

Emergency Preplanning and Prevention Activities- The Key to a Successful Failure

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This paper will focus on emergency preplanning and prevention activities at fixed facilities. Three main topics will be explored using a case study based on a large scale fire event: The session will address the need for emergency preplans, prevention planning, key planning elements, as well as coordination of preplans with the community.

Emergency Services, which includes fire department, emergency medical services, emergency management agencies, and HAZMAT, are key members of the community that respond to fixed facilities during an emergency. To assist attendees with emergency planning, a matrix was developed to outline key plan elements and the actions that can be taken before and during an incident with emergency services to increase the chances of a successful failure.

Coordination with Emergency Services

Basic Plan/Procedure

Before the Incident

During the Incident

Fire Prevention Plan

- The fire hazard analysis, which is a list of all major fire hazards. This list should include details on:
 - Proper handling and storage procedures for materials that pose a fire hazard,
 - Potential ignition sources, including control measures,
 - Fire protection equipment necessary to control each identified hazard;
- A housekeeping plan to control accumulation of flammable and combustible waste materials;
- Preventative maintenance procedures for heat-producing equipment to prevent ignition of potentially flammable or combustible materials used in the process;
- The name(s) or job title(s) of employees responsible for the preventative maintenance and housekeeping procedures.
- A training program that informs employees of the fire hazards in their work area and the steps that must be taken to minimize these hazards, all at the time of initial assignment.

A proper fire prevention plan, while not strictly required from a regulatory standpoint, is the key to minimizing the need for emergency services.

As part of the fire prevention plan, sustained housekeeping activities will help prevent the possibility of a fire or chemical incident and minimize the effects should an incident occur. Regular employee training sessions, workstation auditing, and enforcement of corrective actions will help make housekeeping activities sustainable. Insurance loss control representatives can assist with auditing activities to add a layer of expertise and second set of eyes that do not continuously observe the area.

Contact emergency services to review materials with special fire hazards, such as combustible metals or water reactive materials, and any special equipment present to extinguish or control fires involving these materials, such as class D fixed extinguishing systems. This will allow emergency services to add this information to the preplan for the facility.

Good housekeeping improves conditions that emergency responders will work in during a response. Minimizing stacks of pallets, drums, and other packaging material will reduce the potential for responder injury should these stacks become unstable and fall.

Maintaining access space around electrical panels, disconnect switches, and valves will provide easy access for responders to eliminate electrical hazards and isolate leaking pipe lines. Minimizing clutter on the floor by organizing equipment, raw materials, and products will decrease the potential of emergency responders getting disoriented or lost while working in an unfamiliar environment.

Ensure subject matter experts that helped to establish the fire prevention plan are available to communicate with emergency services should questions arise regarding the response to the material involved in the incident. This will increase the effectiveness of the response and help ensure the safety of the responders.

Emergency Action Plan

- Procedures for employees to report fires or other types of emergencies. The employer will need to define the different types of emergencies that could occur in the workplace.
- Procedures for employee evacuations from the workplace. These procedures could include a full evacuation, partial evacuation, or shelter-in-place based on the emergency. Identification of exit routes are part of this element and are often documented and posted as maps.
- Procedures to be taken by employees that do not immediately evacuate in order to shut down safety critical operations that cannot operate unattended, including specific steps that will be taken to protect these employees.
- Headcount Procedures
- Procedures for employees performing medical and rescue duties during the emergency.
- Designation of personnel that employees or individuals with responsibilities under this plan can contact for more information about the plan.

Evacuation headcount procedures need to be actionable and exercised. Employee headcount lists need to be updated regularly and headcount locations need to be maintained (lighting, walking/working surfaces, secondary locations for inclement weather). Procedures for accounting for employees working off-shift or during non-routine days such as Sundays or holidays should also be practiced regularly to ensure a facility can effectively and accurately account for employees at any time an emergency response is made to the facility. Provide

emergency services with muster or command post locations to facilitate information sharing between the groups.

Review critical operation shutdown procedures, including employee responsibility along with the location of the critical operation shutdown locations to emergency services. Emergency services can place this information into a facility preplan in case rescue or additional support is needed at the shutdown locations.

Ensure that liaisons are designated and ready to communicate with emergency services regarding the status of the headcount and critical shut down operations.

Liaisons should be identified by a high visibility piece of clothing, such as a vest, and have the ability to communicate between multiple headcount and critical shutdown locations via cellphone or radio.

A count on the number of employees engaged in critical shut down operations, the exact location of the employees, and the extent to which critical shut down operations are complete should be available. A detailed plant map will assist with this process.

Personnel designated as informational contacts should be available as a resource to emergency services should the incident escalate and additional actions plans need to be put in place. These action plans could cover emergency services personnel depending on the location and size of the escalation.

Emergency Response Plan

An emergency response plan focuses on specific chemical emergencies and is required for facilities that have employees that will respond to an incident rather than evacuate. Per 29 CFR 1910.120, the plan will include:

- Pre-emergency planning and coordination with outside parties.
- Personnel roles, lines of authority, training, and communication.
- Emergency recognition and prevention.
- Safe distances and places of refuge.
- Site security and control.

- Evacuation routes and procedures.
- Decontamination.
- Emergency medical treatment and first aid.
- Emergency alerting and response procedures.
- Critique of response and follow-up.
- PPE and emergency equipment.

Contact the emergency services providers having jurisdiction over the plan facility, including the fire department, emergency medical services, emergency management agencies, and HAZMAT to conduct an initial briefing on the contents of the plan. This briefing should be repeated annually or immediately on plan changes.

Provide a tour of the facility to highlight hazardous areas, evacuation or shelter-in-place locations, control equipment (such as gas detection and alarm systems, relief vents, blow-out walls, wind socks, emergency shutdown controls, etc.) and emergency response equipment locations.

If an in-house emergency response team will be utilized, coordinate the selection of PPE and response equipment with local emergency services providers to maintain familiarity between entities. Invite emergency service providers to participate in drills with the in-house team to share operational knowledge and develop a working relationship before a response.

Coordinate special medical treatment needs (such as calcium gluconate for hydrofluoric acid exposure) with emergency services/local hospitals.

Be prepared to provide liaisons to emergency services, possibly one concerning the process generating the emergency and one with working knowledge and experience on the emergency response plan.

Document in detail all steps taken to mitigate or control the emergency, especially location of in-house emergency responders and contamination zones. This information will need to be reviewed with emergency services on arrival to assist with their initial size-up.

Be prepared to turn operational control of the incident to the chief officer of the responding agencies; however, be prepared to support the responding agencies response activities as requested.

Chemical Management

- Labeling: Proper labeling of primary and secondary containers, process vessels, and piping will enable identification of potential hazards.
- MSDS: Maintain copies of MSDS at locations within the facility that may be accessible during an incident, such as a guard shack or outbuilding. If MSDS are digitized, ensure a company representative is available to provide access with a laptop or other device.
- Reporting: EPCRA Section 311 requires submission of an MSDS for each hazardous chemical, or a list of chemicals, that meets or exceeds the listed threshold planning quantity to the SERC, LEPC, and local fire department. Under section 312 of EPCRA, these facilities must also submit an annual inventory of covered chemicals to the SERC, LEPC, and local fire department.
- Storage: Incorporate chemical review as part of the job hazard analysis with special emphasis on potential incompatible and water reactive materials. Ensure that these chemicals are stored appropriately to prevent chemical reactions. Inspect storage areas on a regular basis to check structural integrity of containers and secondary containment and ensure inappropriate materials are not present. CAMEO Chemicals is a free resource that can be used to assist with this review (<http://cameochemicals.noaa.gov/>)

Emergency responders may need to identify materials involved in a spill or that may become involved in a fire.

Keep in mind that responders may be wearing multiple layers of PPE (SCBA, Level A Suit) and working in low light conditions.

Labels in good condition that incorporate the NFPA 704 system and that utilize the US Department of Transportation hazard labeling system with a UN identification number will enhance the ability of responders to identify and evaluate potential hazards.

The chemical inventory, or Tier II report, will allow the LEPC and local fire departments to work together to preplan responses to covered facilities. The preplan may include ensuring

appropriate response equipment is available, subject matter experts on specific chemical response are identified, and dispatch protocols include appropriate warnings to responders dispatched to an incident.

Easy access to MSDS at the scene will increase the speed at which responders can develop a response plan. This easy access is especially important in areas dependent on mutual aid plans as the local fire department may not be the first department on scene. Be prepared to provide MSDS and chemical inventory information to responders. A detailed map showing chemical storage areas, including storage volumes and secondary spill containment areas, will help facilitate information sharing with responders.

Be prepared to have a subject matter expert present or available by phone to provide chemical specific information to responders. Information of interest may include possibility of chemical reactions, by-products of combustion, and explanation of health effects, decontamination procedures, and selection of proper PPE. This information exchange will decrease the research time needed by responders to develop a site safety plan.

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