NOTIFICATION

New Delhi, 18th January, 2010

G.S.R. 39(E).---In exercise of the powers conferred by Section 61 of the Petroleum and Natural Gas Regulatory Board Act, 2006 (19 of 2006), the Petroleum and Natural Gas Regulatory Board hereby makes the following regulations, namely:-

1. Short title and commencement.

(1) These regulations may be called the Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)) Regulations, 2010.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.

(1) In these regulations, unless the context otherwise requires,-

(a) "Act" means the Petroleum and Natural Gas Regulatory Board Act, 2006;

(b) ''Board" means the Petroleum and Natural Gas Regulatory Board established under sub-section (1) of section 3 of the Act;

(c) "boiling liquid expanding vapour explosion (BLEVE)" means the violent rupture of a pressure vessel containing saturated liquid or vapour at a temperature well above its atmospheric boiling point and the resulting flash evaporation of a large fraction of the superheated liquid which produces a large vapour cloud which burns in the form of a large rising fireball due to ignition;

(d) "chief incident controller" means the person who assumes absolute control of the unit and determines action necessary to control the emergency;

(e) "codes of practice" means the codes of practice for emergency response and disaster management plan notified by the Board;

(f) "disaster" means an occurrence of such magnitude as to create a situation in which the normal patterns of life within an industrial complex are suddenly disrupted and in certain cases affecting the neighborhood seriously with the result that the people are plunged into helplessness and suffering and may need food, shelter, clothing, medical attention protection and other life sustaining requirements;

(g) "disaster management plan" means a well coordinated, comprehensive response plan to contain loss of life, property, environment and provide speedy and effective recovery by making the most effective use of available resources in case

of a disaster;

(h) “emergency” means a situation or scenario which has the potential to cause serious danger to persons, environment or damage to property and which tends to cause disruption inside or outside the premises and may require the help of outside resources;

(i) “emergency response vehicle (ERV)” means a vehicle for handling emergencies having necessary equipment meant for rescue and relief operations and ERV can be put to use within installation, outside of installation including road incident;

(j) “hazard” means an event related to the property of substance or chemicals with a potential for human injury, damage to property, damage to the environment, or some combination thereof;

(k) “incident” means an unplanned or unintended or intended event having potential to cause damage to life, property and environment;

(l) “incident record register” means a register containing complete information pertaining to all incidents covering near miss, and all other incidents leading to Level-I, Level-II and Level-III emergencies;

(m) “installation” means facilities, namely, gaseous product pipeline, liquid Product pipeline, hydrocarbons processing installation, oil and natural gas terminals and commercial storage and transportation, hydrocarbons gas bottling Installations including CNG, city gas distribution facilities and retail outlets;

(n) “leak” means release or discharge of a dangerous chemicals or substances or material into the environment;

(o) “Level-I emergency” means an emergency as defined under sub-regulation 6 (a);

(p) “Level-II emergency” means an emergency as defined under sub-regulation 6 (b);

(q) “Level-III emergency” means an emergency as defined under sub-regulation 6 (c);

(r) “mutual aid association” means an industrial mutual aid association in which participating industries as a community shall assist each other in case of emergency. Mutual aid associations supplement a site’s emergency control plan. Services of member industries shall be requested only when the emergency threatens to exceed the capability of otherwise available resources;

(s) "occupier” of an installation means the person who has ultimate control over the affairs of the installation;

(t) “off site emergency” means an emergency that takes place in an installation and the effects of emergency extends beyond the premises or the emergency created

due to an incident, catastrophic incidents, natural calamities, etc. It no longer remains the concern of the installation management alone but also becomes a concern for the general public living outside and to deal with such eventualities shall be the responsibilities of district administration;

(u) "off site emergency plan" means a response plan to control and mitigate the effects of catastrophic incidents in above ground installation (AGI) or underground installations (UGI) or road transportation. This plan shall be prepared by the district administration based on the data provided by the installation(s), to make the most effective use of combined resources, i.e. internal as well as external to minimise loss of life, property, environment and to restore facilities at the earliest;

(v) "on site emergency" means an emergency that takes place in an installation and the effects are confined to the Installation premise's involving only the people working inside the plants and to deal with such eventualities is the responsibility of the occupier and is mandatory. It may also require help of outside resources;

(w) "on site emergency plan" means a response plan to contain and minimize the effects due to emergencies within the installations which have a potential to cause damage to people and facilities within the installation premises;

(x) "risk" means the chance of a specific undesired event occurring within a specified period or in specified circumstances and it may be either a frequency or a probability of a specific undesired event taking place;

(y) "risk analysis" means the identification of undesired events that lead to the materialization of a hazard, the analysis of the mechanisms by which these undesired events could occur and, usually, the estimation of the extent, magnitude, and likelihood of any harmful effects;

(z) "risk assessment" means the quantitative evaluation of the likelihood of undesired events and the likelihood of harm or damage being caused by them, together with the value judgments made concerning the significance of the results;

(aa) "risk management" means the programme that embraces all administrative and operational programmes that are designed to reduce the risk of emergencies involving acutely hazardous materials. Such programmes include, but are not limited to, ensuring the design safety of new and existing equipment, standard operating procedures, preventive maintenance, operator training, incident investigation procedures, risk assessment for unit operations, emergency planning, and internal and external procedures to ensure that these programmes are being executed as planned;

(ab) "site incident controller" means the person who goes to the scene of the emergency and supervises the actions necessary to overcome the emergency at the site of the incident;

(ac) 'spill" means an unintended release or discharge of hydrocarbon or any other

dangerous liquid into the environment;

(ad) "transport emergency (TREM) card" means a card containing details about the nature of hazards, protective devices, telephone numbers and actions related to spillage, fire, first aid and other details of national and international (UN) numbers or signage which is common in India and abroad;

(ae) "unconfined vapour cloud explosion (UVCE)" means the formation of vapour cloud due to release of significant quantity of liquefied hydrocarbons into the atmosphere and its explosion due to ignition which may cause high over pressure and low pressure that cause very heavy damage.

(2) Words and expressions used and not defined in these regulations, but defined in the Act or rules or regulations made thereunder, shall have the meanings respectively assigned to them in this Act or in the rules or regulation, as the case may be.

3. Applicability.

These regulations shall apply to –

(a) Hydrocarbons processing installation (refinery, gas processing, LNG Re-gasification installations etc.);

(b) pipeline such as natural gas, propane, butane etc. and the hydrocarbons products which remain in gaseous state at NTP;

(c) liquid petroleum product pipeline;

(d) commercial petroleum storage facilities, gas storage facilities and terminals including LNG terminals;

(e) hydrocarbons gas bottling Installations having receiving, storage and handling facilities including storage for LPG, propane and butane;

(f) city or local natural gas distribution facilities;

(g) dispensing stations and POL retail outlets;

(h) transportation of petroleum products by road;

(i) any other installation as may be notified by the Board from time to time;

4. Scope and intent.

4.1 Scope.

The scope shall cover –

(i) the identification of emergencies;

(ii) the mitigation measures that attempt to reduce and eliminate the risk or disaster;

(iii) the preparedness that to develop plans for actions when disaster or emergencies occur;

(iv) the responses that mobilize the necessary emergency services including responders (primary, secondary and tertiary) like fire service, police service, medical service including ambulance, government as well as non-governmental agencies;

(v) the post disaster recovery with aim to restore the affected area to its original conditions;

4.2 Intent.

It is intended to apply these regulations –

(a) to develop an ERDMP that should be concise and informative so that members of the emergency control organization should be able to quickly refer to the action plan to determine important functions that are being carried out;

(b) to manage an emergency and not to use ERDMP just as reference material for training and shall be made applicable -

(i) to prevent casualties - both on-site and off-site;

(ii) to reduce damage to property, machinery, public and environment;

(iii) to develop a state of readiness for a prompt and orderly response to an emergency and to establish a high order of preparedness (equipment, personnel) commensurate with the risk;

(iv) to provide an incident management organogram with clear missions and lines of authority (incident command system, field supervision, unified command);

(v) to ensure an orderly and timely decision-making and response process (notification, standard operating procedures);

(vi) to maintain good public relations;

Note: No two locations shall be identical in respect of layout, surroundings, products, storage quantities, meteorological data etc. Therefore, ERDMP will be location specific as per the available resources.

5. The content of the regulation.

The ERDMP shall include -

(a) classification of emergencies;

(b) implementation schedule;

(c) consequences of defaults or non-compliance;

(d) statutory requirements;

(e) pre-emergency planning;

(f) emergency mitigation measures;

(g) emergency preparedness measures;

(h) emergency response procedures and measures;

(i) emergency organisation and responsibilities;

(j) infrastructure requirements;

(k) declaration of on-site and off-site emergency;

(l) resources for controlling emergency;

(m) demographic information;

(n) medical facilities;

(o) evacuation;

(p) public relations and information to public;

(q) reporting of the incident;

(r) emergency recovery procedures;

(s) ERDMP for tank trucks and pipelines carrying petroleum products;

(t) integration of the ERDMP with National Disaster Management Authority (NDMA) guidelines and action plan on Chemical Disasters (Industrial);

(u) security threat plan and action plan to meet the eventualities.

6. Classification of emergencies.

Emergencies can be categorized into three broad levels on the basis of seriousness and response requirements, namely: –

(a) **Level 1** : This is an emergency or an incident which

(i) can be effectively and safely managed, and contained within the site, location or installation by the available resources;

(ii) has no impact outside the site, location or installation.

(b) **Level 2 :** This is an emergency or an incident which –

(i) cannot be effectively and safely managed or contained at the location or installation by available resource and additional support is alerted or required;

(ii) is having or has the potential to have an effect beyond the site, location or installation and where external support of mutual aid partner may be involved;

(iii) is likely to be danger to life, the environment or to industrial assets or reputation.

(c) **Level 3**: This is an emergency or an incident with off-site impact which could be catastrophic and is likely to affect the population, property and environment inside and outside the installation, and management and control is done by district administration. Although the Level-III emergency falls under the purview of District Authority but till they step in, it should be responsibility of the unit to manage the emergency.

Note: Level-I and Level-II shall normally be grouped as onsite emergency and Level-III as off-site emergency.

7. Implementation schedule.

These Codes of Practices shall be implemented for the areas covered under Regulation 3 as per the implementation period mentioned in **Schedule-I.**

8. Consequences of default or non-compliance.

(1) There shall be a system for ensuring compliance to the provision of these regulations through developing a well defined Emergency Response and Disaster Management Plan and conduction of mock drill and safety audits during the construction, commissioning and operation phase, as well as on an on-going basis. There shall also be a system of do's and don'ts regarding safety, mock drills or real emergencies for the visitors before entering an establishment. This should be supported by written instruction sheet for the visitor and ensured that visitor is accompanied by plant representative on forward visit and return gate.

(2) The Board shall monitor the compliance of ERDMP, Technical Standards and Specifications including Safety Standards either directly or indirectly by accredited third party through separate regulations on third party conformity assessment.

(3) In case of any deviation or shortfall, in achieving the recommended standards the entities are liable to penal provisions under the provisions of the technical standards,

specifications including safety standards.

(4) Mutual Aid Association not responding as per Memorandum of Understanding (MoU) or written agreement on request of assistance shall attract penalty under these regulations as under:-

(a) for first default in response, the defaulting entity with the application and its management shall have to submit written explanation to affected mutual aid members.

(b) for the second and successive failure, the defaulting entity shall have to pay the double of the billed amount of expenses incurred by affected mutual aid members in case of any eventuality occurs in the premises of affected mutual aid members.

9. Requirements under other statutes.

(1) It shall be necessary to comply with statutory rules, regulations and Acts, such as, the Environment (Protection) Act, 1986, the Factories Act, 1948, the Inflammable Substances Act, 1952, the Motor Vehicles Act, 1988, the Public Liability Insurance Act, 1991, the Petroleum Act, 1934, the National Environment Tribunal Act, 1995, the Explosives Act, 1884 mentioned in **Schedule–II.** It shall also be necessary to comply with the relevant statutes, provisions and guidelines of the Disaster Management Act, 2005 and National Disaster Management Guidelines Chemical Disasters (Industrial), April, 2007.

(2) These regulations are not intended to override the requirement of other statutory bodies or any other guidelines issued by the Central Government in respect of formulation of ERDMP. It shall be necessary to comply with the provisions of different laws relating to management of hazardous substances, more particularly, referred to in Schedule-II, and rules and regulations made thereunder, as amended from time to time.

10. Pre-Emergency Planning.

10.1Hazard identification.

(1) The first step towards ERDMP shall be to identify potential on-site and off-site hazards such as gas leaks, spills, fire, explosion, transportation incident, pipeline ruptures, equipment failure, natural calamities, etc. and the types of damage caused by them. The hazard identification shall include –

(a) information on toxicological, physical, and chemical properties of the substances being handled in the format of Material Safety Data Sheet (MSDS – Annexure – I);

(b) the identification of potential impact on downwind air quality or downstream water quality from an incidental release and possible danger to human, Flora and Fauna and animal health;

(c) hazards to the installation shall also include Natural perils such as floods, earthquakes, cyclones or landslides etc. ;

(d) check points for hazard identification are given at Check list-1.

10.2Risk analysis and risk assessment.

The second step of the ERDMP process is to determine the risk of an incident associated with each hazard. The basic procedure in a risk analysis shall be as follows:

(a) identify potential failures or incident s (including frequency) ;

(b) calculate the quantity of material that may be released in each failure, estimate the probability of such occurrences;

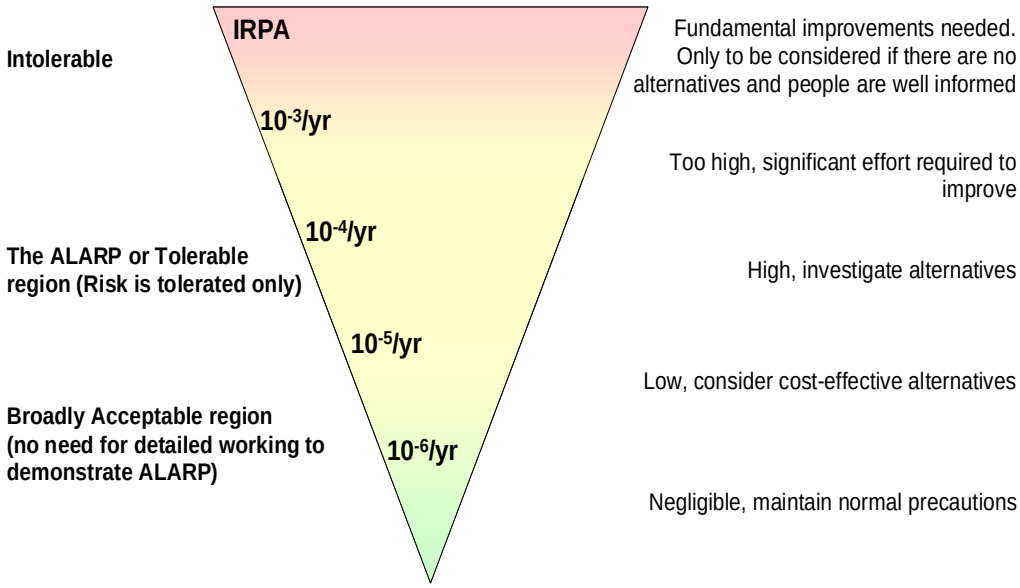
(c) evaluate the consequences of such occurrences based on scenarios such as most probable and worst case events;

(d) the combination of consequences and probability will allow the hazards to be ranked in a logical fashion to indicate the zones of important risk. Criteria should then be established by which the quantified level of risk may be considered acceptable to all parties concerned;

(e) after assessing the risk, the "maximum tolerable criterion" must be defined and above which the risk shall be regarded as intolerable. Whatever be the benefit level must be reduced below this level;

(f) the risk should also be made "as low as reasonably practicable" (ALARP) and least impacting the neighbourhood. While conducting the risk analysis, a quantitative determination of risk involves three major steps:-

IRPA (Individual Risk per Annum)



NOTE- a risk of 10 per million per year, or 10^{-5}/Year, effectively means that any person standing at a point of this level of risk would have a 1 in 100 000 chance of being fatally injured per year.

10.3 Causes of disasters.

The common causes for the above events are tabulated below for reference and the ERDMP should be prepared by the installation to deal with the following emergencies.

Man made	Natural Calamities	Extraneous
• Heavy Leakage • Fire • Explosion • Failure of Critical Control system • Design deficiency • Unsafe acts • In-adequate maintenance	• Flood • Earth Quake • Cyclone • Outbreak of Disease • Excessive Rains • Tsunami	• Riots/Civil Disorder/ Mob Attack • Terrorism • Sabotage • Bomb Threat • War / Hit by missiles • Abduction • Food Poisoning/ Water Poisoning

10.4Consequences.

(1) The consequences of an Incident may be confined within the premises or may spill off-site triggering cascading effects.

(2) The consequences of an Incident are fire explosion, deflagration, blast waves, fast spreading flames, BLEVE, UVCE resulting in direct effects like damage to buildings/property, burns, fatalities. However, an Incident in the neighborhood may sometimes cascade into an on-site emergency. It should be prevented or managed to avoid major emergency.

11.0 Emergency Mitigation Measures.

After determining the risk level, the following actions shall be required for mitigation of emergency:-

11.1 Basic requirement of ERDMP.

Basic requirement needs to be assessed prior to development of ERDMP as per the details provided in **Schedule-III.**

11.2 Resource mobilisation.

Resource mobilisation shall include manpower requirement, fire fighting materials, appliances or equipment, safety equipment, communication facilities, transport, list of emergency drugs and appliances, etc. (**Schedule-IV**).

11.3 Incident preventing measures and procedures.

The incident prevention measures and procedures at installation or other locations shall include the following:-

(i) health safety and environment (HSE) policy;

(ii) proper layout and inter facility distances (the layout should not have any criss-cross movement of men and materials);

(iii) safety committees with fair participation of Union leaders and workers;

(iv) safety audits and inspections shall be carried out with the help of prescribed checklists. The entity shall follow the periodicity and guidelines for inspection as per regulations of Petroleum and Natural Gas Regulatory Board on process / procedure/methodology for ensuring adherence and its protocol for third party conformatory assessment;

(v) work permit system (including confined space and entry permit);

(vi) early warning alarm system in the installation (gas monitoring system, heat detection, high level alarms, low pressure/high pressure alarms etc.) especially in the vicinity of storage tanks, filling station, delivery points and along with periphery with the indication in the central control room;

(vii) in-built safety interlocks system in design such as safety relief valves (SRVs), thermal safety valves (TSVs), non-returning valves (NRVs), remote operated valves (ROVs) and other various emergency trip systems in Installations;

(viii) fire protection (preferably automatic) and HSE Management system;

(ix) drill for visitors including assembly procedure and escape route, do's and don'ts written instructions before entry, etc;

(x) setting up of safety MIS system and sending Exception reports to the head of organisations or CEO;

(xi) all standby equipments should be tried and operated periodically and recorded. Similarly back up power for safety equipment and instrument should be checked periodically and observations be recorded;

(xii) check points for incident prevention measures are given at Check list -2.

12.0 Emergency preparedness Measures.

After detailing the prevention measures, preparedness measures to handle the emergency shall be explained in ERDMP document.

12.1Emergency Drills and Mock Exercises.

(a) To evaluate the thoroughness and effectiveness of an ERDMP, it is necessary to conduct periodic table top exercises full-scale or announced, and unannounced drills. Each site should hold drills on the night shifts, change shifts as well as during the day as mandated under regulation 12.1 (e).

(b) Drills should present a variety of Emergency scenarios and designed to challenge each segment of the organization. Limited scale drills are useful and should be used by Chief of each Support Service to train his own team. Plans should be made to have periodic mass casualty exercises. These exercises should attempt to simulate as closely as possible a fire, explosion, or toxic agent release and comparison of the prescribed time lines and the actual received.

(c) The warning system, first aid, evacuation procedures and the definitive treatment procedures should all be tested periodically.

(d) Some of the drills should also include the participation of outside groups and agencies such as police, fire companies, ambulance service, civil defence organizations and mutual aid groups.

(e) Testing and mock drills for onsite emergency plan shall be carried once in three months and for offsite emergency plan twelve months.

(f) For other installations, the mock drill shall be carried out once a year. However, for locations having more than one industry member, the annual mock drill can be carried out by one industry member in turn, thus ensuring one mock drill in every year at the location.

(g) These mock drills will enable the unit/location to assess the capability of the individual and performance as a group. The frequent discussions and drills will help in eliminating the confusion and shortcomings, if any.

(h) Each Mock Drill should be recorded with observations and deficiencies to be rectified within 24 hours.

(i) Check Points for mutual aid and mock drills are given at Check list - 3.

12.2Training.

(1) An ERDMP shall be easier to use if training material and general philosophy on emergency prevention and control are kept separate from the working plan.

(2) (i) Training shall be imparted to all the personnel likely to be involved directly or indirectly to the emergencies including employees, contract workers, transport crew and security personnel.

(ii) Contract personnel and contract labourer shall be allowed to start work only after clearance of attending and passing safety training.

(3) Refresher training shall be conducted at regular intervals.

(4) The basic requirements of Central Motor Vehicles Rules, 1989 pertaining to dangerous or hazardous goods transport must be complied by the transporters. For this the loading station must conduct training of tank truck crew as per the requirement under Central Motor Vehicles Rules, 1989.

12.3Mutual Aid.

Since combating major emergencies might be beyond the capability of individual unit, it is essential to have mutual aid arrangements with neighboring industries. Consideration shall be given to the following while preparing mutual aid arrangements:-

(a) Written mutual aid arrangements are to be worked out to facilitate additional help in the event of Level-II emergencies by way of rendering manpower, medical aid or fire fighting equipments, etc.

(b) The mutual aid arrangement shall be such that the incident controller of the affected installation shall be supported by neighbouring industries on call basis for the support services materials and equipments already agreed. Further, all such services deputed by member industry shall work under the command of the site incident controller of the affected installation.

(c) Mutual aid associations shall conduct regular meetings, develop written plans and test the effectiveness of their plans by holding drills. Drills are essential to establish a pattern for operation, detect weaknesses in communications,

transportation and training. Periodic drills also develop experience in handling problems and build confidence in the organization.

(d) To make the emergency plan a success, the following exchange of information amongst the member organizations of mutual aid association is considered essential: -

(i) The types of hazards in each installation and fire fighting measures.

(ii) List of all the installations or entities falling along the routes of transport vehicles carrying petroleum or petroleum products.

(iii) The type of equipment, that would be deployed and procedure for making the replenishment.

(iv) Written procedures which spell out the communication system for help and response. This is also required to get acquainted with operation of different firefighting equipment available at mutual aid members and compatibility for connecting at users place.

(v) Familiarization of topography and drills for access and exit details carried out by mutual aid members.

Note: Incidents involving road transport vehicles carrying petroleum products shall be attended by the nearest installation on request of civic authorities even in absence of mutual aid agreement with the consignor. Failure on the part of such industry, installations shall attract penalty provisions under sub-regulation 8(4) of these regulations.

13.0 Response Procedures and Measures.

Containing the consequences of an emergency requires well planned and documented procedures to ensure prompt response and coordination among various task groups. The following response procedures as prevalent in the location shall be carried out:

(a) Zoning and Maps.

(i) The zones and maps shall be prepared highlighting the Incident prone areas of the unit so that in case of an emergency it serves as a basis for taking the action. This indicates the size of the area within which human life is seriously endangered by the consequences of incident. This should also indicate the location of assembly points and emergency control rooms. The map should also have marked 24 wind directions to facilitate easy access in case of emergencies.

(ii) The entities shall help District Disaster Management Authority (DDMA) in finalizing the full drawn map of installations and nearby areas under their

operations having presence of habitats which are vulnerable and sensitive like old age homes, schools, prison, etc.

(iii) Wind speed and direction should be recorded with the help of anemometer and declaration of off-site emergencies should be immediately communicated to DDMA.

(j) Layout/flow diagram -

Detailed layout and flow diagram for different activities such as Product Lines, filling system, emergency shutdown system isolation valves etc. should be detailed. The important control valves should be highlighted.

(k) Manpower data

The details of manpower deputed on shift basis should be given in order to assess the requirement in case of emergency.

Note : Check points on ERDMP response measures are given at Check list- 4.

14.0 Emergency Organization and Responsibilities.

(1) The ERDMP shall identify the safe transition from normal operation to emergency operations and systematic shut down, if any, and the delegation of authority from operations personnel to emergency response personnel. For this purpose, the plan shall identify an emergency response organization with appropriate lines of authority with succession planning and actuating the response management. Responsibilities for decision making shall be clearly shown in an emergency organization chart. The plan shall identify each responder's position, mission, duties and reporting relationship.

(2) Overall objectives of an emergency control organization shall be:

(a) to promptly control problems as they develop at the scene.

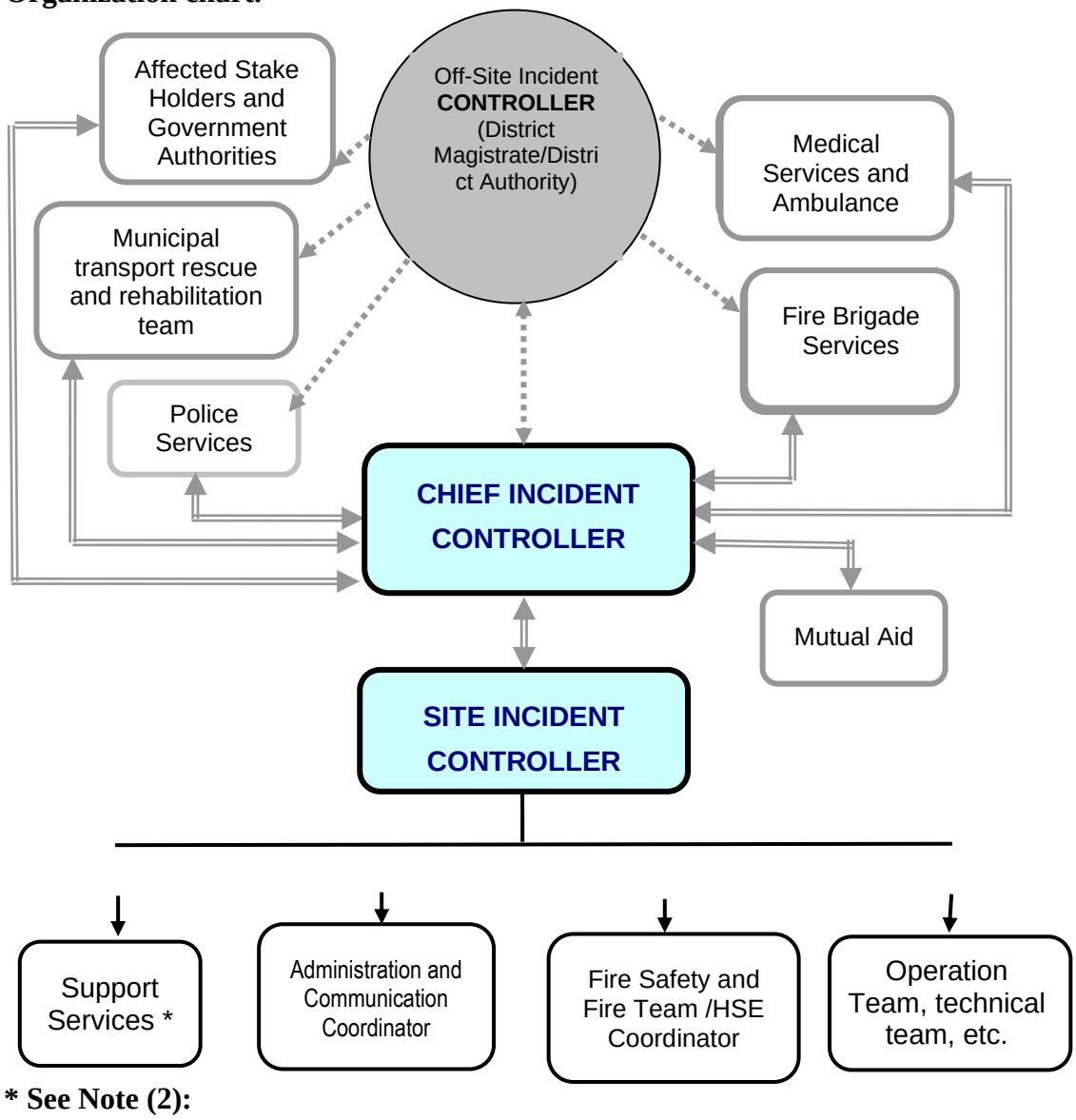
(b) to prevent or limit the impact on other areas and off-site.

(c) to provide emergency personnel, selecting them for duties compatible with their normal work functions wherever feasible. The duties and functions assigned to various people shall include making full use of existing organizations and service groups such as fire, safety, occupational health, medical, transportation, personnel, maintenance, and security.

(d) Employees must assume additional responsibilities as per laid down procedure of ERDMP whenever an emergency alarm sounds.

(e) In setting up the organization, the need for round-the-clock coverage shall be essential. Shift personnel must be prepared to take charge of the emergency control functions or emergency shutdown of system, if need be, until responsible personnel arrive at the site of emergency. The organization should have an alternate arrangement for each function.

14.1 Organization chart.



*** See Note (2):**

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Level – I ——
Level II ═══
Level III ---------

Note: (1) Above is a typical and basic organogram for control of emergency. Entity can merge the functions as per their other statutory requirements and based on level of risk and range of operations. The organisation shall have to address all services and support system required and available to it.

(1) Support Services Include Communication Services, Engineering/Maintenance Services, Medical and Occupational Health, Human Resource and Welfare Service, Security, Media/Public Relations, Transport and Logistics, Finance, Contract and Procurement and Environmental Services.

(2) Role of both CIC and SIC can be merged depending upon the requirement.

14.2 Roles and Responsibilities.

14.2.1 Chief Incident Controller.

The Chief Incident Controller (CIC) shall have overall responsibility to protect personnel, site facilities, and the public before, during, and after an emergency or disaster. The CIC shall be present at the main emergency control centre for counsel and overall guidance. Responsibilities of the Chief Incident Controller shall include the following:-

(a) preparation, review and updation of the ERDMP as per Check List-5;

(b) assessment of situation and declaration of emergency;

(c) mobilisation of main coordinators and key personnel;

(d) activation Emergency Control Centre;

(e) taking decision on seeking assistance from mutual aid members and external agencies like Police, Fire Brigade, Hospitals etc.;

(f) continuous review of situation and decide on appropriate response strategy;

(g) taking stock of casualties and ensure timely medical attention;

(h) ensuring correct accounting and position of personnel after the emergency;

(i) ordering evacuation of personnel as and when necessary;

(j) taking decision in consultation with District Authorities when an Off-site emergency to be declared.

14.2.2 Site Incident Controller (SIC)

The Site Incident Controller shall be identified by the Chief Incident Controller and will report directly to him. SIC should be nominated by the entity in each shift 24 hrs. Responsibilities of the Chief Incident Controller shall include the following:-

(a) The SIC shall maintain a workable emergency control plan, establish emergency control centers, organize and equip the organization with ERDMP and train the personnel;

(b) The SIC shall be capable of making quick decisions and taking full charge;

(c) The SIC shall communicate to the Emergency Control Centre where it can coordinate activities among groups;

(d) The SIC shall be responsible for ensuring that appropriate local and national government authorities are notified, preparation of media statements, obtaining approval from the CIC and releasing such statements once approval received;

(e) The SIC shall also ensure the response to the incidents or the emergencies, as the case may be, is in line with entity procedures, coordinating business continuity or recovery plan from the incident. He must ensure next of kin are notified in a timely manner;

(f) The SIC shall also co-ordinate if any specialist support is required for the above purpose; and

(g) The SIC shall decide on seeking assistance of mutual aid members and external agencies like police, fire brigade, hospital etc.

14.2.3 Administration and Communication Coordinator.

Responsibilities of the administration and communication controller shall include the following:-

(a) to coordinate with mutual aid members and other external agencies;

(b) to direct them on arrival of external agencies to respective coordinators at desired locations;

(c) to activate the medical centre and render first aid to the injured. arrange ambulance and coordination with hospitals for prompt medical attention to casualties;

(d) to ensure head counts at assembly points;

(e) to arrange procurement of spares for fire fighting and additional medicines and drugs;

(f) to mobilize transport to various teams for facilitating the response measures;

(g) to monitor entry and exit of personnel into and out of premises;

(h) to ensure only authorized personnel enter into the premises;

(i) To regulate the flow of traffic into and out of premises and control the mob outside, if any, with the assistance of the police.

(j) to provide administrative and logistics assistance to various teams; and

(k) to arrange evacuation as directed by the chief incident controller, and in coordination with the civil authorities like police, panchayat/municipal authorities etc.

14.2.4 Fire Safety Coordinator and Fire Team.

Responsibilities of the Fire and Safety Coordinator shall include the following:-

(a) to activate emergency sirens as per the practiced codes;

(b) to take charge of all fire fighting and rescue operations and safety matters;

(c) to ensure that key personnel are called in and to release crew of fire fighting operations as per emergency procedure;

(d) assess functioning of his team and communicate with the CIC and or administrative controller for any replenishment or, replacement of manpower or firefighting equipment;

(e) direct the fire brigade personnel and mutual aid members to their desired roles as also proper positioning of the manpower and equipment;

(f) to decide the requirement of mutual aid and instruct fire station, who, in turn will contact mutual aid members;

(g) to coordinate with outside fire brigades for properly coordinated fire fighting operation;

(h) to ensure that casualties are promptly sent to first aid centre / hospital;

(i) to arrange requirement of additional fire fighting resources including help from mutual aid partners;

(j) ensure empty and loaded trucks are removed to safer area to the extent possible so as not to affect emergency handling operations;

(k) continually liaise with the SIC and or CIC and implement the emergency combat strategies as communicated by him; and

(l) ensure adequate hydrant pressure in the mains and monitor water level in the reservoir.

Note: Fire chief shall wear identification jackets at the site of disaster so that he is clearly distinguished among fire fighting personnel and is visible from a distance.

14.2.5 Support and auxiliary services for major installations.

The following additional coordinators (refer 14.2.5.1 up to 14.2.5.4) may be nominated and delegated the specific responsibilities falling under the basic functions of SIC and or CIC: -

14.2.5.1 Human Resources and Welfare Services Coordinator

14.2.5.2 Transport and Logistics Services Coordinator

14.2.5.3 Media and Public Relations Coordinator

14.2.5.4 Operations and Technical Coordinator

14.2.5.6 Security Coordinator.

The Security Coordinator reports to the Chief / Site Incident Controller and is responsible for security of the installation during any incident or emergency situation and for implementing the actions below:

(a) Obtaining an approved visitor list from the security department or reception for ensuring that personnel on the list are escorted to reception by security staff;

(b) Maintaining security of the office in the event of an office evacuation;

(c) Providing office security and assisting authorities in the event of civil unrest or when required organising additional security at the emergency scene;

(d) Obtaining initial briefing from Chief / Site Incident Controller and providing security information and or status reports to Site Incident Controller during the emergency;

(e) Assuming responsibility for any task delegated by Chief Incident Controller; and

(f) Assessing the emergency, identify security specific problems and recommend solutions to Chief Incident Controller.

14.2.5.7 (a) Maintenance of ERDMP Records.

There shall be maintenance of ERDMP records for all kind of emergencies covering near Miss, Level-I, Level-II and Level-III. Organisation shall maintain an Incident Record Register for the above purpose and post–disaster documentation like resources deployed, relief, rehabilitation measures and lesson learned to avoid re-occurrence of any such emergency. Head of HSE or any other designated personnel by the CIC/SIC shall be responsible for maintenance of such records.

(1) A good public relations program is extremely important in an emergency situation. Inquiries will normally be received from the media, government agencies, local organizations and the general public.

(2) This section of the Response Plan shall include a public relations or media plan. It should identify an Information Officer that is well-equipped and trained in media relations.

(3) Initial releases shall be restricted to statements of facts such as the name of the installation involved, type and quantity of spill, time of spill, and countermeasure actions being taken. All facts must be stated clearly and consistently to everyone.

Note- Plans shall also be developed to utilize local media and television stations for periodic announcements during an emergency. This shall also assist in reducing rumours and speculation.

14.2.5.7 (b) Recorder.

The Recorder responsibility is to maintain an accurate time record of key information received from the incident or emergency location and to record the actions initiated by the site incident controller and for implementing the emergency response actions below:

(a) to record key incident events/actions on incident status board/display manually or electronically;

(b) to maintain essential equipment checklist status;

(c) to ensure all status and information is up to date and correctly displayed;

(d) to take all necessary recorded material to the alternate ECC room in the event of emergency in main ECC room; and

(e) to maintain a log book.

14.2.5.8 Communications Services.

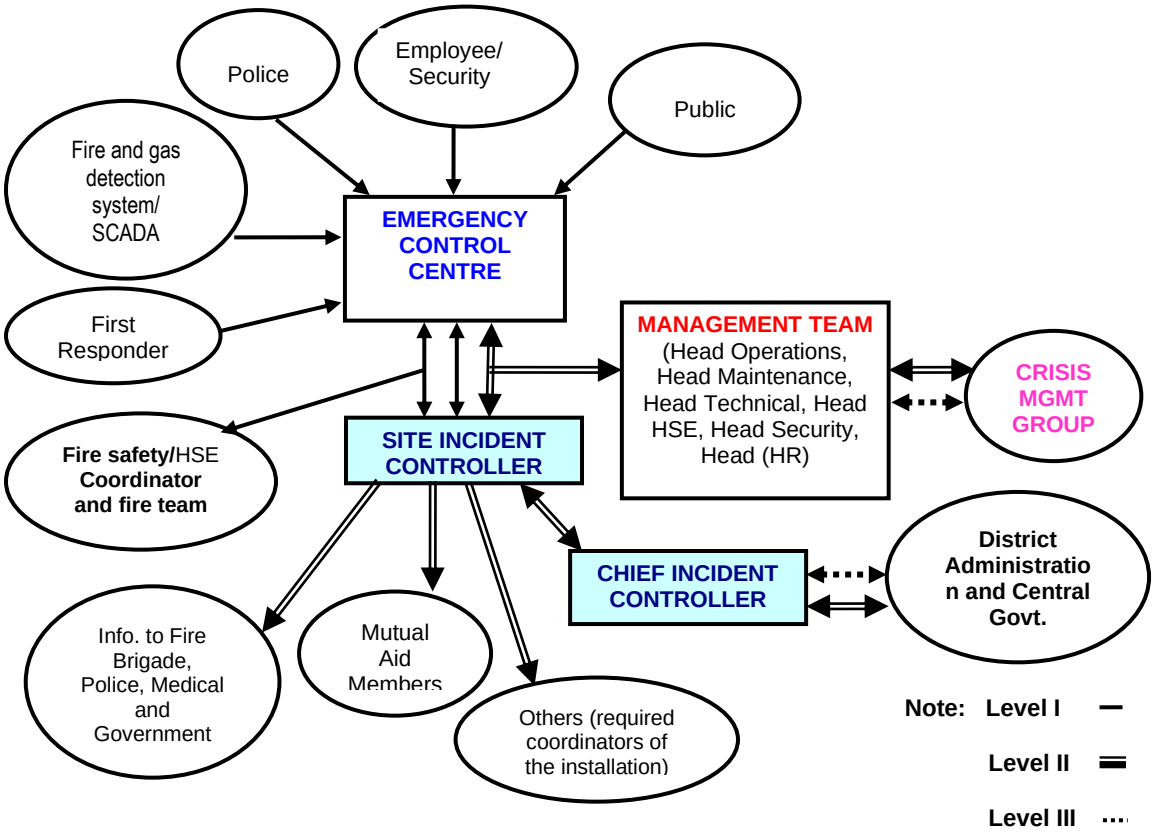
(1) The Communications Coordinator shall ensure the following actions below:

(a) Ensuring the ECC equipment and systems are maintained to a high standard and remain functional throughout the emergency.

(b) Ensuring a back-up communication system is available in the event of the ECC Room is not available.

(c) Providing quality and diverse communication systems for use in routine and emergency situations.

COMMUNICATION FLOW CHART



Note: 1. above is a typical communication flow chart for notification of emergency.

2. Wherever communication exists for any level of emergency, it automatically implies that the communication exists for all higher levels of emergencies.

(2) **Flow of Information.**

(a) Control Centre shall receive the information form field either in person or from the various systems available in the installation.

(b) on receipt of information, the control room shift In-charge will actuate the ERDMP and notify the emergency to site incident controller.

(c) Control room shift in-charge will act as site incident controller till arrival of designated person.

(d) SIC or CIC depending upon the level of emergency will actuate the ERDMP and inform the concerned authorities as depicted above in the chart.

Note: Apart from the above main function, the role and responsibility of other support services such as finance, material etc should also be detailed in disaster management plan.

14.2.5.9 Siren Codes.

(1) The Emergency siren/s should be located suitably to cover the whole area with the operational control within the installation. These should be tested at least once in a week to keep them in working condition.

(2) Emergency siren code should be as follows, namely: -

(a) Emergency Level-I: A wailing siren for two minutes.

(b) Emergency Level-II and III: Same type of siren as in case of Level – I and II but the same will be sounded for three times at the interval of *one* minutes i.e.*(wailing siren 2min + gap 1 min + wailing siren 2min + gap 1min + wailing siren 2min) total duration of Disaster siren to be eight minutes*.

(c) ALL CLEAR: Straight run siren for two minutes.

(d) TEST: Straight run siren for two minutes at frequency at least once a week

(e) Public address system should be provided with message.

15.0 Infrastructure.

15.1 Emergency control centers (ECC).

(1) Each installation shall have the provision of ECC preferably with a back- up arrangement.

(a) The ECC shall be away from potential hazards and provide maximum safety to personnel and equipment.

(b) Preference should be given to a non-combustible building of either steel frame or reinforced concrete construction.

(c) The ECC should have at least two exits and adequate ventilation

(2) Following certain basic supplies and dedicated equipment shall be made available at the ECC.

(a) A copy of the ERDMP.

(b) Maps and diagrams showing buildings, roads, underground fire mains, important hazardous material and process lines, drainage trenches, and utilities such as steam, water, natural gas and electricity are required.

(c) Aerial photographs, if possible, and maps showing the site, adjacent industries, the surrounding community, high-ways, rivers, etc., help determine how the disaster may affect the community so that the proper

people can be notified, adequate roadblocks established, and the civil authorities advised.

(d) Names, addresses, and telephone numbers of employees.

(e) Names, addresses, and telephone numbers of off-site groups and organizations that might have to be contacted should be available. All telephone lists should be reviewed for accuracy on a scheduled basis and updated, as necessary.

(f) Dedicated and reliable communication equipment should be provided at the ECC. Enough telephones and one fax line to serve the organization for calls both on-and off-the-site. Two-way radio equipment shall be provided to maintain continuity of communications when other means fail and also provides an excellent way of keeping in contact with field activities.

(g) All ECC should have emergency lights so that operations can continue in the event of power failure.

(h) Facilities for recording the sequence of events should be provided to assist in investigating causes, evaluating performance, and preparing reports. This can range from a pan board, logbook to a tape recorder with a person assigned to record pertinent information.

(i) ECC should also have dedicated computer with LAN/ internet facility to access the installation data and also it should have the latest and updated soft copies of all standard operating practices (SOP) etc.

15.2 Assembly Points.

(1) There should be pre-designated areas in safe zone as per quantitative risk assessment, where the personnel like workers, staff, contractor workers etc. not involved in emergency operations (as per ERDMP) shall assemble in case of an emergency.

(2) Depending on the location of the emergency, the assembly point can vary. For each potential hazardous zone, a specific assembly point shall be identified and clearly marked on the zones or maps.

(3) The assembly point should be clearly marked with directional display board along the route. Route should be well lighted with florescent marking.

(4) During an emergency, pre-designated persons would take charge of this point and take the roll call of the people reporting. Provisions should be made for assembly points, communication and headcount facilities at assembly points, and personnel to control the movement of assembled employees.

16.0 Declaration of on-site and off–site emergencies.

(1) An emergency starts as a small incident which may become a major incident with passage of time. At the initial stages, the emergency organisation chart shall be put into action. If the incident goes beyond control the on-site emergency plan will be actuated by the chief incident controller at the appropriate stage as considered necessary.

(2) During idle shift or holidays, the security personnel will combat the incident as per the ERDMP organisation chart and at the same time inform various emergency controllers for guidance and control the situation.

(3) When emergency becomes catastrophic and evacuation beyond the plant premises is considered necessary by the chief incident controller, the situation will be handed over to district authority for implementing the off-site emergency plan.

(4) The management of emergency henceforth has to be controlled by the district crisis management group under the supervision of the District Collector/DDMA.

(5) In addition to preparation of on-site emergency plan, furnishing relevant information to the district authorities for the preparation of off-site emergency plan is a statutory responsibility of the occupier of every industry handling hazardous substance.

17.0 Resources for controlling Emergency

(1) To meet all possible emergencies, installation has to provide a number of systems and resources based on the risk level as identified above in addition to requirements under the Factories Act, 1948 and other statutory regulations applicable to the installation.

(2) The available emergency control systems and facilities within the installation shall be as under: -

(a) fire and gas detection system

(b) fire protection system (Active and Passive)

(c) fire fighting systems

(d) ambulance facility in house, if not available then should be available on urgent call basis.

(e) rescue facilities and personal protective equipments (PPEs)

(f) first aid and medical facilities round the clock with availability of minimum one nurse (24X7) and doctor in the first aid room.

(g) communication facilities

(h) escape route and evacuation zones

(i) emergency shutdown system

(3) Required resources shall be suitably incorporated into the plan. Number and type shall be as per the relevant code, standards and best practices in the industry. This section shall also identify sources of local assistance including telephone numbers and names of contacts for:

(a) fire departments

(b) police

(c) municipal and provincial agencies

(d) hospitals

(e) doctors

(f) other relevant company facilities

(g) mutual aid organizations

(h) co-operatives

(i) helicopter and air transport services

(j) surface transport services

(k) safety and monitoring equipment suppliers

(l) spill response and/or cleanup services

(4) Installations shall also determine type of resources such as equipment, personnel, technology, expertise, etc. provided by the respective governments under different conditions.

(5) Check Points for availability of resources-internal/external are given at Check list-6.

18.0 Demographic Information.

ERDMP shall be prepared based on the following information: -

(a) neighboring population in a 5km radius

(b) housing colonies of industries

(c) sensitive institutions such as schools, hospitals, religious establishments and old aged homes, etc.

(d) cattle and livestock

(e) flora and fauna

19.0 Medical Facilities.

Details of medical facilities to be provided in the ERDMP as per the following:-

(a) facilities available at first aid centre

(b) details of trained persons in first aid in the plant

(c) facilities available at identified hospitals

(d) facilities available at other local hospitals

(e) antidotes and emergency medicines

(f) details of specialist doctors in the town

(g) details of hospital in nearby cities

20.0 Evacuation.

(1) Planning and training on evacuation techniques are important in preventing injuries. Evacuation of local communities or people near the site may be prudent depending on the situation and down-wind dispersion information etc. Although this action will normally be initiated and handled by district authorities, the affected installation shall help to implement such evacuation.

(2) This evacuation plan shall also consider:

(a) basis for recommending on-site or off-site actions

(b) authorize person for area or site evacuation

(c) mode of communication

(d) training in locating exits from buildings, areas and the site

(e) location of escape equipment

(f) provisions for flashlights or other supplemental lighting

(g) which areas can function as safe area

(h) moving crosswind from gas or fume releases, etc.

(i) provision of food and drinking water at assembly point and transfer point.

(3) If evacuation takes place after initial head counts are reported, means for recounting may be necessary. Where it is safe to do so, areas being evacuated should be thoroughly searched to ensure everyone has departed safely. Portable mobile vehicle for announcement should be available in the emergency.

21.0 Information to Public.

(1) The safety measures to be taken in the event of an emergency shall be made known to the general public who are likely to be affected.

(2) For the purpose, use of Dos' and Don'ts' shall be prepared and furnished to the Crisis management Group. Display boards carrying do's and don'ts should be located outside the gate as well as in the neighbouring colonies and other habitat areas in the immediate vicinity.

22.0 Roles and responsibilities of stakeholders including external agencies.

(1) Role and responsibilities of stakeholders including external agencies such as District Authority, police, fire service, revenue department, health department, pollution control board, National Disaster Response Force (NDRF) and State Disaster Response Force (SDRF).

(2) For roles and responsibilities of above stakeholders and responders, primarily district collector as Head of emergency operation and other authorities under his charge including external agencies, has been defined in **Schedule–V.** These roles and responsibilities are generally in line with National Disaster Management Guidelines on Chemical Disasters, April, 2007, brought out by National Disaster Management Authority.

23.0 Reporting of the Incident:

(1) All incidents covered under Level-I should be maintained by the entity for inspection whenever called for inspection and Level-II and Level-III shall be reported to the Board in the format specified and placed at **Schedule-VI** including near miss incident. The above report should be submitted within 48 hours after occurrence of the incidents or any other reason triggering major incident.

(2) Investigation report of all major incidents shall be submitted to the Board. An incident shall be treated as Major if any of the following occurs;

(a) fire for more than 15 minutes

(b) explosion / blowout

(c) fatal incident.

(d) loss above Rs. 10.0 Lac

(e) cumulative man hours lost more than 500 hrs.

(f) plant shutdown / outage due to the incident

(g) Level-III incident

24.0 Action after reporting of incident by the entity

After reporting of the incidents to Board, Nodal officer of the Board (head of Technical Standards the specifications and safety group) shall have responsibility of informing all the Members of the Board and shall coordinate with appropriate level in National Disaster Management Authority (NDMA) till normalization of the situation.

25.0 Termination of emergency

(1) Termination activities should concentrate on giving accurate information to people who need it most especially employees, neighbourhood, District Authorities engaged in offsite emergencies, and should begin as soon as the emergency phase of the operation is completed.

(2) The termination of emergency shall be declared through siren as per the Siren Code defined by industry in case of Level- I and II. For Level-III termination of emergency shall be declared by District Authority through appropriate mode of information transfer so as to reach each and everyone.

26.0 Emergency Recovery Procedures

(1) After the emergency, the following activities need to be carried out in detail.

a) information to statutory authorities.

b) incident investigation.

c) damage assessment.

d) salvage of products, de-contamination, clean-up and restoration.

e) a detailed report shall be prepared based on the entire experience of the incident, including restorations, limitations and lessons learnt.

f) ambient air monitoring at the site as well as 5 km radius of the installation by State Pollution Control Board to determine the contamination level affecting health.

(2) Check points on ERDMP recovery measures as given at Check list-7.

27.0 ERDMP for pipelines carrying petroleum products and retail outlets

1) ERDMP for pipelines carrying petroleum products should follow modern methods of surveillance of Pipeline and take guidance from all the aspects of Disaster Management Plan mentioned in the ERDMP. **Schedule–VII** should be referred, which is in line with Chemical Disaster by National Disaster Management Authority.

2) ERDMP for retail outlets should take care of all aspects mentioned in ERDMP and **shall** also refer to OISD STD– 225.

28.0 ERDMP for road transportation.

The road transport of Petroleum product has significant presence and needs special attention. Complete details of treatment for handling emergency arising out of road transportations have been provided below:

28.1 Resource mobilisaiton for road transport emergency

Resource mobilisation for road transport emergency shall be as per the **Schedule-VIII.**

(a) In order to handle Emergencies, which may arise due to incident involving Petroleum Product Transportation, it is required that a comprehensive Emergency Management Plan is readily available with the industry as well as with other related authorities all along the routes. The ERDMP should be clearly understood by its users so that the emergencies can be handled in a systematic manner with minimum response time in accordance with the prescribed procedure.

(b) Copies of the ERDMP shall be made available by the Industry to all the field locations i.e. Installations, POL Depots, Terminals / Installations, Refineries, Gas Processing Plants, Dispatch units of etc., the concerned District Administration, Police Stations and Fire Brigades en-route and within vicinity of specified tank truck routes, oil industry sales personnel of concerned area as may be required.

(c) Location specific availability of Emergency Response Vehicle shall be mentioned in the ERDMP.

28.2 TREM Card (Specific to Road Transportation)

TREM Card format including sample as per details shown in **Schedule-IX** and Route Map shall be provided to the Tank Truck Crew which should be referred in case of an emergency.

28.3 Role of External Agencies for road transportation emergency

It is expected that the following roles shall be performed by various agencies:

28.3.1 Fire Brigade

On receipt of information from any source on incident of tank truck, fire brigade may contact nearest installation and police station. After assessing the situation, it may:

(a) rush fire tender to the incident site with all necessary fire fighting equipments;

(b) prepare a contingency plan for removal of tank truck, if not leaking, in consultation with installation personnel;

(c) dispersal of vapours by water spray away from inhabited area, in case of leakage. Extinguish the fire, in case leakage source cannot be stopped;

(d) allow the fire to burn under controlled conditions if isolation is not possible in case of gaseous fuels;

(e) save human lives and salvage material from incident affected truck;

(f) liaise with fire brigade in the adjoining town for additional help, if necessary;

(g) arrange water through muni

(h) cipal water tanker or any other source;

In addition to the above, the Schedule-V shall be followed.

28.3.2 Role of Police

On receipt of information, police may take the following actions as per **Schedule-V derived from the** National Disaster Management Guidelines Chemical Disasters (Industrial), April, 2007. However, the following points may also be taken care by the police authority:

(a) stop the traffic from both ends of the road.

(b) warn the people living in adjacent area for stopping all fire, smoking, evacuation to safe places, if necessary.

(c) contact nearest district police headquarters and giving the situation report.

(d) evacuate personnel from the area, if required.

(e) extend help in removal of injured personnel to the nearest first-aid centre /hospital, contacting highway patrol, completing legal formalities in case of any casualty.

In addition to the above, the shall be followed

28.3.3 District Administration

On receipt of information, District Administration may take the following actions as per **Schedule-V derived from the** National Disaster Management Guidelines Chemical Disasters (Industrial), April, 2007. However,

On receipt of information, following actions should be taken care :-

(a) to keep watch on the overall situation.

(b) rush ambulance to the incident site if casualties are reported.

(c) direct cranes or any other such equipment to carry out rescue operations.

(d) issue warning messages to people through public address system, if any evacuation is required.

(e) arrange emergency vehicles for evacuation purposes.

(f) give direction to hospitals having burns injury ward for readiness to receive patient in case of incident involving fire.

(g) provide basic amenities, e.g., water, electricity, food and shelter to the affected people as required.

In addition to the above, the Schedule-V shall be followed.

29.0 Integration of the ERDMP with the NATIONAL DISASTER MANAGEMENT PLAN (NDMP)

29.1 NATIONAL DISASTER MANAGEMENT PLAN (NDMP)

(1) On 23 December 2005, the Government of India took a definite step towards NDMP by enacting the NDMP ACT, 2005. The NDMP Act, 2005 is a Paradigm Shift from a response and relief-centric approach to a proactive and comprehensive mindset towards NDMP covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.

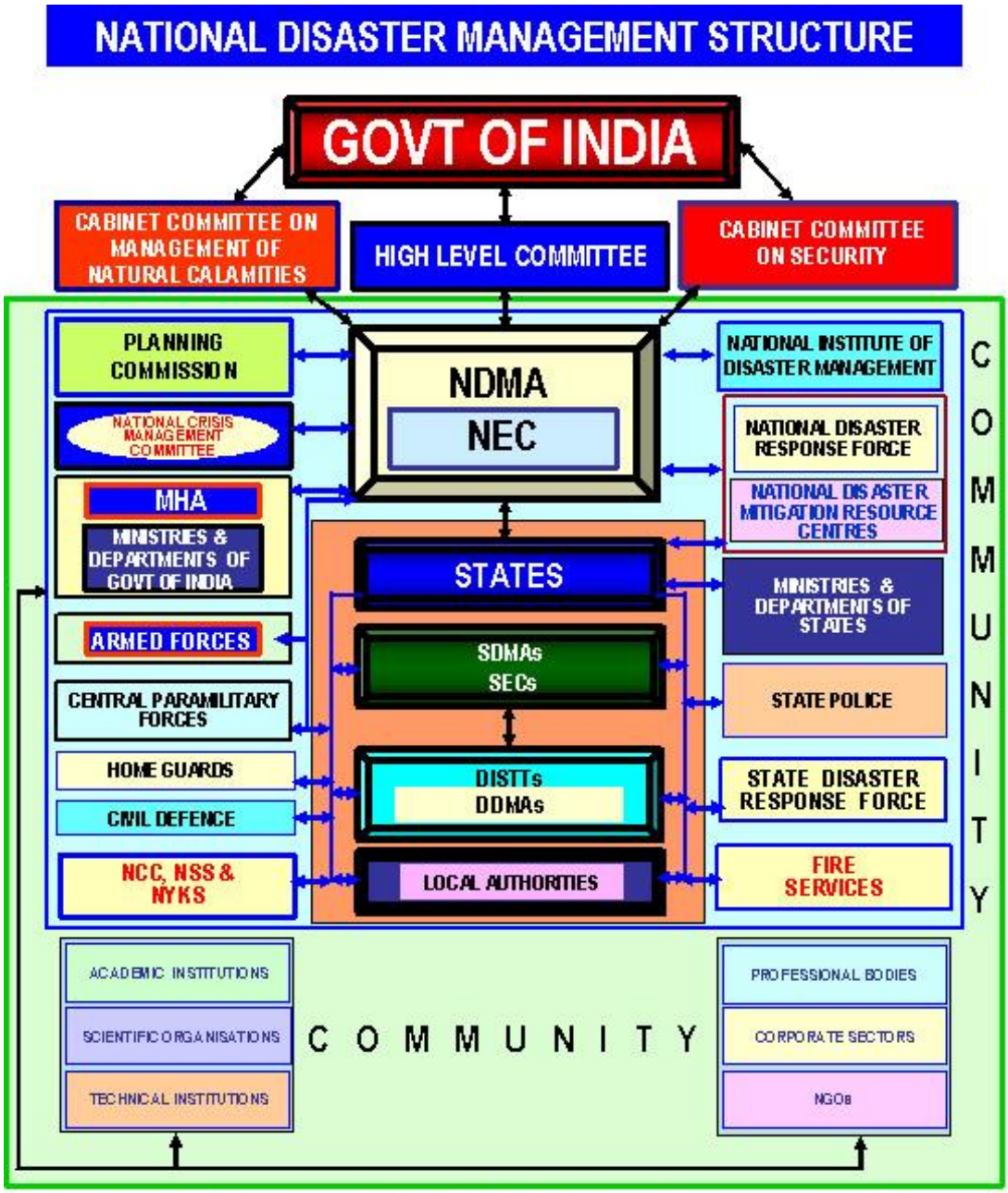
(2) Similar to National Authority at the Centre, the State Government is to establish a State Disaster Management Authority for the State. The State Authority is to be headed by the Chief Minister of the State as the Chairperson. Every State Government, in turn, is to establish a District Disaster Management Authority for every district in the State with the District Collector as the Chairperson.

(3) The Central Government is empowered to take further measures as it deems fit for the purpose of disaster management like deployment of naval, military and air forces, other armed forces of the Union or any other civilian personnel

as may be required for the purposes of this NDMP Act. Government of India is empowered to establish institutions for research, training, and developmental programmes in the field of disaster management as per this Act.

(4) The national vision is to build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for NDMP. 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 government agencies supported by Non-Governmental Organisations (NGOs).

(5) National Disaster management Structure showing the interactive linkage among various agencies for synergised management of disaster is given below;



Notes: 1. This diagram reflects interactive linkages for synergised management of disasters and not a hierarchical structure.

2. Backward and forward linkages, especially at the functional level, are with a view to optimise efficiency.

3. Participation of the Community is a crucial factor.

Note: Since PNGRB has been constituted by PNGRB Act, 2006, it should be identified under Ministries / Departments of Govt. of India.

Abbreviations for NDMA:

NDMA	:	National Disaster Management Authority
NEC	:	National Executive Committee
DM	:	Disaster Management
NCC	:	National Cadet Corps
NCDM	:	National Committee on Disaster Management
NDMRCs	:	National Disaster Mitigation Resource Centres
NDRF	:	National Disaster Response Force
NSS	:	National Service Scheme
NYK	:	Nehru Yuva Kendra
NGOs	:	Non-Governmental Organisations
SDMA	:	State Disaster Management Authority
SEC	:	State Executive Committee
DDMA	:	District Disaster Management Authority

29.2 Integration of ERDMP with NDMP

This ERDMP document has been developed taking into account all possible inputs on the subjects from various stake holders. Efforts have also been made to synergize this with the document on National Disaster Management Guide (Chemical Disasters) Industrial brought out by National Disaster Management Authority.

29.0 Security Threat Plan

(1) With increase in terrorist activities towards the end of 20th century and installations having, significant role in national economy, sabotage and bomb threats to such installation should also be considered in the disaster management plan. Such as high level of alertness measures, strengthening security measures by security gadgets mechanical and electronic security gadgets. In any of such situation, city police/ administration should be informed immediately and their help should be sought.

(2) Emergency Action in case of Bomb Threat :

(a) The persons inside the Plant should be evacuated as soon as possible.

(b) All the vehicles in the plant premises should be evacuated to safer places.

(c) Plant personnel should contact district authorities immediately.

(d) Any new or doubtful thing should not be touched.

(e) All pipeline and tank valves should be closed and all the operations inside the Bottling Plant should be stopped.

(f) In case of fire, firefighting equipments shall be operated and city fire brigade should be called immediately during emergency.

Note: A detailed action plan on bomb threat to be prepared by each installation and should be vetted by the Police Authority specialist in this area under information to PNGRB.

30.0 Miscellaneous.

(1) Whenever any deviation from this code of practices is required to be implemented, the entity shall seek approval of the Board with mitigation measures proposed to be carried out giving full details and justification for such deviation within 1 month from the date of notification of these regulations.

[1][(2) If any question arises as to the interpretation of these regulations, the same shall be decided by the Board.]

SCHEDULE – I

(refer regulation 7)

Schedule of implementation of Code of Practice for ERDMP

S. No.	Activity	Implementation Time (from the notification date of Codes of Practices for ERDMP)
1.	On-site Emergency Plan	3 months
2.	Off-site Emergency Plan(submission of information to District Authority)	3 months
3,	Resources in position	6 months *
4.	Accredited Third Party Certification of ERDMP	1 year
5.	Testing and Mock Drills (On-site)	3 months
6.	Testing and Mock Drills (Off-site)	** 12 months

Note: A copy of ERDMP, duly approved by the Board of Directors of the organisations shall be submitted to the PNGRB.

* Long Delivery Items should be tied up with mutual aid organizations upto 12 months.
** To be coordinated with District Authority.

[1] Subs. by Reg. 2, the Petroleum and Natural Gas Regulatory Board [Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP)] Amendment Regulations, 2014, for 'Regulation 30.0' (w.e.f. 01.01.2015).

Schedule – II

(Refer regulation 9(1))

List of Relevant Statutes on Management of Hazardous Substances

- The Environment (Protection) Act, 1986 (amended 1991) and following Rules thereunder:
  - The Environment (Protection) Rules, 1986 (amended 2004).
  - The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (amended, 1994 and 2004).
  - The Hazardous Wastes (Management and Handling) Rules, 1989 (amended 2000 and 2003).
  - The Environment Prior Clearance 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 Rules, 1991 (amended 1992).
  - The Public Liability Insurance Rules, 1991 (amended 1993).
- The Petroleum Act, 1934.
  - The Petroleum Rules, 2002.
- The Insecticide Rules, 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).

SCHEDULE – III

(Refer regulation 11.1)

Basic Requirements of ERDMP

1. Location Plan of the Installation indicating siting of the installation at neighbouring details up to a distance of 2 kms from the installation in each direction.

2. Site plan of the installation showing a complete layout of the installation indicating boundary walls, exit and entry gates and location of various facilities.

3. Layout of Fire Water Systems and Fire Fighting Equipment details.

4. Line block diagram of manufacturing process and Process Flow Diagram (PFD) of each unit.

5. Material Safety Data Sheet (MSDS) for all hazardous chemicals stored, handled, produced and transported in the installation. (Sample MSDS at Annexure-1)

6. Internal and External Emergency contact numbers and addresses of police, fire station, hospitals, mutual aid industry, factory inspectors, Board, State Pollution Control Board, Petroleum and Explosive Safety Organization (PESO), etc.

7. Pipeline route map and details of various facilities such as sectionalising Valve (SV), intermediate Pigging (IP) stations, intermediate pumping stations (IPS) across pipeline route

8. Addresses and Telephone Directory of Technical Support Services such as Environmental Laboratories, fire fighting chemical suppliers, public and private consultant associated with emergency handling and Aviation Medical Services, if any.

9. Security threat plan.

SCHEDULE – IV

(Refer regulation 11.2)

Resource Mobilisation (Men and Equipment)

Sl. #	Total Requirement	Available with Installation	Neighbouring Units	Civil Authorities
1	**MANPOWER**			
	Regular employees - shiftwise			
	Security staff			

	Personnel Trained in first aid			
	Others (Technicians / Helpers)			
2	**FIRE FIGHTING APPLIANCES/ EQUIPMENT/ CHEMICALS**			
	Fire Tenders/ Fire fighting engines			
	Water storage capacity			
	Fire Hoses			
	Jet/Fog/Spray Nozzles			
	Foam Branch			
	Jumbo Jet Nozzles			
	Foam Compound (KL)			
3	**SAFETY EQUIPMENTS**			
	PVC Suit			
	Compressed air B.A. Set			
	Refill Cylinders for B.A. Set			
	Cascade B.A Set			
	Fire Proximity Suit			
4	**COMMUNICATION**			
	Walkie-Talkie			
	Public Address System			
	Megaphone			
5	**TRANSPORT**			
	Jeeps			
	Cars			
	Ambulance			
	Trucks			
	Buses			
	Tractors			
	Boats			
	Mobile Cranes			
6	**MISCELLANEOUS**			
	Ropes (Metres)			
	Empty drums			
	Buckets			
	Sand bags			
	Dewatering pump			
	Pneumatic pump			
	Photo Camera			
	Video Camera			
7	**EQUIPMENTS FOR CORPS DISPOSAL**			
	Light Metal Stretchers			
	Tarpauline 12’ X 12”			
	Rope fibre 3/8”			
	Bucket			

	Rubber gloves			
8	**LIST OF EMERGENCY DRUGS and APPLIANCES**			
	Canvas Stretcher			
	Oxygen Cylinder			
	Sterlite Bandages			
	Cotton Sterilised			
	Antibiotics			
	Analgesties			
	Sedatives			
	Tetanus Toxoid			
	Dressing Instruments			
	Sterilisers			
	Autoclave for sterlising Instruments, dressing			
	B.P. Apparatus			
	Suction Apparatus			
	I.V.Set			
	Antishock drugs			
	Gluco Saline Set			
	Gluco Saline Bottle			

Schedule – V

(Refer Regulation 22.0)

The important Roles and Responsibilities of Various Stakeholders

a) Oil and Gas Installations and Areas (Mentioned in Regulation 3).

The above mentioned Installation in Regulation 3 should provide necessary information to Mutual Aid Association, District Authority, Police and Fire Services.

i) List of Hazardous Chemical and Systems which have potential to cause danger to Human, Environment and Property.

ii) On-Site Emergency Plan and Periodic Mock Drill.

The above entities should support authorities in mitigation, rescue and rehabilitation, with resources identified and agreed with the authorities in advance. Such areas shall be included in Off-Site Emergency Plans.

b) **The district authority** is responsible for the Off-Site emergency plan and it shall be equipped with up-to-date Major Accident Hazard units, website, control room etc., with provisions for monitoring the level of preparedness at all times. Regular meetings of various stakeholders of Chemical Disaster Management will be conducted by district

administration/District Disaster Management Authority to review the preparedness of Chemical Disaster Management.

c) **The police** will be an important component of all disaster management plans as they will be associated with investigation of incident s/disasters. Police take overall charge of the Off-Site situation until the arrival of the district collector or its representative at the scene.

d) The **fire services** are one of the first responders and shall be adequately trained and equipped to handle chemical emergencies. Fire services are to acquire a thorough knowledge of likely hazards at the incident site and the emergency control measures required to contain it.

e) In a chemical emergency, the **revenue department** shall coordinate with other agencies for evacuation, establishment of shelters and provision of food, etc.

f) When required for evacuation purposes in a chemical emergency, the **department of transport** should made transport promptly available.

g) The role of **civil society and private sector** in the Off-Site plan shall be defined.

h) **The health department** needs to assure that all victims get immediate medical attention on the site as well as at the hospitals/health-care facility where they are shifted. In addition, the department needs to network all the health-care facilities available in the vicinity for effective management and also take effective measures to prevent the occurrence of any epidemic.

i) **Pollution control boards** need to ascertain the developing severity of the emergency in accordance with responsive measures by constant monitoring of the environment. If and when an area is fit for entry will depend upon the results of the monitoring. A decontamination operation would be required to be carried out with the help of other agencies and industries.

j) **The NDRF and SDRF** are the specialised forces to manage these disasters in a longer run according to the severity and nature of the disaster. Their specialised training is an effective measure that needs to be built up and maintained with time for achieving a higher standard of preparedness. They need to coordinate with other local agencies such as the Central Industrial Security Force that may be responsible for security at the industrial site.

** Role of above External Agencies have been defined in Annexure – E of National Disaster Management Guidelines Chemical Disasters, April, 2007*

NDRF: National Disaster Response Force

SDRF: State Disaster Response Force

SCHEDULE – VI

(Refer Regulation 23.0)

INCIDENT REPORTING FORMAT

1. Organisation		2. Sector	
3. Location		4. Incident Sr. No.	
5. Date of Incident		6. Time of Incident	
7. Major / Minor / Near miss		8. Report - Preliminary / Final	
9. Fire / Incident		10. Duration of fire - Hrs / Min	
11. Type of Incident with loss of life / injury, Fire, Explosion, Blowout, Electrocution, Fall from Height, Inhalation of Gas, Driving, Slip / Trip, Others, NA			
12. Location of Incident (Name of Plant / Unit / Area / Facility / Tank farm / Gantry / Road / Parking area etc)			
13. Whether plant shutdown / caused outage of the facility? Yes / No			
14. Fatalities nos.	a) Employees =	b) Contractor =	c) Others =
15. Injuries nos.	a) Employees =	b) Contractor =	c) Others =
16. Man - hours Lost	a) Employees =	b) Contractor =	c) Others =
17. Direct Loss due to the incident (Rs. In Lacs). Loss to equipment / Machinery as per Insurance claim etc.			
18. Indirect Losses : Through put / Production Loss, etc.			
19. Status of the Facility : Construction / Commissioning / Operation / Shutting down / Turn around, Maintenance / Start up / Any other.			
20. Brief Description of the Incident including post incident measures. (Attach details in separate sheet)			
21. Whether similar Incident has occurred in past at the same location, If yes, give brief description of the incident and attach details in separate sheet.			
22. Whether Internal Investigation has been completed. If no, likely date by which it will be completed.			
23. Whether internal investigation report (Major Incident) has been submitted to PNGRB. If no, likely date by which it will be submitted.			

24. Cause of the Incident (Tick the most relevant cause preferably one, maximum two)		
A) Deviation from Procedure		I) Not using the PPE
B) Lack of Job Knowledge		J) Equipment failure
C) Lack of supervision		K) Poor design / Layout etc.

D) Improper Inspection		L) Inadequate facility
E) Improper Maintenance. (Mech. / Elec. / Inst)		M) Poor House Keeping
F) Improper material handling		N) Natural Calamity
G) Negligent Driving		O) Pilferage / Sabotage
H) Careless walking / climbing etc.		P) Any other (give details)
25. Cause of leakage - Oil, Gas or Chemical (Tick one only)		
A) Weld leak from equipment / lines		E) Leakage due to improper operation
B) Leak from flange, gland etc.		F) Leak due to improper maintenance
C) Leak from rotary equipment		G) Normal operation - Venting / draining
D) Metallurgical failure		H) Any other
26. Cause of Ignition leading to fire (Tick only one cause)		
A) Near to hot work		F) Static Electricity
B) Near to Furnace / Flare etc.		G) Hammering / Fall of object
C) Auto - ignition		H) Heat due to Friction
D) Loose electrical connection		I) Lightning
E) Near to hot surface		J) Any other (pyrophoric etc)
27. Was the incident Avoidable?		(Yes / No)
28. The incident could have been avoided by the use of / or by ; (Tick the most relevant point preferably one, maximum two)		
A) Better supervision		F) Personal Protective Equipment
B) Adhering to specified operating procedure		G) Better equipment
C) Imparting Training		H) Management Control
D) Giving adequate time to do the activity through proper planning.		I) Adhering to specified maintenance procedure
E) Adhering to the work permit system		J) Adhering to specified Inspection / Testing procedures.
K) Any other information;		

Guidelines for filling the Incident Report:

1. All Major, Minor and Near miss incidents shall be reported in the quarterly report.
2. Incident Reporting form shall be filled up for all Major, Minor and Near miss Incidents.
3. Summary report shall be enclosed with every quarterly report.
4. Investigations shall be carried out for all Major, Minor and Near miss Incidents.
5. Investigation report of all Major incidents shall be submitted to PNGRB. An incident shall be treated as Major if any of the following occurs;

- Fire for more than 15 minutes
- Explosion / Blowout
- Fatal Incident.
- Loss above Rs. 5.0 Lac.
- Cumulative man hours lost more than 500 hrs.
- Plant Shutdown / Outage due to the incident

6. Loss time Incident shall be monitored till the affected person joins duty. In case the affected person is yet to join the duty, then the status of report submitted will be preliminary. Final report against the same incident shall be sent once he joins duty and the man - hours lost are known.
7. All columns must be filled up.
8. For any additional information use separate sheets as required.
9. Quarterly report shall be sent to PNGRB within 15 to 30 days of end of quarter.
10. Immediate reporting of incident through fax/telephone shall continue as per the prevailing system.

Signature
Name
Designation of the Occupier/Manager

Schedule –VII

(Refer Regulation 27.0)

ERDMP for pipelines carrying petroleum products

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 Guidelines, therefore, comprise:

i) Creation and maintaining an administrative framework to facilitate the development of a safe and environmentally sound transportation infrastructure, including pipelines for hazardous substances.

ii) The pipeline operator has the primary responsibility for the safety of the systems and for taking measures to prevent incidents and to limit their consequences for human health and the environment.

iii) Pipelines for the transport of hazardous substances will be designed and operated so as to prevent any uncontrolled release into the environment.

iv) Risk assessment methods should be used in evaluating pipeline integrity and impact on human health and the environment.

v) Land-use planning considerations will be taken into account both in the routing of new pipelines (e.g. to limit proximity to populated areas and water catchment areas to the extent possible), and in decisions concerning proposals for new developments/building in the vicinity of existing pipelines.

vi) Pipeline operators and the authorities responsible for pipelines shall review and, if necessary, develop and implement systems to reduce third-party interference, which is a cause of incident including their effects.

vii) National legislation shall be clear, enforceable and consistent to facilitate safe transport and international cooperation.

viii) Competent authorities should ensure that pipeline operators:

(a) Draw up emergency plans.

(b) Provide the authorities designated for that purpose with the necessary information to enable them to draw up Off-Site emergency plans.

(c) Emergency plans shall be coordinated between pipeline operators and competent authorities, as well as with fire brigades and other disaster control units.

ix) Pipelines shall be designed, constructed and operated in accordance with recognised national and international codes, standards and guidelines, notified by the Board.

x) Consideration will be given to the impact on the safety of a pipeline such as design and stress factors, quality of material, wall thickness, and depth of burial, external impact protection, markings, route selection and monitoring.

xi) The safety of the pipelines shall be demonstrated through a suitable risk assessment procedure including the worst case scenario and including breakdowns and external additional loads.

xii) The pipeline operator shall draw up a Pipeline Management System (PMS) to ensure that it is properly implemented. The PMS shall be designed to guarantee a high level of protection of human health and the environment. The following issues shall be addressed by the safety management system.

(a) The pipeline will be inspected and maintained regularly. Only reliable trained staff or qualified contractors may carry our maintenance work on a pipeline. Third party conformatory assessment bodies should inspect the pipeline at regular intervals as far as required by the Board. These inspections are to cover in particular the proper condition of the pipeline and the functioning of the equipment ensuring pipeline safety.

(b) Organization ability, roles and responsibilities, identification and evaluation of hazards, operational control, and management of change, planning for emergencies, monitoring performance, audit and review shall be duly addressed in the Pipeline Management System.

SCHEDULE –VIII

(Refer Regulation -28.1)

Resource Mobilisation for Road Transportation Emergencies

A. In-Plant Resources

Following items should be available at the Plant in adequate quantity / nos.

Mechanical Equipment:

1. Gaskets (Carbon Asbestos Filled)
2. Studs and bolts.
3. Teflon tapes.
4. ½" / ¾" crowbar (1 m long)
5. Spade / blind flange
6. Rope (Manila / Jute)

7. Spark arrestors.
8. 1” tapered wooden pegs.
9. Chopper
10. Spare fan belt for tank lorry with P.T.O. unit
11. Wind sock
12. M-Seal / epoxy-base cold-welding compound.
13. Wooden slippers
14. Teflon-taped spanners, wrenches
15. Spark-proof wrenches, hammer and tools.
16. Barricading masts and ropes / tapes
17. hoses
18. Chain pulley blocks and stay pipes
19. Small valve keys for operating valves in the tank truck

Electrical Equipment :

1. Gas Explosi-meter
2. Flame-proof torches
3. Earthing wires (10 m long) with crocodile clips

Personnel Protective Equipment :

1. Gloves:
   i) Rubber gloves
   ii) Low Temperature Gloves
   iii) Industrial gloves (with leather lining)
   iv) Canvas gloves

2. Face shields
3. Ear muff / ear plugs

SCHEDULE –VIII (contd..)

Other Safety Items:

1. 1 roll of gunny / hessian cloth (about 10 mts. long)
2. First aid box (containing water gel compounds)
3. Soap
4. Blanket.
5. Water Gel Blanket
6. Breathing Apparatus (With spare filled cylinder and Canister gas masks)
7. Fire proximity suit

Fire Fighting Equipment :

1. Portable Dry Chemical Powder Fire Extinguishers
2. Fire-water Hoses

3. Triple Purpose diffuser nozzle for use with fire hoses.

Communication Equipment :

1. Hand operated sirens
2. Whistles
3. Megaphone, Mobile Phones, VHF sets.

Traffic Control Equipment :

1. Red lights (Battery operated) - for traffic diversion
2. Area maps
3. Diversion Boards

SCHEDULE – VIII (contd...)

B. <u>External Resources</u>:

Particulars	**Name**	**Address**	**Ph. No.**	**Any Other Info.**
1. Fire Station				
2. Ambulance				
3. Hospitals				
4. Police Station				
5. Drug Stores				
6.District Administration / Collector				
7. Availability of Cranes				
8. Local PWD / CPWD water supplies, sand, morum, vehicles etc.				
9. Local Army, Navy, Air Force authorities				
10. Any major industry nearby				

C. <u>Identification of Communication Resources</u>:

Particulars	**Name**	**Address**	**Ph. No.**	**Any Other Info.**
1. Public Address System				
2. Retail Outlets				

3. Railway Station				
4. Power Houses				
5. Civil Authorities				
6. Voluntary Agencies				
7. Local All India Radio / Doordarshan/ other channels				

SCHEDULE – IX

(Refer Regulation 28.2)

Transport Emergency Card Format

Nature of Hazard :

Protective Devices :

Emergency Action

Spillage

Fire

First Aid

Chemical Abstract Service (CAS). No

(for universal acceptance of material, both number should be mentioned on TREM Card)

Emergency Telephone Numbers/mobile numbers

Name and contact numbers of the control room/contact person of the supplying company

Name and contact numbers of the control room/contact person of the receiving company

Name and contact numbers of Transporter

Other important Name and contact numbers of civic authorities, fire and police

Note: The format shall be designed in English, Hindi and local language where crews are operating.

SCHEDULE –IX (contd...)

SAMPLE TRANSPORT EMERGENCY CARD FORMAT

Cargo: Liquefied Petroleum Gas (LPG)

Nature of Hazard : Highly volatile and Inflammable.
Can cause Cold Burns.
Inhaling vapour can cause nausea, breathlessness and headache.
Air / vapour mixture highly explosive.
Leakage of LPG can cause Vapour Cloud explosion and BLEVE.

Protective Devices : Hand gloves (Rubber / low temperature)
Safety Goggles
Self-contained Respiratory device to work in vapour-rich area.
Low temperature / fire proximity suit.

Emergency Action

Try to move the vehicle to open area.
Stop Engine.
Vehicle should not be left unguarded.
Contact Police, Fire Brigade, Sarpanch, nearest oil company by sending helper / passer by.
Keep public and traffic away by displaying 'Danger Boards' at sufficient distance.
"No Smoking" and "No Naked Lights" within the cordoned off area.
Keep ready for action Fire Extinguishers and Safety Kit.
Stay Upwind.

Spillage

Check the valves and caps for tightness by hand and stop leak if possible

Fire

If minor, try to extinguish by DCP fire extinguishers

First Aid

Pour water in case of cold or hot burn
Seek medical help, if necessary

Emergency Telephone Numbers/mobile numbers

IOC _____ HPC _____

BPC _____ IBP _____

FIRE 101 _____ POLICE 100 _____

CHECK LIST-1

(Refer Regulation 10.1 (d))

Emergency Response and Disaster Management Plan (ERDMP)

Hazard Identification

Sr. #	Check-point	Yes☑ No☒ Remarks
	Hazard Analysis and Risk Assessment	
1	Which of the following procedures or techniques for hazard identification has been used in the terminal/ installation : 1) HAZOP/HAZAN 2) Incident Consequences and Analysis 3) Event Tree Analysis 4) Fault Tree Analysis 5) Failure Modes, Effects and Criticality Analysis 6) Risk Assessment 7) What if, analysis 8) Other accredited practice	 1. □ 2. □ 3. □ 4. □ 5. □ 6. □ 7. □ 8. □
	Hazard Identification :	
2	Is the terminal / installation covered under the definition of "Major Incident Hazard Installation" as per the Manufacture Storage and Import of Hazardous Chemicals Rules 1989 (Amended 1994 and 2004. If yes, please specify the site notification and safety reports	
3	If yes, whether major Incident hazards identified and steps taken for their prevention	
4	Whether design deficiencies, failures or errors which can contribute to hazards and cause abnormalities leading to an Incident are identified	
5	What are the measures undertaken to counter above deficiencies or, errors	
6	Consequences of a major Incident on the workers, people in the neighbourhood and the environment are considered	
7	Steps envisaged for mitigation of the consequences of such incident	
8	Does the installation produce / handle / use / import / store any hazardous chemicals as defined under MSIHC Rules 1989 (Amended 1994 and 2004)	
9	If yes, whether a list of these chemicals, preferably in alphabetical order with their maximum licensed storage quantities is displayed	
10	Are material safety data sheets (MSDS) of these chemicals are prepared / obtained in the prescribed format as per MSIHC Rules and State Factory Rules	

11	Whether a system for disseminating information about these MSDS to concerned workers are existing	
12	Are there a system of labeling of containers / storage tanks for the chemicals / hazardous substances	
13	Whether estimation of maximum possible quantity of each hazardous substance are considered including any vehicle (TT/TW) on site or within 500 mtrs of the site.	

CHECK LIST-1 (contd..)

Sr. #	Check-point	Yes□ No□ Remarks
14	Whether location, configuration and condition under which the hazardous substances are stored and handled are clearly declared	
	Vulnerability Analysis :	
15	Whether zones of influence or vulnerable zones are estimated by considering the maximum single storage of hazardous substance and maximum loss scenario	
16	Whether effects of influence on the vulnerable zones are made after considering the population, facilities and environment encompassed inside that zone	
	Risk Analysis :	
17	Whether a relative measure of the probability and consequences of various possible hazardous events including worst case scenario are taken into account	
18	Whether risks are calculated by multiplying the probability of occurrence of each event by the consequences of that event and then summing up the results.	
19	Whether all types of events possible in petroleum installations are considered including i) storage tanks on fire, ii) pool fire [burning pool of liquid fuel], iii) Flange joint leakage in pipelines, iv) Fire in TT or TW gantry, and v) rupture of hoses.	
	Risk Reduction Measures :	
20	Whether measures for reduction of identified high risks are included by reducing the consequences through hazard mitigation measures	
21	Whether steps have been considered to reduce risks to the exposed population by increasing safe distances by acquiring property around the facility, if possible	
	HAZOP Study	
22	Whether the above method is applied if the location handles more than specified storage and / or critical operations	

23	Whether the study systematically identifies all possible deviations from normal operations	
24	Whether risk levels are established for each deviation after considering the probability and consequences of each such events	
25	Whether potential means for detection of such events and preventive measures are recommended by the study	

CHECK LIST-2

(Refer Regulation 11.3 (xii))

Incident Prevention Measures

Sr. #	Check-point	Yes No Remarks
1	Whether Safety, Health and Environment Policy of the location is displayed	
2	Whether the Safety Policy is documented and duly approved by the top management	
3	Whether the Safety Policy is well structured to cover all elements of Safety, Health and Environment protection	
4	Whether the layout is convenient from operation and safety aspects and meets minimum distance norms as per OISD-118	
5	Whether a duly constituted Safety Committee is functioning in the location with representation from workmen/staff	
8	Whether all unsafe developments and likely risks are deliberated in the meetings and appropriate steps are recommended for eliminating such risks	
9	Whether compliance status of recommendations of earlier Safety Committee meetings are discussed before taking up new issues.	
10	Whether performance and shortcomings observed during recent mock disaster drills form part of the discussions in safety committee meetings	
11	Is the safety committee minutes are recorded and signed by all the attending members	
13	Whether periodical safety audits and inspections by internal and external audit teams are conducted in defined intervals	
14	Whether a system of regular monitoring of such audit compliances by controlling offices / HO are in place	
15	What is the composition of external audit teams to ensure impartiality of audit findings	
16	Whether Work Permit System in line with OISD-105 have been implemented	
17	Whether work permits are issued for hot work, cold work, electrical work and vessel entry jobs	

18	Whether the location-in-charge or his authorized nominee remain the issuer for all hot work and vessel entry permits for enhanced safety and control.	
19	Whether work permits are duly closed at completion of the stipulated jobs, duly certified by the supervising officer	
20	Whether heat detectors in tank sprinkler systems, high level alarms of tank farm management system are provided and checked for regular functioning	
21	Whether in-built safety interlocks provided in the design of the terminal are adequately specified and checked for regular functioning	

CHECK LIST-3

[Refer Regulation 12.1(i))

MUTUAL AID / MOCK DRILLS

Sr.#	Check-point	Yes□ No□ Remarks
1	Whether mock fire / emergency response drills are held	
2	If yes, periodicity of emergency response drills	
3	Mock drills cover all types of probable emergencies	
4	Does the location have Mutual Aid Plan	
5	If yes, the details of other members including names and contact nos. of concerned officials	
6	List of fire fighting equipments available with each Mutual Aid members including District Fire Service	
7	Compatibility of safety equipment of all Mutual Aid members including District Fire Services with said location has been tested and documented in the DMP	
8	Details of water storage available with Mutual Aid member including District Fire Service and mechanism to utilize the same in the said location well documented in the DMP	
9	Details of fire fighting foams concentrate/chemicals available with Mutual Aid members including nearest Fire Service has been incorporated	
10	Details of lead time for response of Mutual Aid members including District Fire Service has been documented in the DMP	
11	Periodicity of safety training for officers, staff, contractor workers, TT crew and security personnel mentioned in the ERDMP.	
12	***Mutual Aid Plans*** Does the location have established Mutual Aid Plans	

13	Which are the Mutual Aid Team members and the assistance offered	
14	Does the plan clearly indicate types of possible hazards and fire fighting measures required.	
15	Does the plan include expected assistance from each members	
16	Does the Plan spell out the communication protocol and the channels in times of emergency	
17	Periodic joint exercise and meetings for practice, familiarization and identifying and resolving compatibility issues.	

CHECK LIST-4

(Refer Regulation 13.0))

ERDMP Response Measures/Infrastructure

Sr.#	Check-point	Yes□ No□ Remarks
	Zones, maps and layouts	
1	Does the Location have Emergency Zones clearly identified for Incident prone areas	
2	Do the Maps indicate location of Emergency Assembly Points and Emergency Control Rooms	
3	Is the process Lay-out prominently displayed	
4	Does the Piping and instrument Diagram include emergency control valves, shutdown system, isolation valves, important control valves etc.	
5	Does the Fire Hydrant Layout conspicuously displayed.	
	Manpower	
1	Is the ERDMP Organogram clearly displayed.	
2	Does the Organogram include all duties to be attended in connection with an emergency.	
3	Is the organogram include key personnel by their names or, work position	
4	Does it have the alternate coverage to take care of the absence of a particular person [in cases where organogram is developed basis names]	
5	Does it include assignment of all key coordinators viz. the Incident Controller, Administration and Communication Controller and Safety Coordinator.	
	Emergency Control Centre (ECC)	
1	Is the ECC well defined and clearly marked on the displayed layout	
2	Is it strategically positioned to be outside the periphery of immediate affected area.	

3	Is the centre have adequate communication channels including internal and external telephone connections, PA, paging and VHF systems	
4	Is list of key personnel and essential telephone nos. are prominently displayed.	
5	The layout of fire fighting system, different hazardous zones, Assembly Points are prominently displayed.	
	Emergency Assembly Points	
1	Are the EAPs well defined and clearly marked on the displayed layout	
2	The EAPs have pre-defined in-charges during emergencies who keep in touch with the Emergency Control Centre and Administrative Controllers and updates on the roll call on people reporting.	

CHECK LIST-5

[Refer Regulation 14.2.1 (a)]

Review and Updation of ERDMP

Sr.#	Check-point	Yes□ No□ Remarks
1	Frequency of mock-drills for practice, refinement and updation	
2	Are the records for periodic Mock drills maintained in a well defined format.	
3	After each drill, whether assembly meetings involving all staff and contract personnel are conducted to share experience of the event as also to identify the shortcomings and scopes for further improvement in procedures. Whether the issues are discussed and the plan modified suitably.	
4	Does the review ensures efficiency of the plan particularly w.r.t. response, communication and coordination aspects.	
5	Do the Mutual Aid members participate in the drills and based on the actual response and difficulties experienced, corrective actions initiated for refinement of the plan.	
6	Does a procedure exist in incorporating the findings/ learnings of the actual disaster management handling, if any so that the plan can be revised accordingly.	

CHECK LIST-6

[Refer Regulation 17.0 (5)]

Availability of resources [internal / external]

Sr.#	Check-point	Yes☐ No☐ Remarks
1	Details of fire fighting equipment of the location is incorporated in the DMP	
2	Information on critical resources like no. of fire hydrants, water monitors, fire fighting pumps, static water storage, portable fire fighting equipment and foam systems are included	
3	Available resources as per **Schedule-IV**	
4	Location has storage of water for 4 hours fire fighting. In case water availability is less, a plan for replacement from nearby sources	
5	Details of drainage system including Oil Water Separator is available in DMP, wherever applicable.	
6	Requirement and availability of Personal Protective Equipment	
7	Whether manpower available during regular as well as idle shift hours including security personnel clearly indicated in the plan	
	External and Internal Resources for combating Emergency	
8	Does the plan enumerate the following resources available internally with the location as also from external agencies including Mutual Aid Members and govt agencies like fire brigade, police, municipal authorities etc. :	
	a. Water – from static reservoir as also mobile water tankers b. Fire Hoses c. Specialised nozzles e.g. fog, jet, triple purpose etc. d. Mobile water monitors e. Fire Extinguishers – type and capacity f. Water Gel Blankets g. Foam Compounds h. First Aid material, Medicines, Stretchers i. Mobile / fixed ladders j. Vehicles available Trained manpower for combating emergency	
9.	Any other resources considered necessary	

CHECK LIST-7

(Refer Regulation 26.0 (2))

ERDMP - Recovery Measures

Sr.#	Check-point	Yes□ No□ Remarks
	Post Emergency Recovery	
	Salvage of product	
1	Check that spilled / accumulated product contents are transferred to the OWS or collected in drums.	
2	Check whether the quality and quantity estimation of the product extracted from OWS has been done for further disposal in line with standing QC guidelines by either transferring to service tanks or to nearest refinery for blending / reprocessing or not.	
3	Check that correct stock accounting of spilled product as loss has been completed in accounting system.	
4	Check that affected area has been completely cleaned and dried after evacuation of spilled product.	
5	Declare that affected area after salvage operations is fully clean and safe for movement of the working personnel.	
6	Check that all drains are not having any residual oil and are thoroughly cleaned and dried.	
7	Check that all control valves on product lines and OWS lines out side dyke area and drains are completely closed after removal of the spilled product.	
8	Check that interlocking system of tanks / gantry has been re-activated for normal operations.	
9	Check whether the soil testing of the affected area, if required, has been done to assess the soil contamination level to meet the Environmental – SPCB norms / requirements.	
	Taking care of affected manpower	
10	Whether physical accounting of all personnel on duty during and after the incident are ascertained by the Site Incident Controller and reconciled immediately	
11	Whether the first-aid treatment and post-incident health check of the affected personnel has been undertaken in time	
12	Whether these personnel are declared fully physically fit before allowing them to resume their normal duties	
13	Whether the records for such first aid and treatment of the affected personnel are maintained in a well defined format	
	Addressing media and outside bodies	
17	Whether the incident was appropriately informed to the local media in line with the respective company's Press and Media Policy	

18	Whether the role of neighbouring population during the drill / disaster is suitably informed to the population during subsequent meetings with local administration / panchayat etc. for necessary improvements	
19	Whether the awareness and preparedness on disaster is regularly assimilated / shared with nearby public / societies and stake holders.	
	Reporting	
20	Check whether that disaster incident report was communicated to respective controlling office / HQ promptly in a standard format.	
21	Whether the incident reports are also sent to concerned State Level Industry Coordinator on time.	
22	Check that detailed report on disaster in proper format was communicated to PNGRB/ Factory inspector / Labour inspector / SPCB / District Magistrate /PESO.	
	Investigation	
23	Whether investigation teams are constituted as per respective company policies	
24	Whether RCA (Root Cause Analysis) of the disaster is conducted by the investigating team	
25	Whether detailed investigation into effective functioning of interlocks, detection devices, automation controls and applicable norms are carried out to find out possible improvements in design / construction / operations / maintenance and training aspects etc.	
26	Whether a system of initiating appropriate corrective measures including suitable revisions to the Disaster Management Plan are adopted based on findings of the investigation	
	Damage Assessment – Monetary and Physical	
27	Check the valuation / cost of product loss / down gradation on account of contamination, if any / Property / Structures / damaged assets – equipments.	
28	Whether repairs and maintenance cost of property, assets and equipment are assessed.	
29	Whether any penalty by statutory authorities like SPCB / Factory Inspector and Labour Commissioner are assessed.	
30	Whether possible impact on environment are also assessed and appropriate measures are taken	
31	Whether damage assessment also include potential erosion of reputation – from company, industry and national perspectives	
	Clean up and Restoration	
32	Whether the affected area has been fully cleaned and cleared after due clearance from investigation team	

33	Check whether heat detectors, high level alarms, in built safety systems (NRV, TSV etc.) are fully functional after the disaster incident.	
34	Check whether all fire fighting equipments like – hoses / nozzles / Fire Extinguishers etc. have been put back at designated places and are fully ready for reuse	
35	Whether clear procedures are in place to allow resumption of normal operations	

[F. No. S-Admn./II/8/2009-Vol-I]

RATAN P. WATAL, Secy.

Annexure – 1

Format for MSDS

1.	Chemical Identified		Safety Date Sheet
	Chemical Name	Chemical Classification	
	Synonyms	Trade Name	
	Formula	C.A.S. No.	U.N. No. 1

Shipping Name
Codes/Lable

Hazchem No.

Regulated identification……

Hazardous Waste
I.D. No.:

Hazardous Ingredients	C.A.S. No.	Hazardous Ingredients	C.A.S. No.
1.	3.		
2.	4.		
2. Physical and chemical data			
Boiling Range/Point	0C	Physical State	Appearance
Melting/Freezing Point	0C	Vapour Pressure @ 35ºC	Odour mm/Hg
Vapour Density (Air = 1)		Solubility in water @ 30ºC	Others
Specific Gravity Water-1		PH	
3 Fire and Explosion Hazard data			
Flammability Yes/No	LEL	%Flash Point 0º	Autoignition 0º
TDG Flammability	UEL	%Flash Point 0º	
Explosion Sensitivity to impact		Explosion Sensitivity to Static Electricity	Hardous Combustion Products
Hazardous Ploymerisation			
Combustible Liquid		Explosive Material	Corrosive
Flammable Material		Oxidiser	Others
Pyrophoric Material		Organic Peroxide	
4. Reactivity Data			
Chemical Stability			
Incompatibility with other Material			
Reactivity			

Hazardous Reaction Product				
5. Health Hazard Data				
Routes of Entry				
Effects of Exposure Symptoms				
Emergency Treatment				
TLV (ACGIH)	PPm	ME/m^3	STEL	PPm mg/m
Permissible Exposure Limit pom mg/m^3 other Threshold				mg/m^3
Lo		LD2		
NEPA Hazard Signals	Health	Flammability	Stability	Special

6. Preventive Measures		
Pennel Protective equipment		
Handling and storage Precautions		
7. Emergency and First aid measure		
Fire	Fire Extinguishing	
Fire	Special procedures	
	Unusual Hazards	
Exposure	First Aid measures	
	Antidotes/Dosages	
Spills	Steps to be taken	
	Waste disposal Method	
8. ADDITIONAL INFORMATION / REFERENCES		
9. MANUFACTURER/SUPPLIERS DATA		
	Contract Person in Emergency	
Name of Firm Mailing Address Telephone/Telex Nos. Telegraphic Address	Local Bodies involved	
	Standard Packing	
	Treameard Details/Ref.	
	Other	

Foot Note: Principal regulations were notified vide G.S.R. 39(E) dated 18th January, 2020 and amended vide F. No. L-MISC/VI/I/2007, dated 1st January, 2015.