur Indl. Area, Geeda. Sahjanwa Gorakhpur, Public	L.P.G.	75.000 20.000 =95.000	15.000	Yes	NR	Y	**NR**	**N**	**N**
35.	Deoria	M/s. Bharat Petroleum Corporation Ltd., PO: Baitalpur, Deoria. Public	H.S.D. S.K.O. M.S.	4400.000 1026.000 3000.000	2500.000 2500.000 1000.000	Yes	Y	Y	**Y**	**Y**	**Y**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardo**	**Storage**	**Threshold Qt.**	**Emergency Plan**	**Safety**	**Safety**	**Safety**	**Mock Drills Conducted**	

			us Chemical	Capacity (MT)	(MT)		Report	Policy	Audit	Once	Twice
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
36.	Deoria	M/s. Hindustan Petroleum Corporation Ltd., Gudari, baitalpur, Deoria. Public	H.S.D. S.K.O. M.S.	7000KL 2300KL 1700KL	2500.000 2500.000 1000.000	Yes	NR	N	**NR**	**Y**	**N**
37.	Deoria	M/s.Indian Oil Corporation Ltd., (Bulk Oil Storage), Baitalpur, Deoria. Public	H.S.D. S.K.O. M.S. Ethanol	13500KL 8500KL 2700KL 70KL	2500.000 2500.000 1000.000 1000.000	Yes	NR	N	**NR**	**Y**	**N**
38.	Deoria	M/s.Bharat Petroleum Corporation Ltd., (LPG Plant), Baitalpur, Deoria. Public	L,P.G.	40.000	15.000	Yes	NR	N	**N**	**Y**	**N**
39.	Allahabad	M/s. Indian Farmers Fertilizers Cooperative Ltd., Phoolpur Unit, P.O. Phoolpur, Allahabad, Public	Ammonia Chlorine Naphtha	10000.000 16.000 30846.000	50.000 10.000 1500.000	Yes	Y	Y	**N**	**Y**	**N**
40.	Allahabad	M/s. Indian Oil Corporation Ltd. (Mkt. Div.), Subedar Ganj, Allahabad, Public	L.P.G.	600.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
41.	Allahabad	M/S Indian Oil Corporation Ltd. (L.P.G. Bottling Plant), Jhunsi, Allahabad. Public	L.P.G.	1850.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
42.	Allahabad	M/S Bharat Petroleum Corporation Ltd. (L.P.G. Bottling Plant), UPSIDC Industrial Area, Naini, Allalhabad. Public	L.P.G.	545.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
43.	Allahabad	M/S Aditya Fuels Ltd., Plot No. 34, 35 Riwa Rod, Tehsil Bara, Allalhabad. Private	L.P.G.	100.000	15.000	N	NR	N	**NR**	**N**	**N**
44.	Allahabad	M/S Trupati Bakers Pvt. Ltd., Plot No. E-15, 16 UPSIDC Indl. Area Naini,Allalhabad. Private	Propane	40.000	200.000	Y	NR	Y	**NR**	**N**	**N**
45.	Varanasi	M/s. Indian Oil Corporation Ltd. (LPG Bottling Plant), Post Harhua, Jaunpur Road, Varanasi. Public	L.P.G.	676.307	15.000	Yes	Y	Y	**N**	**Y**	**N**

46.	Chandauli	M/s. Indian Oil Corporation Ltd. (Marketing Division), Chandauli. Public	Motor Sprit	7310.000	1000.000	Yes	NR	Y	**NR**	**Y**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
47.	Chandauli	M/s. Bharat Petroleum Corporation Ltd. Village Saresar, Ali Nagar, Mugal Sarai, Chandauli, Public	M.S. H.S.D. S.K.O.	7450.000 2370.000 7780.000	1000.000 2500.000 2500.000	Yes	NR	Y	**NR**	**Y**	**N**
48.	Chandauli	M/s. Hindustan Petroleum Corporation Ltd. Mugal Sarai Dipo, Ali Nagar, Sakaldiha Road, Saresar Mugal Sarai Chandauli, Public	M.S., Ethanol HSD, S.K.O.	1910.000 5340.000	1000.000 2500.000 2500.000	Yes	NR	Y	**NR**	**N**	**N**
49.	Sonebhadra	M/s. Kanoria Chemicals & Industries, Renukoot, Sonebhadra, Private	Chlorine Benzene	500.000 1032.000	10.000 100.000	Yes	Y	Y	**Y**	**Y**	**N**
50.	Bareilly	M/s Bharat Petroleum Corporation Ltd. B-61, Road No. 4, Parasakhera Industrial Area, Bareilly, Public	L.P.G.	934.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
51.	Bareilly	M/s. Hindustan Petroleum Corp. Ltd. (Poll Dipo) Village-Nagariya, Tehsil-Aonla Bareilly, Private	MS HSD Ethenol	1609-000 15598-00 140KL	1000.000 2500.000 2500.000	Yes	NR	Y	**NR**	**N**	**N**
52.	Bareilly	M/s. Indian Farmers Fertilizers Cooperative. Ltd.,Aonla Unit, Aonla, Bareilly, Public	Ammonia Chlorine	20000.000 15.000	50.000 10.000	Yes	Y	Y	**Y**	**Y**	**N**
53.	Shahjahanpur	M/s. Kribhco Shyam fertilizers Ltd. Village & Post- Pipraula, Jalalabad Road, Shahjahanpur, Private.	Ammonia Chlorine	5000.000 12.000	50.000 10.000	Yes	Y	Y	**Y**	**Y**	**Y**
54.	Shahjahanpur	M/s. Indian Oil Corporation Ltd., Indane Bottling Plant Village-Jamaur, Shahajahanpur, Public	L.P.G.	3250.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
55.	Badaun	M/s. Tata Chemicals Ltd.	Ammonia	10200.0	50.000	Yes	Y	Y	**Y**	**Y**	**Y**

		(Fertilizer Div.), P.O. Babrala, Indradham, Badaun, Private.	Naphtha Chlorine	00 15200.000 9.000	1000.000 10.000						
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
56.	Agra	M/s. Sunray Chemicals Industries, Jamuna Kinara, Agra, Private	Methyl Parathion	1.000	0.100	Yes	NR	Y	**NR**	**N**	**N**
57.	Agra	M/s. Singhal Pesticides (P) Ltd. Moti Bagh, Nunahi, Industrial Area, Agra. Private	Methyl Parathion	20.000	0.100	Yes	NR	Y	**NR**	**Y**	**N**
58.	Agra	M/s. Indian Oil Corporation Ltd. Tundla Top, Terminal, Atmadpur Agra. Public	M.S. S.K.O. H.S.D.	5000 TQ 5000 TQ	1000.000	Yes	Y	Y	**N**	**Y**	**N**
59.	Agra	M/s. S. H. V. Energy Pvt. Ltd. Plot No. 907 Near 17th Km. Mile Stone, Roonkata Industrial estate, Delhi Agra High-way Roonkata, P.S. Sikendara. Tehsil Kirawali, Agra Private	L.P.G. Butane propane	63.388 20.000 8.360	15.000 15.000 15.000	Yes	NR	Y	**NR**	**Y**	**N**
60.	Mathura	M/S Indian Oil Corporation Ltd. (Poll Terminal) Near Bad Mathura Public	M.S. H.S.D. S.K.O. F.O. R.F.O.	5252KL 21304KL 3600KL 10152KL 10152KL	1000.000 2500.000 2500.000 5000.000 5000.000	Yes	Y	Y	**N**	**Y**	**N**
61.	Mathura	M/s. Indian Oil Corporation Ltd. Refinery Division, Mathura, Public.	Tetra Ethyl Lead L.P.G. Chlorine Naphtha	91.000 4057.000 10.000 55300.000	5.000 15.000 10.000 1500.000	Yes	Y	Y	**Y**	**Y**	**N**
62.	Mathura	M/s. S.V.C. Superchem Private Ltd., Barsana Road, Chatta, Mathura,	P-Xylene Hydrogen	18876.000 3.000	1000.000 2.000	Yes	NR	Y	**NR**	**N**	**N**

		Private.									
63.	Mathura	M/s. Hind Lamps Ltd., Unit No.2, Dautana, Chhata, Kosikala, Mathura. Private	L.P.G.	20.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
64.	Mathura	M/s. Bharat Petroleum Coportation Ltd. Road No. 26, UPSIDC, Site, PO: Mathura Refinery, Mathura. Public	Moter Sprit H.S.D.	7875.000 31960.000	1000.000 2500.000	Yes	Y	Y	**Y**	**Y**	**N**
65.	Hathras	M/s. Bharat Petroleum Coportation Ltd. U.P.S.I.D.C. Industrial Area, Salimpur, Hathras Public	L.P.G.	520.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
66.	Firozabad	M/s. Hind Lamps Ltd., Shikohabad, Firozabad, Private	L.P.G.	80.050	15.000	Yes	NR	Y	**NR**	**Y**	**N**
67.	Aligarh	M/S Indian Oil Corporation Ltd. LPG Bottling Plant, Gram-Karsua, Khair Road, Aligarh Public	L.P.G.	600.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
68.	Meerut	M/s Daurala Sugar Works (Chemical Plant) Daurala Meerut Private	Chlorine	48.600	10.000	Yes	Y	Y	**Y**	**Y**	**Y**
69.	Meerut	M/s. Daurala Organics Ltd. Daurala Meerut Private	Chlorine	55.800	10.000	Yes	Y	Y	**Y**	**Y**	**Y**
70.	Meerut	M/S Indian Oil Corporation Ltd. Marketing Division, Partapur, Meerut Public	M.S. S.K.O. H.S.D.	1317.800 3280.000 4820.000	15.000 2500.000 2500.000	Yes	NR	Y	**NR**	**Y**	**N**
71.	Meerut	M/s. Micro Electricals Pvt. Ltd. Partapur Meerut Private	Chlorine	10.000	10.000	Yes	NR	Y	**NR**	**Y**	**N**

72.	Meerut	M/S Triveni Glass Ltd. (Glass Tube Division) Plot No. 76, PO: Fitkari, Mawana Road, Meerut. Private	LPG	28.000	15.000	Yes	NR	N	**NR**	**Y**	**N**
73.	Meerut	M/S Sangal Paper Ltd. Gram-Bhaisa Mawana Road, Meerut. Private	Chlorine	18.000	10.000	N	NR	N	**NR**	**N**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
74.	Bullandsahar	M/s. U.P. Twiga Fiber Glass Ltd., 9- Sikendrabad Industrial Area, Bullandsahar Private	L.P.G.	60.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
75.	Bullandsahar	M/s. Kajaria Ceramics Ltd. A-27 & 28, Industrial Area, Sikandrabad, Bulandsahar, Private	L.P.G.	25.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
76.	Bullandsahar	M/s. Chloro Paraffin Industries, Industrial Estate, Sikendrabad, Bulandsahar, Private	Chlorine	18.000	10.000	Yes	NR	Y	**NR**	**Y**	**N**
77.	Bullandsahar	M/s. Amit Plasticisers, I-1, Industrial Estate, Sikendrabad, Bulandsahar, Private.	Chlorine	18.000	10.000	Yes	NR	N	**NR**	**Y**	**N**
78.	Bullandsahar	M/s. Sanromo Polymers (P) Ltd., J-15-16, UPSIDC, Industrial Area, Sikendrabad, Bulandsahar, Private	Chlorine	18.000	10.000	Yes	NR	N	**NR**	**N**	**N**
79.	Bullandsahar	M/s. Essel Organics Private Ltd. J-17 & 18 Industrial Area, Sikendrabad, Bulandsahar, Private	Chlorine	16.000	10.000	Yes	NR	N	**NR**	**N**	**N**
80.	Bullandsahar	BMA Enterprises (P) Ltd. HC-17 Industrial Area, Sikendrabad, Bulandsahar, Private	Chlorine	16.000	10.000	Yes	NR	N	**NR**	**Y**	**N**
81.	Bullandsahar	M/S Orient Ceramics & Industries Ltd.	L.P.G.	77.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**

		Plot No. 8 A-75 TO A-80, A-22, Industrial Area, Sikendrabad, Bulandsahar, Private									
82.	Bullandsahar	Krisons Chemicals, C-58, Industrial Area Sikandarabad, Bulandsahar, Private	Chlorine	18.000	10.000	Yes	NR	N	**NR**	**N**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
83.	Bullandsahar	M/S Madan Chemicals (P) Ltd. I-10 & 11, Industrial Area , Sikandarabad, Bulandsahar, Private	Chlorine	16.000	10.000	Yes	NR	Y	**NR**	**N**	**N**
84.	Bullandsahar	M/S Chlorinated Chemicals Co. I-12 & 13, Industrial Area , Sikandarabad, Bulandsahar, Private	Chlorine	16.000	10.000	Yes	NR	Y	**NR**	**N**	**N**
85.	Bullandsahar	M/S Gajanan Polychem Pvt. Ltd. C-55, Industrial Area, Sikandarabad, Bulandsahar, Private	Chlorine	18.000	10.000	Yes	NR	Y	**NR**	**N**	**N**
86.	Bullandsahar	M/S Sai Asharam Chemical Pvt. Ltd. E-1, Industrial Area, Sikandarabad, Bulandsahar, Private	Chlorine	28.000	10.000	Yes	N	N	**N**	**N**	**N**
87.	Bullandsahar	M/S Maryada Polychem Pvt. Ltd. C-55, Industrial area, Sikandarabad, Bulandsahar, Private	Chlorine	18.000	10.000	Yes	NR	N	**NR**	**N**	**N**
88.	Saharanpur,	M/s. Star Paper Mills, Post Bajoria Road, Saharanpur, Private	Chlorine	60.200	10.000	Yes	Y	Y	**Y**	**Y**	**Y**
89.	Muzaffer nagar.	M/S Sikka Paper Ltd. Unit-II, Shamli, Muzaffernagar. Private	Chlorine	54.000	10.000	Yes	Y	Y	**N**	**Y**	**N**

90.	Muzaffer nagar.	M/S Ravi Organics Ltd. G-14, K-46-50, Industrial Area, Begrajpur. Muzaffernagar. Private.	Chlorine	18.000	10.000	Yes	Y	Y	**NR**	**Y**	**N**
91.	Moradabad,	M/s. Pashupati Acrylon Ltd., Kashipur Moradabad Road, Thakurdwara, Moradabad, Private	Acrylonitrile Methyl Acrylate	2000.000 160.000	20.000 25.000	Yes	Y	Y	**Y**	**Y**	**Y**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
92.	Moradabad,	M/S Lohia Brass Pvt. Ltd. Lakdi, Fazalpur, Delhi Road, Moradabad. Private	LPG	16.700	15.000	Yes	NR	N	**NR**	**Y**	**N**
93.	Moradabad,	M/S Glove Metal Industries Ltd. Delhi Road, Moradabad. Private	Propane	33.228	15.000	Yes	NR	Y	**NR**	**Y**	**N**
94.	Jyotiba-Phulenagar	M/S C. L Gupta & Sons, Gram-jibai, Jyotiba-Phulenagar Private	Propane H.S.D. F.O.	40.000 20.000 45KL	15.000 2500.000 5000.000	Yes	NR	Y	**NR**	**Y**	**N**
95.	Jyotiba-Phulenagar	M/s. Jubiliant Organosis Ltd., Post – Gajraula, Jyotiba-Phulenagar Private	Ethyl Alcohal Acetaldehyde Vinyl Acetate Formaldehyde	8611.000 287.000 610.000 630.00	1000.000 25.000 1000.000 5.000	Yes	NR	Y	**NR**	**Y**	**Y**
96.	Jyotiba-Phulenagar	M/s. Raunaq Automotives Components Ltd. Gajraula, Jyotiba-Phulenagar Private.	L.P.G.	18.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
97.	Rampur	M/s. Shiva Paper Mills Ltd. Jain Nagar, Dhamaura, Rampur, Private	Chlorine	60.800	10.000	Yes	Y	Y	**Y**	**N**	**N**
98.	Rampur	M/s Indian Oil Corporation Ltd., (Indian Bottling Plant), Vill. Pattikalan P.O. Sultanpur Patti, Kashipur, Rampur	L.P.G	23.000	15.000	Yes	Y	Y	**N**	**Y**	**N**

		Public									
99.	Bijnore	M/S Mohit Papers Ltd. 8th Km. Bijnore Nagina Road, Bijnore Private	Chlorine	25.000	10.000	Yes	Y	Y	**N**	**Y**	**Y**
100.	Bijnore	M/S Indian Oil Corpn. Ltd. Bulk Petroleum Dipo, Adesh Nagar, Najimabad, Bijnore Private	M.S. H.S.D. S.K.O. Ethanol	6190 KL 27000 KL 8000 KL 140 KL	1000.000 2500.000 2500.000 1000.000	N	N	N	**Y**	**N**	**N**
101.	Ghaziabad	M/s. Mohan Crystal Glass Works, P.O. Mohannagar, Ghaziabad, Private	L.P.G.	50.000	15.000	Yes	NR	Y	**NR**	**Y**	**Y**

Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
102.	Ghaziabad	M/s. Univarsal Glass, Plot NO. 17, Site-IV, Industrial Area, Sahibabad, Ghaziabad, Private	L.P.G.	30.009	15.000	Yes	NR	Y	**NR**	**Y**	**N**
103.	Ghaziabad	M/s. BPL Display Devices Ltd., A-41/42, Site-IV, Industrial Area, Sahibabad, Ghaziabad, Private	L.P.G.	90.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
104.	Ghaziabad	M/s. Hindustan Petroleum Corpn. Ltd., (L.P.G. Bulk Storage Terminal) Vill.- Tilla, Shahbajpur, Loni, Ghaziabad, Public	L.P.G.	3000.003	15.000	Yes	Y	Y	**N**	**Y**	**N**
105.	Ghaziabad	M/s Indian Oil Corporation. Ltd., (L.P.G. Bottling Plant), Vill. Banthala (Near Loni) Distt. Ghaziabad. Public	L.P.G.	4650.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
106.	Ghaziabad	M/s. Bhusan Steels and Strips Ltd., 23, Site-IV, Industrial Area, Sahibabad, Ghaziabad, Private.	L.P.G.	20.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
107.	Ghaziabad	M/s. Gangotri Plasticisers Pvt. Ltd., B-1, Udyog Kunj, Industrial Area, Hapud, Delhi Road, Ghaziabad	Chlorine	18.000	10.000	Yes	NR	Y	**NR**	**Y**	**N**

		Private.									
108.	Ghaziabad	M/S Bharat Petroleum Corporation Ltd. (L.P.G. Terminal) Tilla, Sahbajpur, Loni, Ghaziabad. Public	L.P.G.	4050.000	15.000	Yes	Y	Y	**N**	**Y**	**N**
109.	Gautam Budh Nagar	M/s. Samtal Colour Ltd., (Unit No.1) Village Chhapraula, Buland Shahar Road, Gautam Budh Nagar. Private	L.P.G.	40.000	15.000	Yes	NR	N	**NR**	**Y**	**N**
110.	Gautam Budh Nagar	M/s. Samtal Colour Ltd., Plant No.2 Village Chhapraula, Buland Shahar Road, Gautam Budh Nagar. Private	L.P.G.	40.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
111.	Gautam Budh Nagar	National Thermal Power Corporation Ltd., Rashtriya Rajdhani Vidyut Station, Post: Vidyut Nagar, Gautam Budh Nagar. Public	Chlorine	12.000	10.000	Yes	NR	Y	**NR**	**Y**	**N**
112.	Gautam Budh Nagar	M/s. Yamaha Motor Escorts Ltd., A-3, Surajpur Industrial Area, Gautam Budh Nagar, Private.	L.P.G.	20.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
113.	Gautam Budh Nagar	M/s New Holland Tractors (India) Pvt. Ltd., Plot No.-3, Surajpur Ind. Centre, Grater Noida, Distt. Gautam Budh Nagar. Private	L.P.G Propane	225.000 18.850	15.000 15.000	Yes	NR	Y	**NR**	**Y**	**N**
114.	Gautam Budh Nagar	M/s. Hindustan Petroleum Corporation Ltd., (LPG Bottling Plant), P.O. Kasna, Gautam Budh Nagar (Greater Noida) Public.	L.P.G.	845.000	15.000	Yes	Y	Y	**Y**	**Y**	**N**
115.	Gautam Budh Nagar	M/s. Honda Siel Cars India Ltd., A-1, Sector-40/41, Greater Noida, Surajpur, Gautam Budh Nagar, Private	Propane	57.200	15.000	Yes	NR	Y	**NR**	**Y**	**N**
116.	Gautam	M/s Delphi Automotive	L.P.G.	40.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**

	Budh Nagar	Systems Ltd. Plot No.3, Sector-41, Greater Noida. Gautam Budh Nagar, Private									
117.	Gautam Budh Nagar	M/s Daewoo Motors India Ltd. AK-1, Surajpur Industrial area, Noida Dadri Road, Noida. Gautam Budh Nagar, Private	L.P.G.	20.000	15.000	Yes	NR	Y	**NR**	**N**	**N**
118.	Gautam Budh Nagar	M/s Surya Food & Agro Ltd. Unit No.2, Plot No.1, Udyog Vihar, Noida. Gautam Budh Nagar, Private	L.P.G.	100.000	15.000	Yes	Yes	Y	**NR**	**N**	**N**
119.	Gautam Budh Nagar	M/s L G Electronics (India) Plot No.51, Udyod Vihar, Phase-2, Surajpur, Kasna Road, Noida. Gautam Budh Nagar, Private	L.P.G.	40.000	15.000	Yes	NR	Y	**NR**	**Y**	**N**
Sl. No.	**Distt.**	**Name & Address of the factory Private/Public**	**Name of Hazardous Chemical**	**Storage Capacity (MT)**	**Threshold Qt. (MT)**	**Emergency Plan**	**Safety Report**	**Safety Policy**	**Safety Audit**	**Mock Drills Conducted**	
										Once	**Twice**
01	**04**	**05**	**06**	**08**	**09**	**10**	**11**	**12**	**13**	**15**	**16**
120.	Gautam Budh Nagar	M/s Anmol Bakers Pvt. Ltd. Plot No. 38A, Udyog Vihar, Surajpur Kasna Road, Grater Noida. Gautam Budh Nagar, Private	Propane	50.000	10..000	Yes	NR	Y	**NR**	**Y**	**N**
121.	Gautam Budh Nagar	M/s Global Auto Tank Ltd. Plot No. 3-D, Udyog Vihar, Ikotech-II, Grater Noida, Gautam Budh Nagar, Private	L.P.G.	20.000	15.000	N	NR	N	**NR**	**Y**	**N**

IMPORTANT CONTACT NUMBERS

CHIEF MINISTER (CHAIRPERSON OF UPDMA)

Designation	Office Phone
Chief Minister	2239296, **Fax**: 2239234
Officer on Special Duty	2225757, 2239296
Secretary	2238251, 2239299, 2238286
Special Secretary	2238288, 2238258, 2238316
Joint Secretary	2237250
Special Secretary	2238279
Chief Minister Information Centre	
Deputy Director (Press)	2238271
Information Officer (Media Centre)	2239303
Information Officer	2236094

Chief Secretary

Designation	Office Phone
Chief Secretary	2221599, 22238212, 22239461 **Fax**: 22239283
Staff Officer	22238942, 22208553, 22205736 **Fax**: 22238282
Additional Chief Secretary	22208797, 22238277, **Fax**: 22238979

State Emergency Operation Centre (SEOC)			
SEOC Toll Free Number			1070 (For Lucknow) 1077 (for other districts)
SEOC In Charge	Relief Commissioner	22238200	9415906050
Nodal Officers Emergency Support Functions			
Communications			
Public health and sanitation			
Energy	Principal Secretary		9415906018
Transport	Principal Secretary		9415906029
Search and Rescue			
Donations			
Public works	Principal Secretary		9415906016
Planning	Principal Secretary		9415906015
Relief supplies			

Food and civil supplies	Principal Secretary		9415906014
Drinking water			
Housing	Principal Secretary		9415906015
Media			

Principal Secretary

Principal Secretary, Urban Dev./ Emp./ Poverty Erad.	2237314, 2238263 **Fax**	9415906023
Principal Secretary, Transport	2238068, 2236977	
Principal Secretary, Tourism	2238956	
Principal Secretary, Technical Education	2239331, 2238106	
Principal Secretary, Taxes & Registration	2239387	
Principal Secretary, Secretariat Administration	2238065	
Principal Secretary, Secondary Education	2238058	
Principal Secretary, Revenue/ Relief	2238089	
Principal Secretary, R.I.D.C, Ambedkar Gram Vikas, Rural Development	2238126	9415906017
Principal Secretary, Public Enterprises	2238456	
Principal Secretary, Planning	2238973, 2238467	
Principal Secretary, Parliamentary Affairs	2238315	
Principal Secretary, Panchayati Raj	2238083	9415906019
Principal Secretary, P.W.D.	2200399, 2221154	9415906016
Principal Secretary, Medical, Health & Family Welfare	2625449	9415906012
Principal Secretary, Labor	2238682	
Principal Secretary, Justice & Legislature	2238108	
Principal Secretary, Irrigation	2238461	9415906011
Principal Secretary, Information & Public Relation	2238249	
Principal Secretary, I.D.C., Civil Aviation	2239530, 2238265	
Principal Secretary, Home	2238291, 2239279	
Principal Secretary, Higher Education	2238155	

Principal Secretary, General Administration	2238989
Principal Secretary, Forest	2238669
Principal Secretary, Food & Civil Supply	2238411, 2238242
Principal Secretary, Finance	2238062, 2238434
Principal Secretary, Excise	2238674
Principal Secretary, Energy	2238244, 2236517
Principal Secretary, Civil Defense/ Home guard	2239282
Principal Secretary, Appointment/ Personnel	2238256, 2239288
	Fax
Principal Secretary, Agro-Industry/ Export Promo.	2238137
Principal Secretary, Administrative Reforms	2238416
Principal Secretary, S.W.C.	2237165

Divisional Commissioner

District & STD Code	Post	Office	Residence	Mobile
Agra (0562)	Divisional Commissioner	2226812, 2226810	2226533, 2226536	2226115
Allahabad (0532)	Divisional Commissioner	2640250	2642900, 2642800	2640196
Azamgarh (05462)	Divisional Commissioner	224816, 228465	243900	9454417494
Bareilly (0581)	Divisional Commissioner	2455663, 2455661	2550501, 2550502	9454417495
Basti (05542)	Divisional Commissioner	283432, 283685	246269	9454417496
Chitrakoot Dham (05192)	Divisional Commissioner	224546, 285658	225291	9454417497
Devipatan (05262)	Divisional Commissioner	222012	222011	9454417498
Faizabad (05278)	Divisional Commissioner	224243, 222310	222309, 224242	9454417499
Gorakhpur (0551)	Divisional Commissioner	2333076, 2335238	2336022	9454417500
Jhansi (0517)	Divisional Commissioner	2443313	2443310, 2452500	9454417501
Kanpur (0512)	Divisional Commissioner	2304304, 2304480	2294100, 2294441	9454417502
Lucknow (0522)	Divisional Commissioner	2229522	2220441, 2204460	9454417503

Meerut (0121)	Divisional Commissioner	2664431	2641377, 2651155	9454417504
Mirzapur (05442)	Divisional Commissioner	256888	256544	9454417505
Moradabad (0591)	Divisional Commissioner	2413586	2426644, 2435255	9454417506
Saharanpur (0132)	Divisional Commissioner	2760063	2761028	9454417507
Varanasi (0542)	Divisional Commissioner	2502158, 2508203	2382333	9454417508

Inspector General (I.G.)

District & STD Code	Post	Office	Residence	Fax
Allahabad (0532)	I.G.	2624825	2621502	---
Bareilly (0581)	I.G.	2420215, 2511060	2457061	---
Gorakhpur (0551)	I.G.	2333707	2333777	---
Kanpur (0512)	I.G.	2214450	---	---
Lucknow (0522)	I.G.	2393300	2721212	2393350
Meerut (0121)	I.G.	2763664	2763733	---
Varanasi (0542)	I.G.	2507575	2501433	---

Deputy Inspector General (D.I.G.)

District & STD Code	Post	Office	Residence
Agra (0562)	D.I.G.	2363343	2261000
Allahabad (0532)	D.I.G.	2609327	2603730
Azamgarh (05462)	D.I.G.	243201	243249
Bareilly (0581)	D.I.G.	2511049	2427075
Basti (05542)	D.I.G.	246487	---
Chitrakoot Dham (05192)	D.I.G.	224792	224792
Devipatan (05262)	D.I.G.	222253	229777
Faizabad (05278)	D.I.G.	224248	224247
Gorakhpur (0551)	D.I.G.	2333442	2201100
Jhansi (0517)	D.I.G.	2443351	---
Kanpur (0512)	D.I.G.	2304461	---
Lucknow (0522)	D.I.G.	2225480, 2217884	2225480
Meerut (0121)	D.I.G.	2642550	2641566
Mirzapur (05442)	D.I.G.	256366	257401
Moradabad (0591)	D.I.G.	2435532	2435698
Saharanpur (0132)	D.I.G.	2761795	2761465
Varanasi (0542)	D.I.G.	2508181	2508163

Divisional Magistrate (D.M.)

District & STD Code	Post	Office	Residence	Mobile
Agra (0562)	D.M.	2260184	2361210	9454417509
Akbarpur (Knp. dehat- 05111)	D.M.	2304008, 22066	2304660, 220433	-
Aligarh (0571)	D.M.	2400202	2400798, 2400799	9454417513
Allahabad (0532)	D.M.	2641253	2640300, 2640400	9454417517

Ambedkarnagar (05271)	D.M.	246999	244345	9454417539
Auraiya (05683)	D.M.	245528	244888	9454417550
Azamgarh (05462)	D.M.	220930	220402	9454417521
Badayun (05832)	D.M.	266406	224301	9754417525
Bagpat (0121)	D.M.	220520	221999	9454417562
Bahraich (05252)	D.M.	232815	232401	9454417535
Ballia (05498)	D.M.	220879	220311	9454417522
Balrampur (05263)	D.M.	233942	232231	9454417536
Banda (05192)	D.M.	224632	224333	9454417531
Barabanki (0524)	D.M.	2822730	2822229	9454417540
Bareilly (0581)	D.M.	2473303, 2457043	2557147, 2558764	9454417524
Basti (05542)	D.M.	282005	246306	9454417528
Bijnaur (01342)	D.M.	264444	262021, 262465	9454417570
Bulandshahar (05732)	D.M.	224351, 226440	231343	9454417563
Chandauli (05412)	D.M.	262557	262555	9454417576
Chitrakoot (05198)	D.M.	235016	235305	9454417532
Dewaria (05568)	D.M.	222316	222306	9454417543
Etah (05742)	D.M.	233302	233301, 233777	9454417514
Etawah (05688)	D.M.	254770	252219, 252544	9454417551
Faizabad (05278)	D.M.	224286	222221, 224205	9454417541
Farrukhabad (05692)	D.M.	234133	234297, 234165	9454417552
Fatehpur (05180)	D.M.	224502, 224414	224439	9454417518
Firozabad (05612)	D.M.	285001, 285066	285002, 285111	9454417510
Gautambuddhnagar (0120)	D.M.	2320089, 2326030	2552552	9454417564
Gazipur (0548)	D.M.	2220204	2220240	9454417577
Ghaziabad (0120)	D.M.	2714416	2710106, 2701616	9454417565
Gonda (05262)	D.M.	222400, 225125	229666	9454417537
Gorakhpur (0551)	D.M.	2336005	2344544, 2336007	9454417544
Hamirpur (05282)	D.M.	222330, 222251	222201	9454417533
Hardoi (05852)	D.M.	234537	234680	9454417556
Hathras (05722)	D.M.	233401	224001	9454417515
Jalaun (05162)	D.M.	252201	252200	9454417548
Jaunpur (05452)	D.M.	260666	260201, 260202	9454417578
Jhansi (0517)	D.M.	2470556	2331520, 2443324	9454417547
Jyotibarao Phule Nagar (05922)	D.M.	259988	262999	9454417571
Kannauj (05694)	D.M.	237697	234500	9454417555
Kanpur (0512)	D.M.	2306577	2304287, 2304436	9454417554
Kaushambi (05331)	D.M.	233467	233358	9454417519
Kushinagar (05564)	D.M.	242592	242392	9454417545
Lakhimpur Kheri (05872)	D.M.	252838, 252822	252715, 252879	9454417558
Lalitpur (05176)	D.M.	272200	274003	9454417549
Lucknow (0522)	D.M.	2223024, 2225653	2623912, 2214700	9454417557
Maharajganj (05523)	D.M.	222044	222206	9454417546
Mahoba (05281)	D.M.	244412	244472, 244473	9454417534
Mainpuri (05672)	D.M.	234308	234401	9454417511
Mathura (0565)	D.M.	2404152	2403200	-
Mau (0547)	D.M.	2220233	2500411	9454417523
Meerut (0121)	D.M.	2664133, 2643976	2642232, 2640166	9454417566
Mirzapur (05442)	D.M.	252480	252340, 257400	9454417567
Moradabad (0591)	D.M.	2413288	2413967, 2413016	9454417572

Muzaffarnagar (0131)	D.M.	2405103	2433125, 2433970	9454417574
Pilibhit (05882)	D.M.	237912	257911	9454417526
Pratapgarh (05342)	D.M.	220405	220401	9454417520
Raibareli (0535)	D.M.	2202302	2202301, 2202180	9454417559
Rampur (0595)	D.M.	2350403	2351061	9454417573
Saharanpur (0132)	D.M.	2723434, 2726838	2727144, 2725526	9454417575
Sant Ravidasnagar (05414)	D.M.	250203	250202	9454417568
Sant kabirnagar (05547)	D.M.	222890	222889	9454417529
Shahjahanpur (05842)	D.M.	222540	222221	9454417527
Shravasti (05250)	D.M.	222287	222288	9454417538
Siddharthnagar (05544)	D.M.	222169	222333	9454417530
Sitapur (05862)	D.M.	242900, 242996	242600, 242212	9454417560
Sonbhadra (05444)	D.M.	222190, 222090	252644	9454417569
Sultanpur (05362)	D.M.	222202	222203	9454417542
Unnao (0515)	D.M.	2820207	2820201	9454417561
Varanasi (0542)	D.M.	2508585	2348080, 2502626	9454417579

Senior Superintendent of Police (S.S.P.)

District & STD Code	Post	Office	Residence	Fax
Agra (0562)	S.S.P.	2262221	2227255	2227256
Aligarh (0571)	S.S.P.	2400444, 2400638	2703111, 2703110	---
Allahabad (0532)	S.S.P.	2641902	2640600	2440700
Badayun (05832)	S.S.P.	266342	224308	---
Bareilly (0581)	S.S.P.	2457021	2510500	2427003
Bulandshahar (05732)	S.S.P.	224705	224338	---
Etah (05742)	S.S.P.	233319	231942, 233307	---
Etawah (05688)	S.S.P.	254041	---	254978
Faizabad (05278)	S.S.P.	224214	224215	224220
Gautambuddhnagar (0120)	S.S.P.	2350241	2549330	2444546
Ghaziabad (0120)	S.S.P.	2710758	2710157	2711120
Gorakhpur (0551)	S.S.P.	2334629	2334204	2333127
Jhansi (0517)	S.S.P.	2443340, 2443341	---	2443304
Kanpur (0512)	S.S.P.	2304407	2530547, 2532153	---
Lucknow (0522)	S.S.P.	2228965	2225983, 2225984	2274204
Mathura (0565)	S.S.P.	2405172	2404600	2409620
Meerut (0121)	S.S.P.	2660548	2664634	2664588
Moradabad (0591)	S.S.P.	2412654	2412562	---
Saharanpur (0132)	S.S.P.	2727143	2661740, 2661737	---
Varanasi (0542)	S.S.P.	2502644	2502655	2502655

Superintendent of Police (S.P.)

District & STD Code	Post	Office	Residence	Fax
Akbarpur (Knp. dehat- 05111)	S.P.	220211	2383575	220296
Ambedkarnagar (05271)	S.P.	244445	244229	---
Auraiya (05683)	S.P.	244421	---	244887
Azamgarh (05462)	S.P.	220107	220403	---
Bagpat (0121)	S.P.	220518	222395	220517

Bahraich (05252)	S.P.	232892	232407	232405
Ballia (05498)	S.P.	220373	220312	220859
Balrampur (05263)	S.P.	233100	232490	---
Banda (05192)	S.P.	224624	224444	---
Barabanki (0524)	S.P.	2822277	2822244	2822244
Basti (05542)	S.P.	282904	246309	246804
Bijnaur (01342)	S.P.	262002	262026	261071
Chandauli (05412)	S.P.	262480	262479	262478
Chitrakoot (05198)	S.P.	235500	235241	---
Dewaria (05568)	S.P.	222755, 241400	222311	---
Farrukhabad (05692)	S.P.	234410	234206	---
Fatehpur (05180)	S.P.	224413	224288	224288
Firozabad (05612)	S.P.	285110	285004	285052
Gazipur (0548)	S.P.	2220538	2220567	---
Gonda (05262)	S.P.	222544	222760	---
Hamirpur (05282)	S.P.	222329	---	244474
Hardoi (05852)	S.P.	234749	234694	234904
Hathras (05722)	S.P.	232100	235100	234100
Jalaun (05162)	S.P.	252237	252233	252791
Jaunpur (05452)	S.P.	261660	261203	261205
Jyotibaraofulenagar (05922)	S.P.	259288	263244	263244
Kannauj (05694)	S.P.	235439	234808	---
Kaushambi (05331)	S.P.	233411	233603	---
Kushinagar (05564)	S.P.	242393	242390	242341
Lakhimpur Khiri (05872)	S.P.	253157	---	---
Lalitpur (05176)	S.P.	272387, 277100	278100	278100
Maharajganj (05523)	S.P.	222246	222062	---
Mahoba (05281)	S.P.	244168, 254068	244474	244475
Mainpuri (05672)	S.P.	234442, 234660	234402	234540
Mau (0547)	S.P.	2220629	2500620	2500620
Mirzapur (05442)	S.P.	252578	256655	256565
Muzaffarnagar (0131)	S.P.	2403294	2403393	2403393
Pilibhit (05882)	S.P.	257183	257182	257182
Pratapgarh (05342)	S.P.	220423	220403	220403
Raibareli (0535)	S.P.	2202315	2202304	2202126
Rampur (0595)	S.P.	2350996	2351900	2350080
Sant Ravidasnagar (05414)	S.P.	250236	250285	250227
Santkabirnagar (05547)	S.P.	222892	222891	223140
Shahjahanpur (05842)	S.P.	222553	222415	223344
Shravasti (05250)	S.P.	222328	---	222715
Siddharthnagar (05544)	S.P.	222183	222302	222170
Sitapur (05862)	S.P.	243207	242229	242404
Sonbhadra (05444)	S.P.	252631	252614	252673
Sultanpur (05362)	S.P.	222301	222302	223685
Unnao (0515)	S.P.	2820228	2820202	2828903

Police Administration

Director General of Police, Headquarters	
Designation	**Office Phone**
Director General of Police	2206104
Additional Director General of Police (Crime/Law & Organisation)	2208857
Additional Director General of Police (Personnel)	2208000
Additional Director General of Police (Human Rights)	2391765
Inspector General of Police (Establishment)	2207907
Inspector General of Police (Administration)	2207997
Inspector General of Police (Personnel)	2207995
Inspector General of Police (Operation)	2208370

Inspector General of Police (STF)	2205302
Inspector General of Police (Crime)	2208598
Inspector General of Police (Human Rights)	2391465
Deputy Inspector General of Police (Human Rights)	2208371
Additional Superintendent of Police (Crime)	2206903
Information Officer	2206559
Police Headquarters, Allahabad (0532)	
Additional Director General of Police	2623666, **Fax**: 2622031
Inspector General of Police (Housing)	2623721
Inspector General of Police (Budget)	2621216
Additional Inspector General of Police (Establishment)	2623937
Deputy Inspector General of Police (Headquarters)	2623277
Superintendent of Police (Personnel)	2623628
Superintendent of Police (Headquarters)	2623117
P.A.C. Headquarters	
Additional Director General of Police	2385052, **Fax**: 2385732
CID Headquarters	
Deputy Director General	2720713
Intelligence Headquarter	
Additional Superitendent of Police (Intelligence)	2205166, 2209728
Anti Corruption Cell	
Additional Director General of Police	2287245
Railway Police Headquarters	
Deputy Director General of Police	2287241-2
Economic Crime Cell	
Additional Director General of Police	2287253
Technical Services U.P.	
Additional Director General of Police	2286309
Radio Headquarters	
Additional Director General of Police	2385983
Police Training Headquarters	
Additional Director General of Police	2287247, 2287269
Fire Service Headquarters	
Director General of Police	2228736
Prosecution Directorate	
Director General of Police	2720656
Special Enquiry Headquarters	
Additional Director General of Police	2287658
Home Guards, Public Security	
Commandant General	2451388
Police Housing Development Corporation	
Chairman/Managing Director	2391818
Vigilance Establishment, Lucknow	
Director	2236319, 2211228
U.P. Nepal Border Police	
Additional Director General of Police	2397117, **Fax**: 2396291

List of References

I. Web References

http://upgov.nic.in/upinfo/up_eco.html

http://forest.up.nic.in

http://www.webindia123.com/uttar/land/forests.htm

http://www.krishiworld.com/html/crop_pattern2.html

http://www.upenvis.nic.in/

http://www.moef.nic.in

II. National Disaster Management Guidelines on Management of Chemical Disasters

III. Directorate Factories, Kanpur