



Developing Onsite Emergency Plan For Ensuring Safety

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Abstract--- The purpose of this paper is to assess the creation of a comprehensive Onsite Emergency Plan tailored for a specific location, such as a workplace or industrial facility. Commonly referred to as an Emergency Response Plan or Emergency Action Plan, this document serves as a vital blueprint for guiding responses to a variety of emergency scenarios. Its primary objectives are to ensure the safety and well-being of individuals, minimize property and environmental damage, and ensure regulatory compliance. Key components of the plan encompass emergency contact details, specific response procedures for various emergencies, clearly delineated evacuation routes, communication protocols, roles and responsibilities within emergency response teams, provision of essential emergency equipment and resources, employee training and drills, and periodic plan reviews and updates. For industries dealing with hazardous materials, the plan also includes protocols for the safe handling and containment of such materials during emergencies. Through meticulous planning and preparation, this project aims to establish a structured, coordinated, and efficient response framework, ultimately safeguarding lives and assets within the facility and adhering to regulatory requirements in high-risk industries.

Keywords: Onsite emergency plan, Evacuation plan, Response team, firefighting training

I. INTRODUCTION

The need for preparedness and swift, coordinated responses to emergencies is paramount, particularly in settings such as workplaces and industrial facilities where the safety of individuals and the protection of assets are of paramount concern. This project centres on the development of an Onsite Emergency Plan, often referred to as an Emergency Response Plan or Emergency Action Plan, meticulously tailored to the specific requirements of a designated location. The significance of such a plan cannot be overstated, as it serves as the cornerstone for guiding responses to an array of potential emergency scenarios, ranging from fires and chemical spills to natural disasters, medical crises, and security incidents. Its overarching mission is threefold: to ensure the safety and well-being of all individuals within the defined location, to minimize damage to property and the environment, and to maintain strict adherence to regulatory standards.

With its multifaceted components, this project encapsulates critical aspects, including the provision of emergency contact information, the formulation of precise response procedures for diverse emergency situations, the establishment of clear evacuation routes,

the delineation of communication protocols, the allocation of roles and responsibilities within the framework of emergency response teams, the procurement and maintenance of essential emergency equipment and resources, the organization of employee training programs and drills, and the commitment to regular plan reviews and updates. For industries dealing with hazardous materials, the plan also encompasses specific protocols for their secure handling and containment during emergencies. By undertaking this endeavour with meticulous planning and unwavering dedication, the project aspires to forge a robust, coordinated, and efficient emergency response framework, thereby safeguarding the lives and assets entrusted to its care, and ensuring unwavering compliance with the regulatory imperatives that govern high-risk industries.

II. PROBLEM IDENTIFICATION

The primary problem is the absence of a well-defined and comprehensive Onsite Emergency Plan tailored specifically for the unique risks and challenges faced by a Red Category industry with a large workforce of 3000 employees. Without a proper plan in place, the organization might struggle to respond effectively during emergencies, potentially leading to increased risks to employee safety and facility damage. The lack of a thorough risk assessment specific to the Red Category industry hampers the ability to identify potential hazards accurately. A proper risk assessment is crucial for understanding the scope and magnitude of potential emergencies, which is essential for developing effective mitigation strategies and emergency response plans. In emergency situations, clear and efficient communication is vital to coordinate response efforts and disseminate critical information. The absence of a robust communication system or a well-defined chain of command can lead to confusion and delays in response, potentially exacerbating the impact of emergencies.

Employees' preparedness and knowledge of emergency procedures are essential for a successful response. A lack of regular and comprehensive training might result in employees being ill-prepared to handle emergencies, leading to suboptimal response actions and increased risks during critical situations. Red Category industries often deal with hazardous materials, which require careful handling and containment in case of spills or accidents.

Without a formal Onsite Emergency Plan, the organization might be adopting a reactive approach to emergency preparedness. Proactive planning and preparedness are essential to minimize the impact of emergencies and ensure a safer work environment for employees. Non-compliance with safety regulations applicable to

the Red Category industry might result in legal and financial consequences. A well-structured Onsite Emergency Plan should ensure adherence to safety standards and regulatory requirements.

III. METHODOLOGY

The comprehensive methodology involves an initial phase of assessing the facility and understanding regulatory requirements, followed by rigorous hazard identification and risk assessment. Stakeholder engagement plays a crucial role in gathering insights and expectations. Subsequently, the plan is meticulously developed, encompassing emergency response procedures, evacuation and sheltering plans, employee training, hazardous material management, communication and coordination protocols, and regulatory compliance. Regular plan reviews, documentation, and performance evaluations ensure ongoing effectiveness, while public awareness strategies inform nearby communities. This methodology guides the systematic creation and maintenance of an Onsite Emergency Plan, tailored to mitigate risks in hazardous industries.



Fig1: Flow Chart

A. Assessment and information gathering:

Explanation: This initial phase involves a thorough assessment of the facility and gathering essential information. It includes identifying hazardous materials, equipment, and processes within the facility. Furthermore, it entails collecting data on existing safety protocols, regulatory requirements, and any historical incident reports. Key personnel and stakeholders are identified and engaged in this phase to provide insights and expectations, setting the foundation for the subsequent steps in the methodology.

B. Regulatory Compliance review:

Explanation: This crucial step involves a comprehensive examination of standards that are applicable to the hazardous industry. It is essential to ensure a clear understanding of legal requirements related to emergency planning and response. This review provides the necessary framework for developing an Onsite Emergency Plan that adheres to regulatory mandates, ensuring both safety and legal compliance within the hazardous industry context.

C. Plan development:

Explanation: This phase involves the meticulous development of the Onsite Emergency Plan itself. It encompasses the creation of detailed emergency response procedures tailored to various scenarios, such as chemical spills, fires, explosions, natural disasters, and security threats. It also includes the clear definition of roles and responsibilities for all personnel during emergencies and the establishment of communication protocols, including notification procedures for employees and external authorities. The Plan Development phase forms the core of the methodology, ensuring that the facility is well-prepared to respond effectively to hazardous situations.

D. Evacuation plan:

Explanation: This critical component involves the design and development of evacuation and sheltering procedures. It includes the creation of clear and well-structured evacuation routes and assembly points, taking into account the hazardous nature of the facility. Additionally, it encompasses the development of shelter-in-place procedures for situations where evacuation may not be feasible or safe. The objective is to ensure the safety of all personnel within the facility during emergencies, providing them with easily accessible and understandable instructions for evacuation and sheltering.

E. Hazardous material management:

Explanation: This critical phase focuses on the establishment of protocols and procedures for the safe handling, storage, labeling, and disposal of hazardous materials within the hazardous industry. It ensures that employees dealing with hazardous materials receive specialized training and follow stringent safety measures to prevent incidents. Effective hazardous material management is integral to mitigating risks and maintaining a safe working environment, aligning with the overarching goal of the Onsite Emergency Plan.

F. Communication and coordination

Explanation: This aspect involves establishing a robust communication system within the facility, encompassing alarm systems, two-way radios, and other means of communication essential for emergency response. It also extends to fostering collaboration with local emergency services and authorities to ensure clear lines of communication and coordination during emergencies. Effective communication and coordination are fundamental to executing the emergency plan successfully and mitigating the impact of hazardous incidents.

G. Plan review and continual improvement

Explanation: This phase emphasizes the ongoing evaluation and enhancement of the Onsite Emergency Plan. Regular reviews are conducted to assess the plan's effectiveness, with a focus on identifying areas for improvement. Lessons learned from emergency drills, incidents, and changing regulations are incorporated into plan updates. This iterative process ensures that the plan remains up-to-date, responsive to evolving risks, and continuously improves the facility's emergency preparedness and response capabilities.

H. Documentation and reporting

Explanation: This phase involves the maintenance of detailed documentation related to the Onsite Emergency Plan. It includes the creation and upkeep of standard operating procedures, contact lists, and incident reports. Effective documentation ensures that critical information is readily accessible during emergencies and aids in post-incident analysis. Incident reporting mechanisms are established to facilitate the collection and analysis of data from emergency events, enabling continuous improvement of the plan and response strategies.

I. Finalization and implementation

Explanation: This crucial phase marks the completion of the Onsite Emergency Plan. It involves finalizing all plan components, incorporating feedback from stakeholders and relevant authorities, and ensuring that the plan aligns with regulatory requirements. Once finalized, the plan is implemented across the facility, and all personnel are made aware of its existence and contents. This phase emphasizes the importance of translating planning efforts into practical actions, ensuring that the facility is well-prepared to respond effectively to hazardous situations as outlined in the plan.

J. Evaluation of plan

Explanation: This phase involves the systematic evaluation of the effectiveness of the Onsite Emergency Plan. Regular evaluations and audits are conducted to assess how well the plan performs in practice. These assessments consider factors such as response times, communication effectiveness, and the adequacy of procedures. Lessons learned from these evaluations are used to identify areas for improvement, and adjustments are made to the plan accordingly. External audits or reviews may be sought from regulatory agencies or safety experts to provide an impartial assessment of the plan's compliance and effectiveness. Evaluation and audit processes are integral to ensuring that the plan remains current, responsive, and continuously refined to meet the evolving needs of the hazardous industry.

K. Public awareness and communication

Explanation: In this phase, strategies are developed to inform nearby communities and the public about potential hazards and emergency response measures. Clear and transparent communication is key to building trust and ensuring public safety. Public awareness campaigns, community meetings, and information dissemination initiatives are implemented to educate those living in proximity to the hazardous facility about emergency procedures and what to do in case of an incident. Effective communication with the public helps minimize panic and ensures a cooperative response during emergencies, benefiting both the facility and the surrounding community.

IV. DATA COLLECTION AND ANALYSIS

1. Legal requirement.

The preparation of On-Site Emergency Plan is the responsibility of Occupier and factory management.

- The Factories Act-1948, Section 41 B (4): "Every Occupier shall, with the approval of Chief Inspector of Factories draw up an On -site emergency plan and detailed disaster control measures for his factory and make known to all the workers employed there in and to the general public living in the vicinity to the factory, the safety measures required to be taken in the event of accident taking place".
- Tamil Nadu Control of Industrial Major Accident Hazards Rules 1994. (CIMAH Rules)
- Under Environment Protection Act 1986, Manufacture, Storage and Import of Hazardous Chemicals Rules 1989, Rule 13. " An occupier shall prepare and keep an up to date On-Site emergency plan"(where the threshold

quantity of hazardous chemicals exceed as given in the Schedule 2 or 3 of the said rules)

2. Site incident controller's activity

- Reach emergency spot and assess the situation
- Communicate to SMC through the runner.
- Give appropriate instructions to the responders of the emergency.
- Arrange shut down of plant if needed
- Communicate requirement of additional resources to SMC
- In case of after office hours and holidays hold charge till the site main controller (SMC) or responsible person arrives at site.
- Arrange for evacuation of persons based on the type of emergency.
- Arrange for transporting the victims to render first aid.
- Get the advice from SMC and act accordingly.
- Inform SMC about the progress of the site control activities through runner. Arrange for safe shut down of plant & ensure safety of people and electrical isolation of the plant.
- Arrange for removal of ignition sources nearby.
- Depending on the site conditions, advise the firefighting actions & precautions.
- Advise and arrange for containment measures.
- Ensure availability of PPE, tools and appliances.
- Co-ordinate action on evacuation of persons.
- Overseas activities concerning maintenance - rescue, first aid & transportation.
- Advise appropriately in case of large spill.
- Bring the situations under control
- Arrange for decontamination of the affected area.
- After mitigation of emergency inform SMC to give all clear signals.
- Preserve evidence for further investigations.
- Attend the SMC's meeting and give the inputs to avoid such recurrences.

3. Rescue team.

- Rescue team will be formed by the SMC at the time of emergency if needed.
- Render assistance if any victim got affected.
- Render assistance for first aides and transportation to hospital.

4. Emergency Team - Fire

Emergency team will be formed by the SMC at the time of emergency if needed

- Upon hearing the alarm assemble at the assembly point
- As per the situation, reach the emergency spot with Fire Proximity Suit and required equipment.
- As per the SIC coordinator carry out fire-fighting operations.
- After putting out the fire, rewind everything.

5. Emergency Team – Hazardous Material

- Carry the neutralizing agents like lime sand etc...
- Take appropriate steps to contain any acid leaks. Assist to take shower in case of acid spill over any body.
- Ensure / confirm the area is free from the hazardous chemicals .Do housekeeping works and make the area ready for plant start-up.

6. Emergency Team – First Aid

- Ambulance must reach the nearest safe place to the incident scenario.

- Get the first aid box ready
- Get the medicine box, splints, stretcher etc.
- Render first aid for the victim along with rescue team
- Take the victim to the emergency vehicle.
- Accompany the victim till he reaches the medical attention by a qualified medical practitioner.
- Inform SMC about the condition of the victim.

7. All other Employee

- Upon hearing the alarm, stop all the activities.
- Make a safe shut down in the process area.
- Take route of upwind directions to go to the assembly point.
- Assemble at the assembly point
- Make a row for enabling head count
- Do not move unless otherwise instructed by SMC
- After hearing all clear sirens, resume work.

8. All contractors

- Upon hearing the fire alarms stop all activities.
- Fabrication persons must ensure the power supply is isolated for the welding machine
- Persons working at height must stop their work and carefully comedown
- Note the windsock direction and go upwind.
- Assemble at the assembly point and form a line
- Ensure the persons are reporting to their contract supervisors
- Supervisor must report about the missing persons to the security/head count person

10. Liasoning – HR officer

- Will report to SMC at ECC
- Obtain information on head count at assembly point
- Co-ordinate with medical team on first aid and hospitalization and arrange for medicines.
- Exercise control on vehicle movement to & from plant.
- Informs relatives of victims / injured.
- As directed by SMC. Interacts with government officials like Police, Factory Inspectorate, and PCB etc.
- Co-ordinate with outside hospitals for transport as and when needed
- Arranges for adequate fuel availability for vehicles.
- Take steps to ensure all relief / rehabilitation measures
- Maintain liaison as instructed by SMC. (communication)

11. Safety officer

- Report to SIC.
- Assist SIC to control the emergency.
- Give inputs from MSDS if required.
- Certify the area is free from hazardous materials.
- Report to safety officer

12. Permit to work system

- All permits stand cancelled if emergency is declared
- People working at height, shall stop the work safely and comedown and reach the assembly point.
- People involved in vessel entry, shall stop the work, exit the confined space and reach the assembly point.
- People performing hot works, shall stop power supply to welding machine, drilling machine, and any other power tool.
- People engaged in the gas cutting job, shall stop the work, close the gas cylinder and reach assembly point.
- People performing works under normal work permit, shall stop the work and return to assembly point.

13. Communication of emergency

- The siren is used to intimate everyone about the existence of an emergency in the plant.
- The siren is located at security. Security shall activate it on emergency communication. The siren will be of high pitched wailing sound for 10 seconds and repeated twice, they're by differentiating from the normal tone.
- For all clear, operate the siren for 30 -60 seconds continuously.
- Intercom is available for internal communications. If telephones are not working, mobile phones will be used.

14. Emergency Control Centre

- Emergency control center (ECC) – Safety Department has been designated as the emergency control center.
- Site main controller will be in charge of the emergency control center. SMC will receive and give all communications from this center.
- Emergency control center will have the following infrastructure:
 - Copy of OSEP.
 - Plant layout diagram
 - List of first aid trained emergency responders available at site.
 - MSDS for chemicals
 - All Emergency contact numbers
 - First aid box
 - Personnel protective equipment's.
 - Metrological data

15. Firefighting system

The fire sump capacity of 480 KL for emergency purpose. We have additional capacity on overhead tanks around 85 KL as per Tamil Nadu Factories Rules 1950 .The pump house is equipped with a jockey pump and main pump both electrically driven and a diesel engine driven pump. All the pumps will be in auto mode and kept at standby pressure of 7kg/cm². When there is a drop in pressure the electrical pump and diesel pump will switched on depending upon the pressure drop and the power supply.

The facility is provided with 201 no's of fire extinguishers at various types depending upon the location of the extinguisher. Apart from the fire extinguisher the factory is surrounded by 4 nos. Double Headed and 38 single headed hydrant points. There are 1 no of 360 degree water monitors .Each hydrant point is equipped with 2 No's of hoses each 30m in length with Brass nozzle. Triple purpose nozzles & fog nozzles are provided at strategic places to help in making water spray.

Foam Arrangement will be provided to make foam with the help of water from Hydrant outlets and foam compound stored in jetty canes. Foam compounds are of two kinds. Protein foam and aqueous film forming foam (AFFF). Branch pipes like FB5X and FB10X for making foam compound will be stored in foam trolleys located in each module.

Fire trolley & foam compound Fire trolley is equipped with all necessary supplies for replenishment required in the attempt to extinguish large fires. Stock of foam compound in drums is also available. The hydrant points are capable to pierce water at 7kg /cm². The office rooms will be provided with required number of smoke detectors in office area. And also manual call points will be installed in the facility to alert and communicate employees in case of emergency and ensure safe egress of employees.

P&T Phone, mega phone, walkie-talkies, flameproof torch etc. ECC is placed near to the assembly point so that communication and control will be quick.

Serial number	Fire Hydrant Number	Hose reel number	Location
1.	FH-01	HR-01	Gents checking
2.	FH - 02	HR - 02	Ground Floor - Chain Hammering Opposite
3.	FH - 03	HR - 03	Ground Floor - Scrap area
4.	FH - 04	HR - 04	Ground Floor - RIFC
5.	FH - 05	HR - 05	First Floor - Bluemoon Entrance
6.	FH - 06	HR - 06	First Floor - Bluemoon Leaching area
7.	FH - 07	HR - 07	EXPO
8.	FH - 08	HR - 08	Second Floor - Chain Furnace opposite
9.	FH - 09	HR - 09	Second Floor - Chain entrance opposite
10.	FH - 10	HR - 10	Second Floor - Silver cell opposite
11.	FH - 11	HR - 11	Second Floor - Manager's cabin near
12.	FH - 12	HR - 12	Third Floor - Foundry Opposite
13.	FH - 13	HR - 13	Third Floor - Die Near
14.	FH - 14	HR - 14	Third Floor - Gold & Silver Forming opposite
15.	FH - 15	HR - 15	Third Floor - R&D Lab near
16.	FH - 16	-	Near Main Gate
17.	FH - 17	-	Near Retail /Admin Building
18.	FH - 18	-	Near Power House
19.	FH - 19	-	Near Compressor Room
20.	FH - 20	-	Props Opposite
21.	FH - 21	-	Opposite to Diesel Yard

22.	FH - 22	-	Foam 360 Monitor
23.	FH - 23	-	Opposite to ETP
24.	FH - 24	-	Near Ammonia Yard
25.	FH - 25	-	Opposite to Compressor Shed
26.	FH - 26	-	Canteen near
27.	FH - 27	-	RO Outside
28.	FH - 28	-	Safety Department Opposite
29.	FH - 29	-	Old Store Opposite
30.	FH - 30	HR - 16	Parking
31.	FH - 31	HR - 17	Parking
32.	FH - 32	HR - 18	Parking
33.	FH - 33	-	First floor - Retail Building
34.	FH - 34	-	Second floor - Retail Building
35.	FH - 35	-	Third floor - Retail Building

Table 1

15. List of first aid trained personnel

The trained first aid person involves all kind of fire incident that can be either minor fire or major fire

Serial number	Department	Emp. No.	Employee name
1.	Chain hammering	E17558	Harish
2.	Utensil east	E15864	Chandan swain
3.	Sj plating	E10043	Robin son raju
4.	Retail silver store	E11030	Eshwari.s
5.	Utensil west	E13577	Muthu bose
6.	Idol decorative	E02161	Surya
7.	Recovery	E15452	Basanta kumar gouda
8.	Rf&rc	E00973	Ranjith kumar.p
9.	Packing	E15248	Sritam maharana
10.	Texturing	E01644	Nilambar swain
11.	Fgs	E09789	Jaslin anto george
12.	Gents checking	E04841	Ramraj
13.	Pd final	E07747	Selvi.m
14.	Silver machine chain	E06904	Praveen kumar.p
15.	Chain cutting	E19660	Karuppasamy
16.	Pd cell-3	E14479	Ramalakshmi
17.	Pd cell-1	E07836	Arun kumar

18.	Opd	Nap1779	Joycaroline s
19.	Payal	E19339	Suman lohar
20.	Silver cell	E02325	Lakshmanan s
21.	Silver separation&casting	E07988	Deepika.n
22.	Silver wax	E00482	Lavanya.s
23.	Zilara cell	E17881	Alexandar asudoss
24.	Sj-cad	E01990	Thayanithi.j
25.	Mfd	Nap1386	Selvi
26.	Jewel foundry	E05613	N renukadevi
27.	Sculpture	E17455	Srimathi
28.	Idol texturing	E14162	Meena b
29.	Electroforming idol plating	E06144	Sebasti
30.	Idol paking	E07893	Karthick
31.	Die	E16353	Ponsujith
32.	Cad	E19346	Aravind
33.	Gold store	E09340	Karthick s
34.	Silver emptying	E13222	Hariharan
35.	Jewel emptying	E01638	Pradeepkumar
36.	Jewel forming	E14282	Manojkumar
37.	Silver forming	E08232	Kaviyarasu.k
38.	Chemical lab	E20087	Anandhraj
39.	R&d	E13109	Karthik selvaraj
40.	Wax upstream	E12719	Sreekanta
41.	Canteen	E19980	Guruprasath
42.	Plasma security	E04841	Ramraj
43.	Plasma	E01545	Satheesh
44.	Leaching	E02740	Raja
45.	Ro & etp	E01916	Balasubramani
46.	Qms	E18927	Prathisa
47.	It	E18997	Meera
48.	Power house	E18906	Palpandian
49.	Training centre	E00159	Karthik.k
50.	Expo hall	E16251	Vignesh b
51.	Photography	E07289	Muthulakshmi
52.	House keeping	E20607	Karan

Table 2

V. PREVENTIVE MEASURES

1. Preventive methods: L.P.G unloading

The following methods are to be followed while unloading

- Stop/Start Unloading by operating the unloading valve using Remote Operated Valve (ROV) control switch provided at the Battery Limit.
- Ensure Nitrogen blanketing to vaporizer units.
- If possible blanket road tanker with nitrogen.
- Start sprinkler to the L.P.G yard.

- Use fire retardant cloth during large Liquid Spills/Leak of L.P.G.
- Use firemen gumboot (ISI) for L.P.G area.
- Face shield for face and eye protection.
- Use only non- sparking tools
- If possible contain the leak using lime sand mixture.
- Ensure Static electricity controls like earthing bonding are intact in normal working days and maintain records for verification during emergency.

2. Preventive method for firefighting:

The following methods can be followed for firefighting

- Fire suit is to be used in case of fire.
- In case of leak, stay at least 10 feet away from the emergency spot and render firefighting

3. Spill overs

- Pour cold saline water immediately.
- Apply water jell immediately.
- Remove the clothing immediately if possible.
- Wrap the affected area with water jell
- Send to hospital.

4. For acid spill/splash/burns

- Water washes the area at least for 15 minutes. Better take a shower under safety shower.
- Apply saline water followed by the application of cream "Silverex".(silver sulphadiazine)
- Send to hospital.
- In case of eye spills, use eye wash bottle for cleaning eyes in open position.
- Then use normal "Eye Applicaps /Genticin Eye Drops".
- Send to hospital

VI. RESULT DISCUSSION

The comprehensive methodology presented here outlines a systematic approach for developing an Onsite Emergency Plan in a hazardous industry. Initial phases involve information gathering, compliance review, hazard assessment, and stakeholder engagement, ensuring a solid foundation for planning. The core of the methodology focuses on the development of detailed emergency response procedures, evacuation and sheltering plans, training, hazardous material management, and communication protocols. Continuous improvement is embedded in the plan through regular reviews, audits, and documentation practices.

The methodology underscores the significance of regulatory compliance, public awareness, and coordination with local authorities, ensuring alignment with legal requirements and fostering cooperation with external agencies. It also highlights the importance of employee training, an effective communication system, and clear roles and responsibilities during emergencies.

By following this methodology, hazardous industries can create robust Onsite Emergency Plans that prioritize safety, risk mitigation, and effective response. The emphasis on ongoing evaluation and public awareness reinforces the commitment to continuous improvement and community safety. This methodology serves as a valuable guide for enhancing emergency preparedness and safeguarding lives and assets within hazardous industrial settings.

VII. CONCLUSION

In the realm of hazardous industries, where the potential for emergencies looms large, the development of a comprehensive Onsite Emergency Plan is not just a regulatory requirement; it is a paramount responsibility. The methodology outlined herein offers a systematic and holistic approach to crafting such a plan, tailored

to the unique challenges and risks faced by these industries. Beginning with thorough assessments and regulatory compliance checks, the methodology delves deep into hazard identification, stakeholder engagement, and meticulous plan development. Evacuation and sheltering strategies, along with rigorous employee training, emerge as cornerstones of preparedness, underscoring the commitment to employee safety. Hazardous material management takes center stage to mitigate risks, while robust communication and coordination protocols ensure a synchronized response in times of crisis. Plan reviews, audits, and documentation practices underpin a culture of continual improvement. Notably, the methodology extends beyond facility boundaries, addressing public awareness and cooperation with local authorities, emphasizing a commitment to the safety not only of employees but also of nearby communities. In sum, this methodology is a guide to fostering a proactive approach to emergency preparedness in hazardous industries. By adopting this systematic framework, organizations can mitigate risks, protect lives and assets, and navigate the unpredictable terrain of emergencies with resilience and efficiency.

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