**NOTIFICATION FOR INDUSTRIAL BUILDINGS**

**1) Legal powers governing this Notification:**

*According to Section 14 (1) of Andhra Pradesh Fire Service Act, 1999. Preventive Measures : The Government or any Officer authorizes by the Government in this behalf may , by notification required the owners or Occupiers of the Premises used for Purpose 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 13 (2) of Andhra Pradesh Fire Service Act, 1999.The Director General or any member of the service duly authorized by him in this behalf, shall* ***within sixty days*** *of receipt of such application, on being* ***satisfied*** *about the provision of fire prevention and safety measures as stipulated in the [National Building Code of India, as amended from time to time ] or any other law for the time being in force regulating such purpose or activity, shall issue* ***No Objection Certificate*** *with such conditions as may be considered necessary and if not so satisfied, reject the same for reasons to be recorded in writing.*

**2) The purpose is :**

**First**, to institutionalize Preventive Measures such as Joint Mock Drills, Community Awareness Programs etc., those 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 ” as envisaged in Section 13(2) of Andhra Pradesh Fire Service Act, 1999.

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

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**Fourth**, to Ensure compliance by notifying authorities competent to inspect, test and certify the functioning of Fire Safety Equipment.

**Fifth**, to lay down procedures for time bound disposal of application for Fire “No Objection Certificate” (NOC) within Sixty days of its submission as prescribed in the Act 1999.

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.

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**(b) Gas Leakage at Brandix India Apprel Company:**

Recently, on June 3, 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 yet been established.

**(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 Government affidavit. In 2010, several former executives of the company were all Indian citizens 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 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. As he prepared to escape from the leaking gas, 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 near by. In a short span of time, the leak went out of control.

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**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". 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 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.***

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***They were then told that it was methyl isocyanate (MIC), which hospital staff had never heard of, had no antidote for, and received no immediate information about. The gas cloud, composed mainly of materials denser than air, stayed close to the ground and spread in the southeasterly direction 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.***

The better way is to empower the first responders and the public with right information to enable them to prepare and protect themselves .

(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 accidental 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 away from any residential habitation.

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The above methods were adopted by companies (located near residential areas) due to public disclosure of large 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 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 (what kind of toxic/explosive 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 and to avoid toxic exposures including conducting mock drills.***

***How the above prevents:***

1. ***LG Polymers:***

If the large storage of styrene, a toxic gas, been known to community surrounding the factory, management, under public scrutiny, would have followed any of the above methods. 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.

1. ***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 Pharma 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 gases/chemicals in all factories is made known to public, it would have easy to pin point the source such toxic gas leakage which would help us to stop further leakage and take preventive measures.

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Moreover, if any of the above three preventive methods were following in handling and storage of toxic chemicals by the Pharma Company, then this accident, even if happened, wouldn’t cause such major harm to human health as the release would have been of not significant quantity to cause such harm.

**(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.***

**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.**

Thus, the “Democratic Checks and Balances” resulting from “Public Disclosure” will go a long way in preventing such major explosions /disasters. This is particularly important in Andhra Pradesh State which has about 990 km of coast line with five operational ports.

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Thus, the “Democratic Checks and Balances” resulting from “Public Disclosure” will go a long way in preventing such major explosions /disasters. This is particularly important in Andhra Pradesh State which has about 990 km of coast line with five operational ports.

***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 in the following format and in enclosed Annex B (IS 4209:2013) just once both electronically and physically to the local fire station every three months to enable the first responders (Fire, Police, Medical) to conduct joint mock drills and the neibhouring 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, 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 |

|  |  |  |  |
| --- | --- | --- | --- |
| Any Document upload | Any Image Upload | Any Video Upload |  |

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**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 principle, 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 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***.

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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.

Moreover, the design Engineers have flexibility in deploying any advanced technology even if not specified in IS code of practice as long as they are of any industry or International Standards. In addition, the centralized pumping system and water sprinklers can also 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.

However, all new deployments of automatic water sprinklers shall confirm to new IS code, which dramatically reduces need for iron pipes replacing them with HDPE pipes and allows use of gravity flow pressure with a pressure pump if necessary.

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, neibhouring industries are every ready to part with their mobile fire fighting equipments along with their trained fire fighters to help control the fires.

Please refer Andhra Pradesh Government Gazette No. W.No.02, Dated.18-01-2022 authorizing the Decentralized System; Aerosol, CO2, Neutral Gas and N2 Flooding Systems.

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**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 the Director General and hence the following fire safety measures prescribed to remove ambiguities; and to improve transparency and “ease of doing business”.

Fire Extinguishers to be provided as per IS 2190, amended from time to time and Electrical safety to be ensured following good practices prescribed in Indian Electrical Code (IEC).

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.

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. We have no preference to any particular pumps, manufacturers of any fire fighting equipment and we leave it to the choice of managements. 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 at right pressure depending on the fire load, and nature of hazard.

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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 sheds/ facilities to deploy right kind of fire fighting 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 noted that (b) to (g) are meant to be alternatives to conventional Water Sprinkler System and they can deployed in automatic work mode depending on the application. For example, Aerosol or Dry chemical powder gets released if temperature exceeds 580C just as in case of Water Sprinkler’s. Similarly, any gas (CO2/N2/Clean agent etc.,) can be made to work in auto flooding mode using temperature sensors and/or smoke sensors.

The above technologies are in addition to the existing conventional centralized system and water sprinkler system.

In case, water sprinklers are required for any particular application, the sprinklers can be connected to (PVC pipe) run inside the wall from over head tank. The water comes with gravity or can be pressurized with a small pump (0.5kg/Cm2) where ever needed.

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

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The managements are at freedom to deploy any of the above technologies and methods based on fire load, fire hazard and other technical requirements duly observing the relevant Indian/International Standards in designing and installation of fire safety systems.

The managements shall ensure compliance with HARA (Hazard Analysis & Risk Assessment) report; OSID (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 (-2oC to 6oC). As per NBC guidelines, Fire Department insists upon installation of sprinkler system.

Most 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 occupies 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 two critical reasons, which present genuine practical difficulties, most of the Cold Storages Godowns in the State have not installed such sprinklers and are functioning without obtaining any ‘NOC’ from the fire department.

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1. 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.
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(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. Inspite 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 even in cases of buildings provided with conventional Fire Fighting Systems. 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 and other stakeholders during these experiments. These experiments prove the effectiveness of the liquid CO2 if used in sufficient quantity in controlling the fire, partially saving the stock and definitely saving the structure of the Cold Storage from collapse.

The Cold Storage association is satisfied with this pragmatic solution and is willing to install the required pipes inside their Godowns to make it easy to pump liquid carbondiaoxide uniformly in all parts of the Godown. Having successfully solved the problem, the fire department is acquiring liquid carbondiaoxide fire tenders (10,000 Kg capacity liquid CO2 tank fitted on 28 ton chasis) to be stationed near clusters of Cold Storage Godowns.

**Therefore, Liquid CO2 flooding system is prescribed to control fires in Cold Storages to meet the “satisfaction” of Director General for issue of “No Objection Certificate” under section 13(2) of A.P Fire Service Act, 1999.**

**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. If the Cold Storage is in cluster, there is no**

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**such requirement as we can have liquid CO2 Fire Tender stationed at the cluster. It is an elegant low cost but effective solution for challenging problem of controlling fires in Cold Storage Godowns.**

**(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.***

On 13th April, 2022, a major explosion took place in a 3,000 litre 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 200oc 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 fire safety audit report; 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 and Emergency Evacuation Plan will “Satisfy” the Director General for issuing “No Objection Certificate” Under Sec 13(2) of Andhra Pradesh Fire Service Act, 1999.***

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**(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.

**(α) 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, administrative complex, utilities area and a process unit 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 had been taking place for couple of days prior to the incident. Since the gas is odourless, its leakage was undetected until a tea Stall owner lit a stove early morning to prepare tea, 200 meters from the place of gas leakage. This led to a blast followed by large ball of fire.

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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 causalities.

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/sites or expansion of any existing wells/sites 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’ as per Sec 13(2) of Andhra Pradesh Fire Service Act, 1999 with the following condition.***

The submission of the authorized Mines Manager’s undertaking either at District Chief Fire Officer (or) Director General’s office and it acknowledgement shall deemed to be considered as the Fire ‘NOC’ as any delay in paper work will mean huge financial burden to the concerned company.

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.

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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)** **Industrial Park Level Safety Measures:**

A mutual aid agreement for Fire Safety shall be entered into by all the Oil and Gas Industries with in the State of Andhra Pradesh and is recommended to set up an Emergency Response Center at Visakhapatnam, to cater to fire emergency in Oil and Gas Industries.

In all Industrial Parks hosting more than 10 industrial units, an industrial park level Fire Safety Committee may be constituted. It

role is to periodically meet and discuss latest safety issues, conduct park level mock drills and keep inventory of mobile fire safety equipment with all the industries located within the park so that all the fire fighting equipment available with any unit, be pressed into service to attend to any fire emergency in any unit within their park.

The committee can optimize the water storage requirements taking the over all view of the park in having sufficient water storage for fire fighting purposes instead of having lakhs of liters of water for every building in the park as all industries do not get engulfed in fire at a time provided sufficient water is available at least at two storage places in the park and this water is made available through different tapping points to all units in the park.

This water optimization is very important for example, in Sri City SEZ industrial area at Tada in Tirupati district hosting above 150 units, Lakhs of liters of water is stored for every unit leading to water shortage for farmers in the area. As the park has big water storage reservoirs with pipeline network all buildings needn’t have separate storage but can have water tapping points.

The committee shall also keep emergency contact numbers of not only Fire Service, Police, Medical and District Administration but also of neibhourhood industries who can help in fighting fires.

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These Safety Committees shall be formed by the Zonal Manager, APIIC or General Manager, District Industries Center or Station Fire Officer having jurisdiction in all APIIC industrial parks, in Cold Storages, jinning and spinning mills clusters of Guntur, Prakasam District etc. District Chief Fire Officers to ensure formation of such committees and to work in coordination with these and all committees in their jurisdiction.

**7)** **Mock Drills:**

a) Every three months 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 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.

**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.

1. That all workers know Exits and Assembly points and what to do in Emergency.
2. Endeavour is to be made to conduct joint Mock Drills with Local fire Station so that everyone will know what kind of dress to wear, where to take position and what to do in any emergency.

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**8) Inspections & 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 inspections done through the Fire department officials.

Moreover, many SFO’s have just intermediate qualification and hence SFO’s with such qualifications are “not competent” to inspect technical aspects of Electrical Safety or Fire Safety Equipment, particularly in hazardous industrial establishments. 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) are authorized in accordance with powers conferred on Director General for inspection purposes.

3. All Civil, Electrical, Mechanical and Chemical Engineers Employed with State Government or its undertakings or any State University are authorized to inspect and issue certificate of compliance with proper working of installed Fire Safety Equipment, plumbing, water availability and Electrical Safety code of practice.
4. ***Fire safety Audits: District Collectors are authorized to Constitute four members teams of authorized Chemical, Electrical, Civil/Mechanical and afire officer to carryout “Fire Safety” audits in hazardous industries particularly in those hosting exothermic reactors from time to time.***
5. Is there any inspection required for issuing Provisional “No Objection Certificate”?

This gazette notification is the “Provisional NOC” and the managements are mandated follow guidelines prescribed here in.

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

1. Who can carry out inspection for issuing Occupancy “No Objection Certificate”?

The Director General of Fire Services can nominate “Non Jurisdictional” Fire Officer of Station Fire Officer & above rank to carryout inspection as per G.O Ms.120, Home (Prisons & Fire) Department, and Dated: 25.10.2021. The guiding principle is to do away with monopoly of jurisdictional officers in conducting all inspections to improve transparency.

The Director General to nominate teams of a Civil Engineer, an Electrical Engineer and either a Mechanical Engineer or a Chemical Engineer in case of Pharma/Chemical related industry authorized in (a) along with non jurisdictional fire officer so that proper methodical inspection is carried out for issuing “Occupancy NOC” in hazardous industries. In case of other category industries, non jurisdictional fire officers inspection report may be relied upon.

e) 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 along with industries department Officials. Normally, inspections involve fault findings and hence are to be avoided by jurisdiction officers. However, 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. The managements of the company shall extend full cooperation for conducting joint mock drills as a condition of issuing ‘NOC’ under section 13(2) of Andhra Pradesh Fire Services Act, 1999.

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**9) Delegation of powers and Deemed Approval for Renewal of**

**“No Objection Certificate”:**

Not only that there are about 10,000 Industries, 7,500 Hospitals and 40,000 Schools etc… but the list of such establishments will be growing as the State develops. Hence, the renewal applications will be cumulatively growing leading to huge administrative burden given that there are only about 100 total fire personnel per district (including all ranks and just 5 to 10 officers above SFO rank). They need to be on operational duty 24x7 and 365 days. Hence, the necessity of delegation of powers.

**(a) Delegation of Powers:**

Applications for renewal of “No Objection Certificate” in Orange Category Industries can be submitted to General Manager, District Industries Center (or) Zonal manager, APIIC having jurisdiction(or) continue to be submitted to Director General’s Office. Both are equally competent to renew “No Objection Certificate” in Orange Category Industries.

The above officers are here by authorized in accordance with powers conferred on Director General in Sec 13(2) A.P. Fire Services Act, 1999, to renew “No Objection Certificate” after ensuring Fire Audit Certificates of authorized Electrical Engineer and Civil Engineer besides payment of prescribed fee through challan.

The renewal applications shall accompany with affidavit signed by management declaring that all the above said Prudential Safety norms are complied with. All such renewals orders shall be copy marked to District Chief Fire Officer and Director General for proper record. However, no delegation of powers is made for Hazardous or Red Category Industries.

The applications for renewal can continue to be submitted directly to Director General’s Office. This will do away with monopoly powers of any particular office, thereby improving transparency.

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**(b) Deemed Approval:**

As mandated under Sec 13(2) A.P. Fire Services Act, 1999, the Director General or any officer authorized by him shall issue “No Objection Certificate” within 60 days of the date of complete application. The date of Challan payment is to be treated as date of application for this purpose following the date of said Fire Audit Certificates. If not issued, the Renewal of “No Objection Certificate” is deemed to have been issued, following the doctrine of legitimate expectations as all criteria have been met.

Therefore, the above delegation of powers go a long way in “Ease of doing business” in the State while improving administrative convenience and transparency without compromising Safety.

**10) Ambiguities Removal:**

1. 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.

1. 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 oa Taj Hotel Mumbai in 2008 etc. Therefore, this requirement is dispensed with.

c) 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.

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d) 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.

**11)** **Which buildings doesn’t need “No Objection Certificate” given their inherent nature of activities?**

All Small Scale Industries except hazardous units are here by exempted from “No Objection Certificate” as per law. However, they are recommended to install fire safety equipments depending on fire load. All Small Scale Industrial parks having more than 10 units, shall have park level Fire Safety Committees as specified in clause(6).

**Low Hazard buildings such as**

1. ETP, Scrap storage.
2. Fabrication Workshop
3. Security, Time Office
4. Water Plants
5. Canteen/Dinning Halls
6. Admin Offices Conference Halls
7. Vehicle parking
8. Utilities
9. Engineering Stores

which are less than 15 meters in height, have multiple exits are exempted from “No Objection Certificate” in all industries.

**12) Alignment of Interests:**

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.

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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, methods and tested in presence of following experts.

|  |  |  |  |
| --- | --- | --- | --- |
| Sl. No. | Name | Name of the University | Qualification |
|  | Prof. K.N. Satyanarayana | IIT, Tirupati | PhD Civil Engineering |
|  | Sri. P.C. Ramesh Kumar | R & B Chief Engineer | M.Tech, LLB |
|  | Prof. S. Srinivasa Prasad | V.R. Siddartha Engineering College | PhD Mechanical Engineering |
|  | Prof. Manas Kumar Pal | VIT – Andhra Pradesh Campus | PhD Mechanical Engineering |
|  | Prof. Venkata N. Nori | SRM University | PhD Mechanical Engineering |
|  | Sri. D. Seshi Reddy | KL University | M Tech, EEE |

The experts and all stakeholders are satisfied with the prescriptions of this notification as adequate to stop/control fires in the incipient stages given that the professional fire fighters located in about 180 fire stations across the State are ever ready to step in, within minutes, working 24 x 7 and 365 days.

In designing, testing, evaluating and in creatively finding solutions, the invaluable contributions of Sri. Dinesh Kumar, General Manager (Fire Services) ONGC, Rajahmundry, Sri. Himanshu Sekhar Sahu, General Manager (Fire Services) ONGC, Kakinada and Sri. Rahul Ramkrishna Joshi, Chief Manager (Fire Services) ONGC, Kakinada and many others are hereby acknowledged and commended.

The above minimum requirements for issue of “No Objection Certificate” are hereby notified to avoid compelling owners to install escalating ladder of equipments and to ensure transparency.

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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 in hazardous industries.

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

**(PRATAP MADIREDDY, I.P.S.,)**

**DIRECTOR GENERAL**

State Disaster Response & Fire Services, A.P., Vijayawada.

Enclosure: ANNEX B

**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 oC Physical State Appearance | | | | | |
| Melting/Freezing Point oC Vapour Pressure @ 35 oC mm Hg Odour | | | | | |
| Vapour Density Solubility in water @ 30 oC Others  (Air=1) | | | | | |
| Specific Gravity *p*H | | | | | |
| Water = 1 | | | | | |
| **3. Fire and Explosion Hazard Data** | | | | | |
| Flammability Yes/No LEL % Flash Point oC Auto ignition oC  Temperature | | | | | |
| TDG Flammability UEL % Flash Point oC | | | | | |
| Explosion Sensitivity to Impact Explosion Sensitivity Hazardous  to Static Electricity Combustion  Products | | | | | |
| Hazardous Polymerization | | | | | |
| Combustible Liquid Explosive Corrosive  Material 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. | | | | | |

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|  |  |  |
| --- | --- | --- |
| **5. Health Hazard Data** | | |
| Routes of entry | | |
| Effects of Exposure/  Symptoms | | |
| Emergency  Treatment | | |
| TLV (ACGIH) ppm mg/m3 STEL ppm mg/m3 | | |
| Permissible  Exposure Limit ppm mg/m3 Odour Threshold ppm mg/m3  LD50 LD50 | | |
| NEPA Hazard Health Flammability Stability Special  Signals | | |
| **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  Mailing Address  Telephone/Telex Nos.  Telegraphic Address | | Contact person in emergency |
| Local bodies involved |
| Standard packing |
| 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 up to 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. | | |