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PART II - MISCELLANEOUS NOTIFICATIONS OF INTEREST TO THE PUBLIC

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NOTIFICATIONS BY HEADS OF DEPARTMENTS Etc.,

DIRECTOR GENERAL

DISASTER RESPONSE & FIRE SERVICES DEPARTMENT

ANDHRA PRADESH

Lr.C.No.52 / DGFS / Camp / 2022.

Date: 30-09-2022.

NOTIFICATION FOR INDUSTRIES

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NOTIFICATION FOR INDUSTRIES

1) Legal powers governing this Notification:

According to Section 14 (1) of Andhra Pradesh Fire Service Act, 1999, the Director General by notification required the owners or Occupiers of the Premises used for purposes which in their opinion, are likely to cause a risk of Fire, to take such precautions as may be specified in such Notification.

According to Section 14 (2) of Andhra Pradesh Fire Service Act, 1999, it shall be lawful for the Director General or any other authorized by the Government in this behalf to direct in writing the removal of objects or goods likely to cause a risk of fire, to a place of safety: and on failure of the owner or occupier to do so, the Director General or such other officer may, after giving the owner or occupier a reasonable opportunity of making a representation, seize, detain or remove such objects or goods or order the closure of the premises.

2) The purpose is :

First, to institutionalize Preventive Measures such as Joint Mock Drills, Community Awareness Programs etc., that are required in case of accidental leakage of Toxic, Poisonous, Explosive and Dangerous Chemicals that are likely to cause fire and harm human health.

Second, to define Principles, Standards and minimum requirements that will “**Satisfy**” to meet the Fire Safety in Industrial Buildings for Issuing “No Objection Certificate”. Therefore, this notification is deemed as Provisional NOC.

Third, to specify industrial Park level Fire Safety measures for optimization and resource pooling.

Fourth, to ensure compliance by notifying roles and responsibilities of district authorities competent to ensure “Disclosure of Information”, suggest precautions, conduct “Mock Drills”, and

Finally, to remove ambiguities and to notify Industrial buildings that don't require Fire “No Objection Certificate” to bring transparency.

3) Necessity of Disclosure:

(a) LG Polymers gas Leakage:

On May 7, 2020, Styrene monomer vaporised due to intense heat generated in an uncontrolled exothermic reaction and leaked out of storage tank in the LG Polymers Plant located in Visakhapatnam city. The incident happened around 03.00 AM, when the people were sleeping, primarily affecting five neighbouring villages namely R.R. Venkatapuram, Padmapuram, BC Colony, Gopalapatnam and Kancherapalem.

As a result 12 people died, more than 1000 were hospitalised and many domestic animals were killed in the incident. Even now more than 30% of the residents of the above five villages suffer from anxiety and psychological issues as per survey conducted by Alluri Sitharamaraju Viganana Kendram and Research Centre. The survivors are still living under fear and many are yet to recover from trauma.

An official committee investigated the incident and made recommendations. It pointed out glaring omissions of the company management and unpreparedness of both the company employees and first responders including Fire Department in handling such serious accidental situations affecting community in the neighbourhood of the factory.

(b) Gas Leakage at Brandix India Apparel Company:

On 3rd June, 2022, around 140 women employees fell sick after inhaling some poisonous gas at the Quantum seeds, the second unit of Brandix India Apparel Company (BIAC) at Atchuthapuram in Anakapalli District. However, the origin of the gas and the cause of the leak, have not been established immediately.

(c) Bhopal Gas Tragedy:

On the night of December 2, 1984, Chemical Methyl Iso Cyanide (MIC) gas leaked from Union Carbide India Limited (UCIL) Pesticide Factory, turned the city of Bhopal into a colossal gas chamber. It was India's first major industrial disaster and considered the world's worst in history.

Officially 3,928 people died as a result of the Bhopal gas disaster and 5,58,125 survivors suffered respiratory problems, blindness and other health injuries as per Government affidavit. In 2010, several former executives of the company were convicted of gross negligence.

(i) How it happened:

To make the pesticide, the methyl isocyanate, or MIC, was stored in the three partly buried tanks, each with a 15,000-gallon capacity. During the late evening hours of December 2, 1984, water entered an MIC Tank. Introduction of water began a runaway exothermic reaction, which was accelerated by contaminants, high ambient temperatures and presence of iron.

December 3, 1984 12:40 am: A worker, while investigating a gas leak, stood on a concrete slab above three large, buried storage tanks holding the chemical MIC. The slab suddenly began to vibrate beneath him. He witnessed 6 inch thick crack on the slab and heard a loud hissing sound and he saw gas shoot out of a tall stack connected to the tank, forming a white cloud that drifted over the plant and toward sleeping residential areas nearby. In a short span of time, the gas leak went out of control.

December 3, 1984 12:50 am: *The public siren briefly sounded and was quickly turned off, as per company procedure meant to avoid alarming the public around the factory over tiny leaks but it was a huge leakage.* Workers, evacuated the UCIL plant. The control room operator turned on the vent gas scrubber, a device designed to neutralize escaping toxic gas, but the scrubber didn't work. As such, the gas was not neutralized but was shooting out of the stack, forming into cloud and settling over the neighborhood.

December 3, 1984 1:15-1:30 am: At Bhopal's 1,200-bed Hamidia Hospital, the first patient with eye trouble reported. Within minutes, there were thousands of patients. ***Calls to the UCIL plant by police were twice falsely assured that "everything is OK",*** and on the last attempt made, "we don't know what has happened, sir" was the reply. Mean while, in the plant, MIC began to engulf the control room and the adjoining offices.

December 3, 1984 3:00 am: *The police were not told earlier because the company management had an informal policy of not involving the local authorities in gas leaks. Meanwhile, people were dying by the hundreds outside the factory. Some died in their sleep. Others ran into the gas cloud, breathing in more and more gas and dropping dead in their tracks.*

This tragedy is a result of not prioritizing safety in a plant which deals with toxic gases that can injure and kill people. An internal company report warned that "a runaway exothermic reaction could occur in the MIC storage tanks", but no action was taken.

(ii) Importance of exchange of information:

With the lack of timely information exchange between Union Carbide India Limited (UCIL) and Bhopal city authorities, the city's Hamidia ***Hospital was first told that the gas leak was suspected to be ammonia, then phosgene.***

After couple of hours, hospital was finally told that it was methyl isocyanate (MIC), which hospital staff had never heard of, had no antidote for, and have no stock of essential medicines to deal with the increasing number of patients.

The gas cloud, composed mainly of materials denser than air, stayed close to the ground and spread affecting the nearby communities. Most city residents who were exposed to the MIC gas were first made aware of the leak by exposure to the gas itself, but not through any alarm system. The residents don't know how to respond to such an emergency. Even the first responders (hospitals, police and Fire) were clueless and completely unprepared to handle such emerging situation.

(Source: Research article of Dr. R. Chakravarthy)

(iii) What United States did:

Following Bhopal Gas Tragedy, US Congress passed the **“Emergency Planning and Community Right-to-Know Act (EPCRA)”** to mitigate hazards posed by the storage and handling of toxic chemicals.

Community Right-to-Know provisions increase the public's knowledge and access to information on toxic chemicals at individual facilities. The information is made available in a publicly accessible database, called **“Toxic Release Inventory” (TRI)**.

This public disclosure has been a great success in reducing release of toxic chemicals in the United States by nudging the companies to reduce impact on human beings of such releases by the following methods:

- (1) By relocating the storage of toxic chemicals far away from any residential habitations and bringing only small daily required quantities or below critical quantities (which even if accidentally released cannot cause serious harm either to workers or to the community) to the factory for processing.**
- (2) By substituting the toxic chemicals with non-toxic chemicals.**
- (3) By relocating companies using toxic Chemicals to places far away from any residential habitation.**

The above methods were adopted by companies (located near residential areas) due to public disclosure of storage of toxic chemicals to avoid damage to their brand reputation and consequent reduction in their share price, and in public patronage of their goods and services. This kind of large public safety benefit resulting from such simple “Public Disclosure” is aptly termed as “Democratic Checks and Balances” working to ensure “Public Safety”.

Bhopal Gas Tragedy Lessons:

It highlights the importance of providing right information to the neighbourhood community (what kind of toxic chemicals are stored; what precautions are necessary etc.) and essential training for immediate first responders (Fire Fighters, Police and Emergency Medical Services) to adopt right safety procedures including conducting mock drills.

(d) 2020 Beirut Explosion:

A massive chemical detonation occurred on August 4, 2020 in Beirut Port, Lebanon. ***An uncontrolled fire ignited ~2,750 tons of Ammonium Nitrate (AN) stored in a Port warehouse for more than 5 years, producing one of the most devastating blasts in recent history.*** The blast supersonic pressure and heat wave claimed the lives of 220 people and injured more than 6,500 instantaneously, with severe damage to the nearby dense residential and commercial areas.

It produced a 140 m wide crater and an earthquake of 3.3 magnitudes on Richter scale. The Blast in Beirut was categorized as the third most devastating urban explosions of all time after the Hiroshima and Nagasaki nuclear bombings at the end of World War II.

Following the Beirut incident, Indian authorities carried out inspection of warehouses across all ports in India and found large storage of ammonium nitrate in Chennai port stored for a long time. It was immediately removed.

This highlights the importance of avoiding storage of explosive and toxic chemicals in port warehouses for a longer period.

How the “Disclosure of Information” prevents disasters:

1. LG Polymers:

If the large storage of styrene, a toxic gas, been known to community surrounding the factory, the management, under public scrutiny, would have followed any of the above methods [clause 3(iii)(1),(2),(3)]. Any of the three methods would have prevented the accident or even if it happens, the harm caused to health of community or workers would have been minimal as the quantity of toxic gas released would have been below critical quantity to cause any major harm.

2. Brandix Gas leakage:

Investigations about sources of toxic gas leakage at Brandix Apparel Company revealed that there is no source in the premises of the company. The toxic gas has come from a company located in the same industrial area. Therefore, it took many weeks to find the source of toxic gas which affected 140 people.

If storage of toxic chemicals in all factories is made known to public, it would have easy to pin point the source of toxic gas leakage immediately, which would help us to stop further leakage and to take preventive measures.

Moreover, if any of the above three preventive methods [clause 3(iii) (1),(2),(3)] were following in handling and storage of toxic chemicals, then this accident would have been prevented and even if it had happened, it wouldn't cause such major harm to human health as the release would have been of not significant quantity to cause such harm.

3. Beirut Explosion:

Had the public disclosure of such hazardous or explosive or toxic chemicals information been done, the resulting public awareness would certainly cause it to be appropriately disposed off by the relevant authorities within a short time.

Thus, the "Democratic Checks and Balances" resulting from "Public Disclosure" will go a long way in preventing such major disaster. This is particularly important in Andhra Pradesh State which has about 990 km of coast line with five operational ports and more ports upcoming. In addition, Ammonium Nitrate, a common fertilizer and explosive chemical (explodes if stored for a long time in humid coastal environment) is being imported through Vizag Port.

Therefore, the Director General hereby notifies (under section 14(1) of AP Fire Services Act, 1999) mandating all Companies/Industries/Individuals including Port Authorities storing or processing any toxic, Hazardous or Explosive Chemicals in the State, to disclose the information on such chemicals specified under MSIHC (Manufacture, Storage and Import of Hazardous Chemical) Rules ,1989 (as amended from time to time) in the following format every three months and in enclosed Annex B (IS 4209:2013) just once both electronically and physically to the local fire station to enable the first responders (Fire, Police, Medical) to conduct joint mock drills and awareness programs among the neighbouring community to prepare and protect themselves.

Port authorities/ managements of all Ports (Major and Minor) shall ensure to disclose information of any Toxic, Hazardous or Explosive Chemicals stored in the Godowns and Warehouses located in the Port Lands.

Format:

Name of the Industry: Address: Geo Coordinates (Lat, Long): Emergency Contact Name: Emergency Contact Number (Landline): Emergency Contact Number (Mobile): Nearby Fire Station: Nearby Fire Station Contact Number:

For each Chemical:

Chemical Name	MSDS Code	Hazchem Code	Storage Quantity	Storage Quantity Units (Tons/Kgs/Ltrs)	Nature of Chemical (Toxic/Poisonous Flammable/explosive/hazardous)
Flash Point OC	Boiling Point OC	LEL %	UEL %	Incompatible With	
Incase of Fire: Fire Fighting media and instructions	Personnel Protective Equipment	Spill Cleanup procedure	In case of contact with Eye/Skin, procedure to follow	Any other remarks	

4) The principles governing the Fire Safety Norms:

An extract from the Foreword to Part 4 of the National Building Code.

*“Absolute safety from fire is not attainable in practice. The objective of this part is to specify measures that will provide the degree of safety from fire which can be reasonably achieved. **The Code endeavors to avoid requirements that might involve unreasonable hardship or unnecessary inconvenience or interference with normal use and occupancy of buildings** but insists upon compliance with minimum standards of fire safety necessary for building occupants and users”.*

Every Industry is different and faces different hazards. Therefore, the managements shall refer to the respective Indian/International Code of Practice with appropriate modifications to confirm to the following principles, methods and technologies in designing and installation of fire safety systems.

The Endeavour is to deploy modern technologies that are ***resilient, maintenance free, easy to operate in case of emergency and don't get rusted in the largely Coastal Environment*** of the State.

The governing principle is to have large margin of Safety or failure proof deployment of Fire Fighting Equipment in "Decentralized Way" so that any individual Equipment failure will not affect the Fire Fighting capabilities as there are many similar Equipments in any building. Even the Fire Fighting Equipments of neighborhood buildings or industries can also be used for fighting fire as all these pumps are designed to be "mobile" and can operate either on "Electric" or "Fuel motors" besides being versatile in drawing water from any source such as Sumps, Overhead tanks, any municipal water tanks, or any tap in the building or any well or drum.

Therefore, ***the above versatility and mobility of the pumps deployed in buildings will multiply the margin of safety manifold unlike the case of immobile Centralized Pumping System.***

The above is just a layman expression of a well known mathematical proof that any Centralized Complex System with many interdependent components however reliable, is "fragile" compared to Decentralized System having independent components of similar reliability.

In addition, the centralized pumping system and water sprinklers can also be deployed at the sole discretion of the managements depending on the application. ***The existing such deployments can continue with a condition that they shall be maintained mandatorily replacing all rusting parts every three years with qualified technical teams so that they will be useful in case of actual emergencies instead of just being show pieces.***

Finally, minimization of Energy use (Sustainability) and Cost Effectiveness are to be observed. Let us be comforted with the fact that “no Industry is an island” in itself to handle any fire outbreak but thankfully, there are professional fire fighters spread across the State in 180 Fire Stations available “on duty” 24 x 7 and 365 days. In addition, neighbouring industries are every ready to part with their mobile fire fighting equipments along with their trained fire fighters to help control the fires. ***To ensure this, we have mandated signing of mutual aid agreements among industries.***

5) Fire Safety Measures:

General Fire safety Guidelines:

(i) NBC 2016 (Table VII) prescribes fire safety measures only for small scale industries. Whereas, for other category industries, it has left to the Director General and hence the following fire safety measures are prescribed to remove ambiguities; and to improve transparency and “ease of doing business”.

Fire Extinguishers are to be provided as per IS 2190, amended from time to time and Electrical safety is to be ensured following good practices prescribed in Indian Electrical Code (IEC) and Central Electricity Authority rules. Licensed “Electrical contractors” are recommended to be used for doing electrical works as per law.

We have authorized the following technologies and methods vide Andhra Pradesh Government Gazette No. W.No.02, Dated.18-01-2022 after due testing considering the hardships and practical difficulties in deploying conventional centralized systems.

- (a) Decentralized Fire Safety System using Plunger Pumps, Fire Engine Pumps etc.
- (b) Aerosol Automatic Extinguishing devices.
- (c) Dry Chemical Powder Modular System.
- (d) CO₂ flooding system.
- (e) N₂ flooding system.
- (f) Clean agent flooding system.

- (g) Installation of automatic heat and temperature sensing Devices or Fire Detection and Alarm System.

In addition, Foam Generators are hereby authorized to be used for oil related fires and wherever applicable.

Given the superiority of Decentralized System compared to conventional centralized hydrant system in ensuring large margin of safety as discussed in governing principles, we urge the managements to give priority to Decentralized design of fire safety systems.

The individual equipments/pumps to be of ISI or Industry or International Standards and that can work both in auto or manual mode capable of discharging right quantity of water or foam or any gas at right pressure depending on the fire load, and nature of hazard.

For instance, ONGC has deployed four pumps in four corners of a gas well at Narsapur, West Godavari District, Andhra Pradesh State which handles natural gas at 10,000 PSI pressure. The deployed pumps are capable of discharging water at 36,000 Ltrs per minute at different angles on to the flame burning such high pressure inflammable gas. Whereas, office buildings and engineering stores don't require such water pressure or quantity as these facilities have low fire load.

Hence, we expect the managements to take help of industry experts to assess fire load at different locations and facilities to ***deploy right kind of fire fighting and electrical equipment freely drawing from modern technology practices without being constrained by any particular code which may not have been updated for a long time, provided the technology deployed provides better safety than what is recommended in the relevant codes.***

It may be noted that (b) to (g) are meant to be alternatives to conventional Water Sprinkler System and they can be deployed in automatic work mode depending on the application. For example, Aerosol or Dry chemical powder gets released if temperature exceeds

58°C just as in case of Water Sprinkler's. Similarly, any gas (Foam/CO₂/N₂/Clean agent etc.,) can be made to work in auto flooding mode using temperature sensors and/or smoke sensors.

In addition, Yard Hydrant can be designed with HDPE/CPVC pipeline burried underground (so that it won't be burnt during fire) or connect to existing Yard Hydrant line and water tapping outlets (made of steel) can be attached to that pipeline, where ever required. This is intended to avoid iron pipes in coastal rust prone environment of the State.

The managements shall ensure compliance with QRA (Quantitative Risk Assessment) and Dispersion Analysis or HARA (Hazard Analysis & Risk Assessment) report; OISD (Oil Industry Safety Directorate); PESO (Petroleum Explosive Safety Organization) norms where ever applicable and prepare "on site"/"off site" Emergency evacuation plan before commencing the operations.

ii) Cold Storage Fires:

There are about 278 Cold Storage Godowns existing in the State. Every Cold Storage Godown maintains the ambient temperate between (-2°C to 6°C). Conventional Water Sprinklers are not appropriate for these Godowns.

Most of the Godowns are used for storing red dry chilies, any water leakage from sprinklers will result in discoloring/damage to the red chilies. In addition, the sprinkler system occupyes lot of economic space of the Godown. The water inside the Sprinkler system pipes sometimes gets frozen as the temperature goes below its freezing point. Due to the above critical reasons, which present genuine practical difficulties, most of the Cold Storages Godowns in the State have not installed Conventional Water Sprinklers.

(a) In a major fire accident due to short circuit, huge stocks of chilli were gutted in a Cold Storages Godown at Ankireddipalem, Guntur District, on 27 April, 2011. Fire could be extinguished only after all the stored material was burnt lasting 5 days, leading to collapse of the entire structure.

(b) On June 14, 2018, Boppudi Cold Storage, Chilakaluripet, had fire in the B Chamber destroying huge stocks of red gram, black gram, chilli, bengal gram and turmeric stock. Fire officials were able to save stocks in A Chamber. In spite of ten fire tenders working to douse the fire, the entire Cold Storage building collapsed.

Similarly, going by the last 20 years experience of handling such fires in the State, we found that ***once the Cold Storage catches fire, it would result in burning of all stored material leading to collapse of entire structure. Hence, we recognized this as an unsolved problem for which a pragmatic technology solution needs to be found.***

We conducted experiments using liquid Nitrogen, Aerosol and liquid Carbon Dioxide taking advantage of the fact that Cold Storage buildings are completely sealed, have one or two doors with no human presence inside during fire accidents. We have involved ONGC and industry experts during these experiments. These experiments proved the effectiveness of the liquid CO₂ if used in sufficient quantity in controlling the fire, definitely saving the structure of the Cold Storage from collapse.

Having successfully solved the problem, the fire department is acquiring liquid carbon dioxide fire tenders (10,000 Kg capacity liquid CO₂ tank fitted on 28 ton chasis) to be stationed near clusters of Cold Storage Godowns.

Isolated Cold Storages are to have a bank of CO₂ cylinders in manifold as it takes time for the liquid CO₂ fire tender to reach the location. Two or more Cold Storages can have a common CO₂ storage tank. It is an elegant low cost but effective solution for challenging problem of controlling fires in Cold Storage Godowns.

Therefore, Liquid CO₂ flooding system connected to CO₂ storage tank is prescribed to control fires in Cold Storages to meet the “satisfaction” of Director General for issue of “No Objection Certificate”.

The process of issuing “NOC” dealt under category of MSME (Micro, Small & Medium Enterprises).

(iii) Pharma Industry: There are more than 220 Pharma units in the State. Many have multiple exothermic reactors. ***Root cause of the most of the fatal accidents in the State is because of explosion of these reactors due to run away exothermic reactions. We urge the managements to adopt latest safety technologies in case of reactors hosting exothermic reactions in addition to posting qualified, well trained, full time employees at these reactors.***

It has to be understood that we can have equipment to fight fire but not explosion. Hence, all care is to be taken to avoid conditions leading to explosion which don't give any time for escape.

On 13th April, 2022, a major explosion took place in a 3,000 liter capacity reactor at Porus Laboratories Private Limited, Akkireddy gudem, Eluru District of Andhra Pradesh. The explosion was due to exothermic reaction of chemicals generating about 200°C of heat. The impact was felt over a 10 KM radius resulting in death of 10 workers including five workers charred to death. The fire service personnel were able to stop the fire from spreading to 15 other reactors in the factory and solvent tanks, thus averting a major disaster.

This highlights the importance of following the safety precautions suggested in Hazard Analysis and Risk Assessment (HARA), Third party safety audit report under MSIHC (Manufacture, Storage and Import of Hazardous Chemicals) Rules, 1989 (as amended from time to time) and practicing Emergency Evacuation Plan (EEP). And the role of Inspector of Factories to ensure the managements adopt modern technologies in the design of exothermic reactors and adhere to industry best practices in maintenance of these reactors to prevent such ghastly incidents.

Therefore, installation of appropriate fire safety equipment in compliance with HARA report, Safety Audit under MSIHC (Manufacture, Storage and Import of Hazardous Chemicals) Rules, 1989 (as amended from time to time) and Emergency Evacuation Plan and Disaster Emergency Management Plan (DEMP) will “Satisfy” the Director General for issuing “No Objection Certificate”.

(iv) Oil & Gas Industry:

Andhra Pradesh State has a long coastline endowed with Oil and Natural Gas reserves both offshore and onshore. The State also has many ports used for export and import of petroleum products and edible oil. Therefore, there are extensive oil and Gas installations including refineries, strategic oil reserves, storage depots, transportation pipelines and distribution points such as petrol bunks and LPG storage Godowns across the State. Let us examine most prominent fire incidents in this industry.

(a) LPG Cloud Explosion @ HPCL, Vizag: In Sept. 1997, leakage occurred during receipt of LPG Cargo from a pressurized ship. The leaked gas formed into Vapor cloud and spread throughout the refinery tank farm before getting ignited. The resulting blaze killed 60 people. It took 14 days to fully extinguish fires with several fire tenders working continuously. About 70,000 people living around the HPCL refinery have fled due to this blaze.

Justice S.C. Jain Commission investigated the incident and recommended to ensure flow of information to the district off-site Emergency authority and to caution the people with public address system besides ***ensuring that only technically qualified people be employed in performing sensitive operational and maintenance duties instead of casual labor.***

(β) GAIL pipeline blaze in Konaseema area: On 27th June, 2014, fire broke out at 5:30 AM on the pipeline running through Nagaram Village. The gas leak seems to have been taking place for couple of days prior to the incident with hissing sound but villagers don't know where to report. The leaked gas cloud caught fire when a tea stall owner lit a stove early morning. This led to a blast followed by large ball of fire.

The explosion with flames reached 250 meters high leaving a trail of death and destruction in which 15 people lost their lives.

This explosion highlights the importance of public awareness so that they can immediately inform authorities about any leaks and preventive maintenance of Gas pipelines.

(γ) Pasarlapudi blowout: It was largest blowout ever recorded in the history of India's oil and Natural gas exploration that happened in an oil rig on 8th Jan 1995 in Pasarlapudi near Amalapuram, Andhra Pradesh. The fire continued for 65 days and could be brought under control with the help of international experts. About 1500 people living in surrounding 7 villages were evacuated but there were no casualties.

The geological complexity of the fields and the presence of high pressure zones in the Krishna - Godavari basin, particularly in the wells at Amalapuram, Razole and Narasapur have led to major disasters. These may happen again in this area.

This highlights the importance of fully complying with Oil Mines Regulations, 2017. Therefore, for new wells or expansion of any existing wells or installations, respective Mines Manager shall submit an undertaking stating that all the applicable provisions of Oil Mines Regulation, 2017 or any other applicable Indian Standards are complied with. ***Such Mines Manager's undertaking shall meet the "Satisfaction" of Director General for issuing 'NOC'.***

The companies particularly ONGC shall spend CSR funds to replace thatched roof houses with pucca houses or any other fire prone civil structures surrounding their operational area in coordination with district administration.

District Collectors of Dr. B.R. Ambedkar Konaseema District and West Godavari district shall periodically review compliance with Safety procedures with concerned companies and conduct community awareness programs given the geological complexity of Oil & Gas fields in these districts.

6) Mock Drills:

- a) Every three months fire mock drills to be conducted and all the workers and Management should sign a document certifying the following and keep in record.

We observe that it is the workers or their supervisors who lose lives in case of any major fire accident in Industries. Very rarely owners are affected. Therefore, ***we intend to put power in the hands of most affected people*** by mandating that the signatures of all participants including Emergency Response Team in Mock Drill to be taken in the register for inspection. These "Mock drills" familiarize all concerned people about the status of safety in their workplace. Necessary training and awareness programs on emergency response to be conducted to all employees and maintain training records for inspection.

Proforma enclosed:

S.No.	Name of the Employee	Remarks/ Observations	Signature
1.			
2.			
3.			

Certifying that all Pumps and other firefighting equipment are in working condition and the Fire Extinguishers are not outdated.

- b) That all workers know Exits and Assembly points and what to do in Emergency.

- c) Endeavour is to be made to conduct joint Mock Drills with Local Fire Station and local bodies like Village Secretariat so that everyone will know what kind of dress to wear, where to take position and what to do in any emergency.

7) Fire Safety Audit:

There are about 180 fire stations in the State. The Station Fire Officer (SFO) has to be available to respond to Emergency “fire and rescue” calls 365 days and 24x7. In addition, there are about 7,500 Hospitals, 40,000 Schools/Colleges besides many industrial and business Establishments where fire safety inspections for different purposes have to be carried out. It is administratively not practical to get all Fire Safety Audits done through the Fire department officials.

In addition, there is no qualified Chemical, Electrical, Mechanical or Civil Engineers in the ranks of Fire Department.

Therefore, the following technically competent people employed with State Government (so that they can be made accountable for accuracy of their reports) or duly licensed persons are authorized in accordance with powers conferred on Director General for Fire Safety Audit purpose.

a) All Civil, Electrical, Mechanical and Chemical Engineers Employed with State Government or its undertakings or any State University are authorized. In addition, all Degree or Diploma holders in Electrical Engineering licensed by A.P. Electrical Licensing Board are authorized to conduct “Electrical Safety” audit after inspecting and satisfying themselves with Electrical Safety.

b) Who can carry out Fire Safety Audit for issuing Precautionary measures under Sec 14 of the Act, 1999?

The Director General or District Collector may nominate teams of a Civil Engineer, an Electrical Engineer, a Mechanical Engineer or a Chemical Engineer along with a fire officer so that proper methodical Safety Audit is done to suggest precautions to be taken in handling hazardous or toxic or explosive chemicals.

8) What can be done by District Administration to prepare for incidents such as LG Polymers gas leak, explosion of exothermic reactors and major blowouts in Oil and Gas installations?

- (a) District Collector to constitute "District Safety Committee" with the members chosen among the following:
- (i) District Superintendent of Police / Commissioner of police or their nominee.
 - (ii) District Health & Medical Officer.
 - (iii) District Chief Fire Officer.
 - (iv) District Electrical Inspector.
 - (v) District Pollution Control Board Officer.
 - (vi) District Industries Center, General Manager (or) Zonal Manager, APIIC.
 - (vii) District Factories Inspector / Boiler Inspector / Labor Inspector.
 - (viii) District CII & FAPSII president.
 - (ix) All presidents of Industrial Park Safety Committees.
 - (x) Chief Safety Officer Ports.
 - (xi) Any major industry such as ONGC, GAIL, Reliance, Steel Plant etc., representatives as decided by District Collector.

(b) The District Safety Committee shall meet atleast once in a year and more frequently in industrialized districts such as Visakhapatnam, Anakapalli and Tirupati.

(c) ***The Pollution Control Board shall maintain the Repository of storage of toxic chemicals across the State and give public access via user friendly Website.***

The companies holding toxic chemicals shall upload the information every three months electronically. All public authorities including Fire Service having such information shall the Repository.

(d) The District Collector shall **ensure that the disclosure of information related to the storage of toxic, hazardous and explosive Chemicals as mandated in clause (3) is upto date and conduct Public Awareness Programs.**

Such Public Awareness nudges the Company Boards (some times located far away in other countries in case of M/s LG Polymers at Korea and at USA in case of Bhopal Gas tragedy) to follow the methods listed in [clause (3) (iii) (1), (2), (3)] for better public safety.

(e) The District Collector to direct **District Health and Medical Officer or private hospitals having collaboration with industries handling toxic chemicals to store relevant emergency medicines all the time.** The concerned companies are hereby mandated to ensure compliance to the orders of District Collector as per Sec 14 of the Act, 1999.

(f) The District Collector shall **ensure signing “Mutual Aid Agreements”** by all industries located in the district so that they collaborate in fighting major incidents of fire.

(g) The District Safety Committee shall have Electronic Collaboration (for instance through WhatsApp group). The District Chief Fire Officer to maintain contact persons cell phone numbers and mobile fire fighting equipment so that they can be readily accessed when needed.

(h) **The District Collector is empowered to get Safety Audits and Mock drills conducted and to give notice to any industry handling toxic chemicals to take such precautions as may be recommend by the “Safety Audits”.**

In case of non-compliance, the District Collector can take legal action (under Sec 14 of the Act 1999) either to stop operations or to immediately remove such chemicals with a copy to the Director General.

(i) District Chief Fire Officer to present this Gazette whenever the following officers join the district.

- (i) District Collector/ District Joint Collector.
- (ii) District Superintendent of Police/ Commissioner of Police.
- (iii) District Medical & Health Officer.
- (iv) District PCB Engineer.

District Chief Fire Officer should also give locational information of toxic chemical storages and industries hosting exothermic reactors and oil wells on a map to get the information at a glance.

9) Ambiguities Removal:

a) About Set backs & Open spaces and measurement of height of buildings.

See Andhra Pradesh Government Gazette W.No.16 dated: 21-04-2022 regarding the above two issues.

b) What principles are observed in issuing No Objection Certificates for Industries?

As the provisions of law provides for prescribing precautions for industrial Fire Safety any time and empowers the Director General with powers to mandate such precautions under Sec 14 of the Act, 1999, but doesn't mention industries under Sec 13 of the Act, we have **adopted the principle of "Trust but Verify" in issuing "No Objection Certificates"**.

This will hold the top most company official (Chief Executive Officer or Managing Director) responsible for safety. While trusting his undertaking affidavit, the process eliminates any delay in granting approvals. We, then, undertake mock drills, multi disciplinary check to specify any further precautions to be taken etc.

The above will go a long way in "Ease of Doing Business" in the State while ensuring Public Safety as per law.

- c)** Is it necessary to submit drawings of buildings to apply for “No Objection Certificate”?

There is no requirement to submit detailed plans & drawings of buildings. The Department has no qualified staff (No Civil Engineers or architects or even diploma holders) who can understand building drawings.

Moreover, this will avoid unnecessary issue of safety of such sensitive documents specially if submitted online. Such detailed maps may fall into hands of cross border terrorists as it happened in case of Taj Hotel, Mumbai in 2008 etc. Therefore, this requirement is dispensed with.

- d)** Can fire Department Officials insist on any particular agency to install Fire Safety Equipment?

No, the management have full discretion as to the agencies, manufacturers as long as the equipment installed is either of ISI standards or any International Standards or Industry Recognized Standards.

- e)** Are the above prescribed Prudential Fire Safety measures confirm to National building Code (NBC), 2016?

Yes.

NBC, 2016 specifies Fire Safety Measures only for small scale industries. It specifically leaves the Fire Safety Measures to the Director General in case of all other categories of Industries.

- f)** Is it necessary to deploy Fire Tenders in mock drill?

Yes. It is required preparation to effectively fight fires.

- g)** Is there any inspection required for issuing Provisional “No Objection Certificate”?

No inspection is necessary as per G.O Ms. 120, Home (Prisons & Fire) Department, Dated. 25-10-2021.

h) Can Jurisdictional Officers carryout Inspections?

The Government has issued G.O Ms. 90, Home (Prisons & Fire) Department Dt. 13-08-2021, authorizing to conduct only joint inspections. ***Jurisdiction officers are encouraged to conduct joint mock drills to familiarize everyone with the equipment available, precautions to be taken and to work as a team to effectively handle any emergency.***

The frequency of joint mock drills is to be arrived depending on the nature of hazards in consultation with management of the company.

10) “No Objection Certificate” for MSME and Green Category Industries:**(a) Park Level or Cluster Level “No Objection Certificate”:**

It is decided to issue one time park level fire safety certificate for industrial parks hosting MSME (Micro, Small & Medium Enterprises) industries and Green Category industries of any scale to encourage and promote fire safety in the State without collecting any fee as NOC is not mandated under Sec 13,14 for such industries.

The following are the prescribed norms:

- (i)** There should be park level safety committees constituted.
- (ii)** Mutual Aid Agreement to be signed by members of the park.
- (iii)** There should be two water sources (park level total minimum one lakh liters) connected via pipeline (HDPC/PVC underground) that brings water near to all buildings with multiple water tapping points at each building (water needn't be under pressure as we can use pressure pumps).
- (iv)** Every industrial unit to have atleast two 5HP pumps (which generate more than 10/cm² pressure when connected to water tapping points). They may use higher rated pumps depending on fire load expected. These pumps to be mobile so that multiple pumps can be deployed in case of fire.

- (v) The entire park is recommended to have Electrical works under taken by licensed “Electrical Contractors” of the A.P Electrical Licensing Board.
- (vi) The park safety committee to have two 150kg/75kg trolley mounted ABC powder cylinders. They can be deployed in case of fires of Electrical or Chemical Origin.
- (vii) In case of Cold Storages, (i),(ii),(v),(vi) and installing pipes suitable to pump liquid CO₂ uniformly inside godown connected to a common storage tank.

The above said conditions meet the satisfaction of the Director General to issue “Park Level Fire No Objection Certificate”.

On submission of an undertaking Affidavit signed by “Park Level Safety Committee” stating that the above conditions are met, the ‘Park Level Fire No Objection Certificate’ is deemed to have been granted and the orders communicated immediately through Single Window Portal of Industries Department with a copy marked to Director General.

(b) Individual “Occupancy NOC” for any industry excluding Red and Orange Categories:

If required, it will be granted .The following are prescribed precautions.

- (i) Installation of proper capacity fire fighting pumps at all work locations depending on fire load with adequate water storage (min 10,000 Ltrs).
- (ii) Put CO₂/ABC cylinders at all work places within 25 meters accessible distance to workmen.
- (iii) Mutual Aid Agreement is signed with at least two other industries in its neighbourhood or in the District.
- (iv) All Electrical works to be done through Licensed Electrical Contractors (by A.P. Electrical Licensing Board) to ensure Electrical Safety.
- (v) The company has remitted to State Treasury one year prescribed fee through any approved Banks or Electronic Payment methods.

An undertaking affidavit signed by (Chief Executive Officer or Managing Director or his authorized representative) stating that the above are complied is required.

On Submission of such an affidavit, “Occupancy NOC” is deemed to have been granted and the orders communicated through Single Window Portal of Industries Department with a copy marked to Director General.

In case of any issue with Single Window Portal, (in (a) or (b)) the Director General will issue the “No Objection Certificate” immediately to support “Ease of doing Business” in the State. Later, he may get Mock drills conducted to get familiarity with the equipment deployed or to suggest any improvements.

11) “Ease of Doing Business”: (Issuing “Occupancy NOC” and “Renewal NOCs” for Red and Orange Category industries):

In case of fire accident, the Industry Owners/management suffer not only property damage but also irreparable loss of reputation especially if any workers life is lost. Obviously, the management interest in ensuring “Fire Safety” is in alignment with fire department objectives, provided the mandated requirements are pragmatic.

The law makers have wisely given powers to Director General through Sec 14 of the Act, 1999 to require the Owners or Occupiers of any premises used for storing or processing any hazardous or toxic explosive chemicals that are likely to cause fire, to take precautions. In case of non-compliance, the Director General is empowered to direct the concerned to remove such chemicals or to close the premises. This is a powerful provision to ensure industrial safety balancing requirement of attracting investments to create jobs for youth.

However, the Legislature has avoided including industries in the Sec 13 dealing with Fire “NOC” but the Pollution Control Board has made obtaining “NOC” mandatory for Orange and Hazardous Category industries, so that these industries can be dealt under Sec 14(1) of the Act, 1999.

Therefore, ***we observe the principle of “Trust but Verify” in processing applications to eliminate any delay.*** In accordance with the mandate of law, we permit the industry to commence and continue operations subject to submitting an undertaking affidavit signed by the Managing Director or Chief Executive Officer, or his authorized signatory, stating the following:

- (a)** Conducted QRA (Quantitative Risk Assessment) and Dispersion Analysis or HARA (Hazard Analysis and Risk Assessment). These assessments are done through multi disciplinary experts. They include fire safety checking by industry experts.
- (b)** All norms regarding PESO (Petroleum and Explosives Safety Organization) observed.
- (c)** All norms of OISD (Oil Industry Safety Directorate) observed.

In case of (a),(b) & (c), if applicable.

- (d)** Installed proper capacity fire fighting equipment at all work places depending on “fire load”.
- (e)** That the company have employed well trained full time, employees at all critical processes and at all exothermic reactors.
- (f)** That the company shall update toxic/hazardous/explosive chemicals information as mandated under clause(3).
- (g)** That the company shall ensure availability of essential medicines that are antidote to toxic/hazardous/explosive chemicals stored by them in case of any mishap.
- (h)** Prepared “On Site and Off site” Emergency Evacuation Plan.
- (i)** That the company will abide by any further precautions suggested by the Director General or District Collector in the interest of Public Safety.
- (j)** The Government prescribed fee is remitted to State Treasury through any approved Banks or Electronic payment methods.

On submission of said “affidavit”, the “Occupancy NOC”/ “Renewal NOC” is deemed to have been granted and orders communicated immediately for all categories of industries through Single Window Portal of Industrial Department. The duration of such NOC’s is for 5 years at a time as per G.O.Ms.No.120, Home (Prisons & Fire) Department, Dated: 25-10-2021.

In case of new oil exploration sites, on submission of Mine Manager’s undertaking stating that all relevant safety norms are observed, “Occupancy NOC” is deemed to have been granted and order communicated immediately through Single Window Portal of Industries Department with copy marked to Director General.

The Director General may direct District Chief Fire Officer to conduct mock drill as soon as possible to familiarize everyone with the industry.

In case of any issue with Single Window Portal, the Director General will issue the above “No Objection Certificates” immediately as envisaged to support “Ease of Doing Business” in the State.

As and when required, the Director General may constitute multi disciplinary teams to suggest any precautions, to be adopted in the interest of Public Safety.

Any violations of the above minimum safety provisions will attract prosecution not only under relevant provisions of A.P. Fire Services Act, 1999 but also under appropriate provisions of Indian Penal Code.

In addition, Courts and Tribunals observe whether management has followed the said Prudential Safety Measures prescribed by Professional Fire Service, while awarding compensation to the victims of fire accidents.

12) Stakeholder Consultation:

In arriving at above pragmatic requirements, we have consulted all stakeholders, analyzed major industrial fire accidents across the country, capitalized on the accumulated experience of fire fighting personnel of all ranks in the department, took advantage of modern technologies.

In designing, testing, evaluating and in creatively finding solutions, the invaluable contributions of Sri. Dinesh Kumar, General Manager (ONGC, Fire Services); Fire Experts Sri. K.T Krishna Murthy and Sri. C. Andrew; Sri. Shaik Samiuddin of CII; Sri. J. Subba Rao, Secretary, JN Pharma City; Sri. K. Chakradhararao, Colgate-Palmolive in Sricity; Sri. J. Ramanaiah, DCFO, Tirupati; Sri. B. Lakshmana Swamy, DCFO, Anakapalli; Sri. P. Anil Kumar, DCFO, Annamayya; Sri. V. Sreenivasa Reddy, DCFO, Ananthapur and many others are hereby acknowledged.

The encouragement of Sri. Sameer Sharma, Chief Secretary in urging to use the “Behavioural Insights” of Noble Laureate Richard Thaler and Cass Sunstein, authors of Nudge, led to the idea of “Disclosure”.

Though major disasters are like “Black Swan” events, this notification is a David’s attempt to build “Ant fragility” relying on the open democratic traditions of our country.

Trust that the enlightened leadership of our country may take these meaningful steps into account while formulating national response.

Therefore, the above notification is hereby issued in larger “Public Interest”.

PRATAP MADIREDDY,
Director General,
State Disaster Response & Fire Services,
A.P., Vijayawada.

IS 4209:2013

ANNEX B
(Clause 8.4.1)

MATERIAL SAFETY DATA SHEET FORMAT

B-1 MATERIAL SAFETY DATA SHEET FORMAT

Identity (As Used on Label and List) and Maximum Quantity handled at any time.

1. Chemical Identity			
Chemical Name		Chemical Classification	
Synonyms		Trade Name	
Formula		CAS NO.	U.N. No.
Regulated Identification		Shipping Name Codes/Label	Hazchem No:
		Hazardous Waste I.D. No:	
Hazardous Ingredients	CAS No.	Hazardous Ingredients	CAS No.
1.		3.	
2.		4.	
2. Physical and Chemical Data			
Boiling Range/Point °C		Physical State	Appearance
Melting/Freezing Point °C	Vapour Pressure @ 35 °C mm Hg	Odour	
Vapour Density (Air=1)	Solubility in water @ 30 °C	Others	
Specific Gravity	pH		
Water = 1			
3. Fire and Explosion Hazard Data			
Flammability Yes/No	LEL %	Flash Point °C	Auto ignition °C
Temperature			
TDG Flammability	UEL %	Flash Point °C	
Explosion Sensitivity to Impact	Explosion Sensitivity to Static Electricity	Hazardous Combustion Products	
Hazardous Polymerization			
Combustible Liquid	Explosive Material	Corrosive Material	
Flammable Material	Oxidiser	Others	
Pyrophoric Material	Organic Peroxide		
4. Reactivity Data			
Chemical Stability			
Incompatibility with other material			
Reactivity			
Hazardous Reaction			
Products			
NOTE – Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.			

5. Health Hazard Data					
Routes of entry					
Effects of Exposure/ symptoms					
Emergency treatment					
TLV (ACGIH)	ppm	mg/m ³	STEL	ppm	mg/m ³
Permissible Exposure Limit	ppm	mg/m ³	Odour Threshold LD ₅₀	ppm	mg/m ³
NEPA Hazard Signals	Health	Flammability	Stability	Special	
6. PREVENTIVE MEASURES					
Personnel					
Protective					
Equipment					
Handling and Storage					
Precautions					
7. Emergency and First-Aid Measure					
Fire	Fire Extinguishing Media				
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					
Name of Firm	Contact person in emergency				
Mailing Address	Local bodies involved				
Telephone/Telex Nos.	Standard packing				
Telegraphic Address	Tremcard Details/Ref				
	Other				
10. Disclaimer					
Information contained in this material safety data sheet is believed to be reliable but no representation guarantee of warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is upto the manufacturer/seller to censure that the information contained in the material safety data sheet is relevant to the product manufactures/handled or sold by him as the case may be. The government makes no warranties expressed or implied in respect of the adequacy of this document for any particular purpose.					

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