

Plant Emergency Organizations: Achieving a Positive Outcome When an Emergency Occurs

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Introduction

To fully benefit from the engineered protective systems designed into a complex industrial facility, a full complement of "human element" programs must also be established to (a) proactively prevent losses and (b) reactively control losses when an incident does occur. These actions are referred to as the "human element" aspect of risk control and include providing a Plant Emergency Organization (PEO) for incident response. Often this organization is referred to as an "industrial fire brigade" (but can also take on additional responsibilities such as EMS or control of hazardous materials spills, etc.). The scope of their intended responsibilities can only be determined following a careful on site hazard or risk analysis and a review of the available public or other locally available resources that can be quickly and effectively brought to bear in an effort to mitigate an incident.

Since achieving a successful outcome when an emergency situation occurs requires advanced planning and preparation, the business organization must determine the type of emergency response team that is most appropriate for them to establish. Criteria for making the decision of whether or not to embark on such a venture, and to what extent, is going to be based upon numerous factors including: the size of the site, financial resources available to fund the operational expenses, proximity and capabilities of the public fire department, severity of the (fire) hazards, and availability of qualified employees on all shifts to respond should an incident occur.

Although this paper will focus primarily on issues related to addressing fire related hazards, a similar decision making process would be followed when considering the creation of an internal response capability for other exposures such as emergency medical services or hazardous materials incident control. The intent is to logically walk the reader through the various key considerations for establishing and staffing a plant PEO, and the importance of each role

within the plan; before, during and after the incident. It will also include a review of the primary fire department strategic objectives in emergency response and how these should be integrated into the overall facility emergency plan an organization should have in place.

Understanding the Terminology

There are several terms that should be defined to clarify the reader's understanding when discussing the level of interaction the above referenced "human element" will have in the scope of your emergency action plan and plant emergency organization. These positions are those that would require more advanced training than that required of the average employee due to the level of responsibility within the plan.

Emergency Wardens/Marshals (also called Fire Wardens/Marshals): These individuals are typically given responsibility for tasks such as making sure all occupants of specifically assigned areas have cleared the building or taken shelter; or shutting down critical equipment or operations to prevent runaway reactions during an emergency. Training requirements for this level are found in the OSHA standard 29 CFR 1910.38.

Incipient (level) Fire Brigade: These employees are assigned specific responsibility above mere evacuation roles that will include responding for fire control efforts with portable fire extinguishers, and sometimes hand held hose lines from Class II standpipes (limited to 1 ½" diameter hose connections). Their training requirements are stipulated in the OSHA standard 29 CFR 1910.38 and 1910.157.

Structural Fire Brigade: Those with more advanced training in structural fire and higher levels of personal protective equipment (PPE) are trained to use larger hose streams, self-contained breathing apparatus (SCBA) and have the same level of protective clothing as municipal fire fighters capable of protecting them from extremely hot environments. They may use any of the equipment available to an incipient level fire brigade, but may also use larger diameter hose lines from Class I or III standpipe systems within the structure; or may even have their own fully equipped automotive fire apparatus. Training and organizational requirements for this level of organization are found in 29 CFR 1910.156 and 1910.158.

Medical Teams. These persons will have varying degrees of emergency medical training to provide care to injured or ill employees or visitors on site. Simple first aid, patient assessment and stabilization, CPR and/or the use of AED's may fall within the scope of their duties. The degree of their assigned responsibilities depends on the availability and reflex time of outside sources of advanced medical care and transport to a definitive care facility. Training for these personnel can range from simple first aid training, through those certified by the state Emergency Medical Services Commission in each state as EMT's or Paramedics; or licensed Nurses. Those with an EMS certification, or licensed health care professionals must be under the direct or indirect supervision of a licensed physician acting as their Medical Director who will provide guidance on the scope of the treatment they will be able to provide. Depending on the length of time for advanced medical care to arrive at your facility, you may be required to at least maintain workers with training in basic first aid and CPR as stipulated in the OSHA standard 29 CFR 1910.151.

Hazardous Materials Teams: Workers with advanced training in how to handle specific chemical incidents that may occur on site, and may need significant resources in the form of PPE, intervention and containment equipment. Training and organizational requirements for these workers is addressed in the OSHA standard 29 CFR 1910.120.

Probable maximum loss (PML): A mitigated event where at least some of the safety controls work properly and limit the total impact

Maximum foreseeable loss (MFL): An unmitigated total failure of loss prevention/control systems resulting in a complete loss of the affected assets

Considerations for Establishing a Plant Emergency Organization

So you think you want to establish a Plant Emergency Organization? This is clearly not a decision to be made without significant research and ultimately the commitment of a sizable amount of time and money to initiate as well as provide for the continuous support of the operations. This process should be methodical and follow a logical progression through a series of questions and/or statements to arrive at the best decision for protecting the human and material assets of the organization. The steps outlined below are merely a rough guide. The level of detail required for each element will vary depending on your situation.

Step 1: Conduct a Detailed Hazard Assessment of Your Operations

Here you will determine what hazards are present and begin the process of quantifying them as far as severity of the outcomes and probability of the undesired event occurring.

Step 2: Determine Your Goals/Objectives

You must decide what you want to accomplish, whether it be property preservation, safe evacuation of occupants, emergency medical services, preventing release of toxic materials into the environment, business continuity, or corporate branding.

Step 3: Commit to Providing the Necessary Time, Manpower and Financial Resources

This should not only include the immediate expenses to start the process, but ongoing funding to keep up with equipment replacement, maintenance, employee training and supplies as needed. This is going to be a long-term proposition to develop your team, acquire the necessary assets, and train to a sufficient level of proficiency to be effective.

Step 4: Develop an Organizational Statement

This will detail your plans for the scope of your internal operations, how you will interact with the public emergency services, and how you anticipate sustainability of the plant emergency organization. This is required under 29 CFR 1910.156. If the public sector resources have obvious limitations that would prevent them from adequately managing your emergencies, you will need to bridge the gap between current internal resources and those that will be provided by the public sector.

Step 5: Memorandum of Understanding with the Local Fire Department

This gets everyone working from the same playbook as far as roles and responsibilities during an emergency. Details will include how Incident Command will function and how the plans get set

into motion when an emergency occurs. This is going to involve both a review of internal resources, but also what the public sector can bring to the emergency situation. The easiest part of this will be evaluating your internal resources.

Step 6: Evaluating the Capabilities and Limitation of the Local Fire Department

Doing this will involve more than just a review of their ISO Public Protection Classification used by insurance carriers. See the article, "Fireground Strategies and Tactics," published in *Professional Safety* February and March 2008 for more information on understanding fire department operations and limitations.

Step 7: Planning /Logistics

These are key to making sure you have or will have what you need, when you need it and have the ability to use it effectively. Although planning has actually already begun with the needs assessment, this more focused on how to make that positive impact on the emergency using the resources you can have available.

Step 8: Obtain the Necessary Resources

This can be everything from special fire extinguishing equipment, PPE, spill containment, or consumables such as firefighting foam, all the way up to portable fire pumps and rolling fire apparatus.

Step 9: Train, Train, Train and Train Some More

Proficiency in all aspects of what your staff is going to be responsible is the absolute minimum level of competency required. This will often require either internal expertise to already exist, or outside training support will be needed.

Implementation

The Difference between Success and Failure

By avoiding or minimizing devastating property losses, emergency response plans protect jobs and business profits, even in extreme scenarios like the following:

In a large chemical plant, a chemical reaction over pressurized a 1,000 gal. (3,785 liter) stainless steel reactor triggering an explosion. Vessel failure released hot flammable liquids flashing to vapor and exploding inside a chemical processing area.

Seconds after the explosion, the PEO went into action. They called the fire department and directed them to the emergency site from the front gate - an action that is too often delayed. The fire protection specialist, who was outside the building when the explosion struck, radioed the powerhouse to activate the emergency paging system.

The PEO began isolating utilities to the building to ensure the safety of responding personnel. They also began to search for company personnel and rescue them. After all were accounted for, they manned fire hoses and provided final fire extinguishment. Personnel made sure the fire pump was working and the sprinkler control valves were open.

Prompt PEO response and the work of local firefighting agencies plus fully operating sprinkler protection and special protection systems limited damage to the building, adjacent equipment and surrounding tank farms and buildings.

But it is the company's response plan that really set the stage for this success story. The plan required step-by-step PEO training and plenty of backup. A PEO supervisor had been assigned for each operating shift and four alternates were available. All personnel and alternates were trained in incipient firefighting, spill containment and salvage. Trained materials handlers were also available.

Assignments were clear-cut and well-rehearsed during training drills. One person had been assigned to remain in the boiler house and coordinate outside communications. Another person was designated to drive the emergency vehicle to the scene. These and many other details had been spelled out in the response plan.

The Norm, Unfortunately

Too many companies put their facilities at risk by neglecting a thorough emergency response program. The following two losses demonstrate how chaotic response can easily increase property damage.

When a fire ignited at a vinyl floor manufacturing plant, no one was ready. Personnel delayed calling the fire department for 20 minutes. Fire pump operation was essential, but no one checked it or monitored the sprinkler control valve. The presence of a control valve or pump operator might have decreased the time required to reactivate sprinklers during a second fire. The loss cost more than \$2 million.

When a major flood inundated a distribution facility, no one was ready even though flooding had been predicted for several weeks. The PEO did not monitor weather for warning of intense storms. They did not relocate pumps, controls and supplies. They did not assign priorities to decide order of items to be moved based on replacement cost and relative value. They also failed to determine availability of personnel to relocate items. The loss cost about \$1.5 million.

Planning Is Essential

Planning starts with careful research and forward thinking management. The steps are simple, but it takes time to find out what you could be facing and determine resources you need both inside the company and beyond.

Assess your needs

Knowing the strengths and weaknesses at your site will either help or hinder your emergency response. It's important to know what they are. Find out:

- What fixed fire protection is provided? Is it in service?
- Do employees know the locations of fire extinguishers and fire hose stations and how to use them?
- What processing or storage hazards exist?
- What type of natural hazard is the site exposed to? (There is probably more than one.)
- What types of materials are stockpiled and ready for use in case a natural hazard strikes?
- Are there staffing or equipment limitations?

- Have you educated and trained key personnel?
- Are drills and periodic staff training provided?

Next, evaluate the impact of the hazards on your property, the general public, the environment or your ability to resume business after an emergency. Examples of events include: fire, floods, hail storms, winter freeze-ups, roof collapse, windstorms and earthquakes.

How could each one affect your day-to-day business operations? Consult with organizations outside the company, like municipal emergency planners or loss control consultants, to help you identify natural hazards common to your area. Business continuity is an important element in most high-risk facilities. Consideration for worst-case scenarios should be discussed and understood so that the appropriate controls can be implemented to reduce loss exposures to critical equipment and buildings. This information should then be implemented through emergency response strategies. Key information should be documenting including bounding conditions for operating equipment, maximum fire flows based on operating fire suppression and manual hose reels, and minimum staffing.

Carefully research the history of emergencies at your facility. This can be very helpful for developing strategies. In the past, how did the response plan work as a result of incidents like hazardous materials spills, fire protection impairments and utility interruptions, riots and civil commotion, sabotage, bomb threats and poor equipment maintenance? Was the cause related to human error? What worked well? What could be improved? What changes would you make if it happens again?

Prioritize all the emergencies your facility has experienced from the most to the least severe. How frequently might they reoccur and how severely?

Develop strategies. Natural hazard emergency response can vary considerably depending upon the type of occurrence. Take a close look at the nature of each one and develop specific actions you will need to minimize the hazards. Ask your loss control consultant to help you identify each exposure and develop each step of response.

Use internal resources. They can be invaluable for this challenging effort. An Emergency Response Planning Committee – not necessarily the people who will respond to the emergency – can bring expertise from areas such as

- operations
- maintenance
- transportation
- engineering
- public relations
- risk management
- environmental health and safety
- human resources
- security
- legal
- labor relations

Others on staff often make good emergency responders and help reduce training time. Some can help train people or serve as leaders. Examples are volunteer firefighters and heavy equipment drivers. Crane operators, plumbers and electricians can be valuable, too.

Take a look at anything offsite that could expose your facility to emergencies. These hazards (also called "exposures") can be related to environmental problems, neighboring properties, and limited outside access to your property, such as roadway obstructions or dirt roads that easily become impassible during a rainstorm. Other examples of offsite hazards include poor or interrupted utility supplies, seasonal brush or forest fires, or frequent arson strikes. Security-related problems on and offsite can affect your facility. In what ways could each affect your facility?

Identify combustible or lightweight construction and other features such as the age of your building. Does each building meet existing code requirements? Have they been well maintained? Has there been a history of roof, wall or floor leaks?

Identify operations from raw materials coming in the door, to transportation and distribution of finished goods like these:

- Hazardous materials used in processing such as flammable liquids; toxic, corrosive or reactive materials; and combustible metals;
- Fixed equipment and storage hazards such as hydraulic oil-operated equipment, dust- or lint-producing equipment, flammable or combustible coolants, vapor or fume producing materials;
- Fuels and other energy sources used onsite such as natural gas, propane, electrical, flammable as well as other pre-piped and cylinder gases;
- Warehouse storage (products/materials stored) and types of storage like rack, solid or palletized;
- Critical production equipment that would need special consideration during an emergency; and
- Access to rail, truck, and over-the-road transportation to move products and equipment.

Identify protection including:

- Fire protection available such as public water supplies, fire pumps and tanks, booster pumps, gravity tanks, and nearby, open bodies of water;
- Types of fixed automatic fire protection equipment such as sprinklers, gaseous suppression, foam, dry chemical and water mist;
- Types of manual suppression equipment like fire hose stations and fire extinguishers;
- Levees and flood walls;
- Sump pumps, curbs and drains;
- Sand, sandbags, portable barriers, emergency generators and portable pumps.

Document Your Policy

This should contain three statements:

- The Purpose declares the company's intent and objectives. It also specifies planned limitations to responding to site-specific incidents.

- The Policy outlines the plan and top management's commitment. Review the plan at least annually to assure that changing conditions are included and kept current, and that personnel are available and qualified to respond.
- Responsibility designates people by name or title regarding who will generate and maintain the emergency response plan.

Fire Prevention Plan

Fire prevention is more cost effective than dealing with the fire and its aftermath. A strong fire prevention plan that addresses the hazard present in your facility is the first line of defense. Each hazard should be individually assessed to determine the likelihood of it occurring and appropriate risk reduction measures implemented where possible. Employers should have a formal fire prevention plan as stipulated in the OSHA standard 29 CFR 1910.39

Emergency Action Plan

Your emergency action plan as required by the OSHA standard 29 CFR 1910.38 will need to outline the basic roles and responsibilities for those involved in mitigating an emergency, as well as that of members of the general workforce. If you choose to establish an organization that qualifies as a structural firefighting brigade, that organizational statement becomes a supplement to the basic emergency action plan.

Levels of Response and Roles of the Key Personnel

Set up an onsite PEO. Create specific job assignments similar to the ones below and provide training accordingly. Some leading corporations, like airports or big manufacturing facilities, might use much larger staffs. A smaller business comprising of a warehouse and office might need only one person for the entire task.

The *Emergency Coordinator* launches the plan, and organizes training for the PEO to respond efficiently during and after an emergency. Major responsibilities are to analyze each department's site-specific hazards, outline all scenarios every emergency could take, strategize protection, and determine responsibilities for each member of the PEO. To fulfill these responsibilities, the coordinator also:

- Arranges pre-incident planning with the fire service or other public agencies to set up a plan of action in event of a fire or other emergency;
- Establishes step-by-step response procedures for the PEO in handling all emergencies, particularly fire, windstorm, earthquake and snow storms;
- Directs emergency actions during the emergency;
- Makes sure the other PEO members are in place and performing their assigned duties; and
- Assures that emergency materials are available (for natural hazards) prior to the specific season. Sandbags, sand, plywood, nails, snow shovels, snow blowers and portable pumps are typical examples but your list will likely go beyond those.

The *Notifier* calls the fire department – his or her first priority. The emergency action plan must clearly identify who is supposed to call 911 to summon the fire department or other public sector emergency responders. Does the employee who discovers the emergency call 911 from a landline, cell phone; or do they contact someone else inside the plant to relay the call? Everyone

needs to know and respect the process outlined in the plan. This person also keeps a current list of PEO personnel and alternates, contacts PEO personnel for all emergencies.

The *Sprinkler Control Valve Operator* knows where all valves are located and is responsible for operating them in the event of a fire. As long as it is safe to do so, this person:

- Goes to the valve that controls sprinklers protecting the fire area, makes sure the valve is open by physically testing it and stands by it until the person in charge orders it shut (essential step);
- Examines sprinkler control valves for damage after an earthquake, explosion or building collapse; and
- Closes only those valves needed to isolate broken piping, after checking with the person in charge and following all proper fire protection impairment procedures.

The *Fire Pump Operator* goes to the pump room when the fire alarm sounds and checks that the pump has started automatically. If not, he or she starts the pump and keeps it operating until instructed to shut it down by the person in charge. It's important for this person to be familiar with the operation and care of the pump, and trained in starting pumps manually and understanding the importance of pumps in relation to fire protection.

The *Pipe Fitter* knows about the piping distribution networks and can shut off supplies of flammable gases, liquids and other hazardous materials in an emergency. Duties:

- Know where primary and secondary shutoffs are located and how they operate.
- Keep drains clear and restore sprinkler protection where necessary.
- Isolate, drain and repair any piping damaged by previous windstorms, explosions, collapses or earthquakes.
- Be familiar with equipment controls.

The *Salvage Team* gets the facility back in business as soon as possible after an emergency. Duties:

- Be able and ready to start salvage during and after the emergency. Actions should be immediate. Damage can worsen as time passes.
- Know how to salvage and clean equipment and stock.
- Concentrate on valuable stock and equipment. Mopping up to remove dampness and drying out wet areas are typical tasks.
- Give priority to any major damage to vital equipment or processes.

It's important to contact contractors for repairs and rebuilding. Suppliers of spare parts should be immediately notified.

Watch Service personnel are a very important part of the PEO, because they are often the only ones around when the facility is closed or when most personnel are offsite. These are the times watch services or security personnel will be required to fill PEO positions. They should receive the same training as the PEO. If you are in a larger facility that may have many buildings, or access control points, you need to make sure quickest and safest route to the location of the emergency as they might not otherwise be clearly evident to the first arriving fire companies.

These security personnel also play a key role in directing the arriving public sector emergency responders to the appropriate location – so they must be kept in the communication loop so they are not caught off guard when apparatus is arriving at the front gate of the plant.

- Know the procedures during and after an emergency and follow them carefully.
- Sound the fire alarm.
- Notify the fire service in event of fire.
- Check sprinkler control valves and fire pumps.
- Direct fire service personnel to the area of fire origin.
- Notify facility officials.

Firefighting Teams, typically used in larger organizations, are selected and trained to fight a fire until the fire service arrives or until the fire grows beyond their level of training. Trained personnel must:

- Know where fire extinguishers and hose stations are located and how to operate them.
- Know the types of extinguishers to use on different kinds of fires and how to operate each type of extinguisher. Extinguisher types include carbon dioxide (and other gaseous suppression agents such as FM 200), dry chemical, foam, pump tank and stored pressure water-filled.
- Receive training on the use of hose lines to handle and operate them quickly, efficiently and safely.
- Understand the function of fire doors. Periodically make sure all of them operate properly. Make sure they have secured them properly during the emergency.

The *Electrician* may be essential to larger companies. The Electrician must:

- Know the location of all switches, portable generators, extension cords and emergency power equipment in the assigned area.
- Be thoroughly trained on the potential electrical hazards during a fire or other emergency.
- Be accountable for shutting down electrical fans or handling ventilating equipment according to a prearranged plan. Shutting off the HVAC is important for eliminating a fresh supply of air to the fire and preventing smoke, soot and heat from spreading throughout the property.
- Be able to set up temporary power or lighting if utility power is lost.
- Be able to cut off power, in event of a flood to basements, ground floors or below grade areas.

One of the most important parts of developing a response plan is your pre fire plan with the public fire service. Good pre fire planning involves conducting a site visit with the fire service on your property so that if an emergency strikes your personnel and firefighters will act in a coordinated fashion – everyone knowing their role and responsibilities. Firefighters need to be familiar with the layout and hazards of your facility. It's important for everyone involved to know exactly who does what, where and when.

Throughout the site visit, you will need a site plan showing the layout of the property and a checklist of items involving the level of response both your staff and firefighters will need.

Train Your Personnel

Educate personnel for each level of response you need for the firefighting team. It's important to establish drills with the onsite team and coordinate them with the public fire service and other outside agencies. The PEO should also be trained to respond to natural hazards before and after they strike.

Complete the Audits

Changes will occur and, as they do, they need to be well managed. Audits of your equipment, storage and property help determine past and evolving changes and future plans. It's important to do at least two things:

1. Plan audit intervals. They should be done at least once a year.
2. Develop a process to assure that changes in construction, occupancy, protection and exposures will be accounted for. Make sure they are communicated to the person in charge of the Emergency Response team.

Special Considerations from the Private Sector Point of View

Evaluating the Public Fire Service Capabilities

This will involve more than just a review of their ISO Public Protection Classification (PPC) system. While this evaluation method does give some guidance to a business or property owner of the general capabilities of a responding fire department, the evaluation process will need to go much deeper. This is due to the fact that the ISO PPC that rates fire departments on a 1 to 10 scale, with 1 being exemplary and 10 being nearly non-existent from an adequate response standpoint; really only addresses the fire hazard situation in a very general nature. The ISO PPC bases their rating on response reliability and alarm handling (10%), engine companies, equipment testing, personnel and training (50%), and water supply (40%). It does not address needs where special hazards are present in a particular occupancy. These hazards could include: highly combustible storage, products not compatible with water (the primary extinguishing agent used), or where large volumes of firefighting foam may be needed (due to large quantities of flammable liquids). Other issues such as high-rise buildings, limited access via roadways on site and factors that are unique to your operation are also not contemplated in the ISO PPC system. The higher the PPC number for that responding department, the greater the likelihood that the business owner will by default become responsible for making up that shortfall in resources for use by their internal fire brigade as well as the responding fire department. An example would be a large hydrocarbon storage facility where the on-site firefighting foam is limited and must be obtained from a remote location before offensive efforts can begin. It is important for the fire department to know that they will need to take a defensive posture until the necessary resource arrive – else they be wasted in an under provisioned fire attack. This is where the open dialogue between the parties is necessary to ensure that any deficiencies identified in the ability to handle the anticipated emergencies from either side are addressed in during this collaborative effort.

For more information on fire department operations and understanding response limitations see *Professional Safety* for a two-part article in the February and March 2008 issues.

Unintended Consequences

Although your property insurance carrier may favor implementation of an industrial fire brigade as an early intervention tool to limit their loss exposure; your workers compensation insurance carrier may not look so favorably upon this endeavor. Most workers compensation insurance carriers would prefer your Emergency Action Plan direct the workers to evacuate the area where the emergency is occurring, rather than directing or allowing employees to aggressively pursue firefighting efforts – particularly where the limited amount of training they have might give them a false sense of security or courage that can end with catastrophic consequences.

Expectations from the Public Sector point of view

Pre-incident

The Memorandum of Understanding is the document that outlines roles and responsibilities before, during and after the incident is brought under control. The intent is to open the lines of communication before an incident, but also to ensure the appropriate fire department personnel are notified when conditions on site change due to planned maintenance or shut downs of protective equipment.

After the Memorandum of Understanding has been drafted and all elements have been agreed upon, the fire department will need to become familiar with the layout and hazards in your facility. Joint training between your team and the public sector emergency responders may be beneficial – however, the intent is not train members of the plant emergency organization as much as it is to help familiarize the fire department personnel with the fixed assets and other resources present.

Resources, such as detailed maps, drawings, inventories of chemicals and other hazards should be gathered into concise package of documents that provides the fire department with all the necessary information about the current conditions. This needs to be kept in a location where it will be available when the fire department arrives. The KnoxBox™ and similar devices can be used to safely store this information when there is no 24-hour on site security that can provide the packet to the first arriving company officer, or chief officer that will assume command of the incident.

During the Incident

When the notification is made to the 911 dispatcher, they will attempt to gather as much information about the location and scope of the problem as possible from the caller. This will require that those making the notifications understand what information is going to be needed and they should only hang up when told to by the dispatcher. The reason for this is that the information is to be relayed to the arriving fire companies while they are in route.

If the location of the incident and the best access are not clearly visible from the street, someone will be needed to meet the fire department at the entrance to the building or property to provide direction to the incident.

An incident command system will be used to manage the incident and resources. The first arriving fire department company level officer will assume the role of incident commander – this will be clearly defined in the MOU. Incident Command will generally be transferred internally within the responding agency when a higher-ranking operations officer arrives on the scene. A

senior officer may be present and not assume command if the junior officer is doing an adequate job of managing the incident – this is to provide supervised learning opportunities.

Upon arrival to the emergency scene, the first arriving company level officer must perform a “size up” of the incident. The information developed during this quick size up is then communicated in an abbreviated report transmitted via radio to the remaining responding units. The size up report gives a concise summary of the scope and location of the problem and whether they intend to take an offensive, defensive, or rescue approach to the incident.

To identify their initial basic incident strategy this officer will be looking for the answers to three basic questions: What is the problem and where is it located? Is everyone out – or accounted for? Where are the key points to control energy or operational control within the building that could present a hazard to the firefighters? From this information this officer must make determinations as to: Where is the fire going? What is in its way that can slow it down? And lastly, what resources will be needed to handle it? This information will come from multiple sources that may include details provided by the building representatives, documents from the pre-fire plan that was developed before the incident, as well as what is observed in person.

When the fire department takes over command of the incident the business owner representatives who have previously been assigned various responsibilities, such as for occupant accountability, control of building services, or even as the internal incident commander; will now take on a strictly advisory role. They will need to be available to provide technical information to the incident commander pertaining to the operations and hazards, but will not have active role in the direction of operations. This same type of transfer of responsibility will also apply to the members of the industrial fire brigade directly involved in suppression activities, once the fire department arrives on scene.

One of the critical factors for the incident commander is the determination of the necessary resources. This must be done early in the event in order to reduce the impact of “response” or “reflex” time. Additional resources in the form of manpower and equipment will be called in groups as additional “Alarms” or “Box Alarms” are added to the incident response that will have a specified number of engine companies, ladder trucks, rescue squads, etc. Some of these will be assigned operational duties immediately, while others will be held nearby in a staging area until called into action by the incident commander. Their advantage is they are now quickly available when needed to address the changing environment.

The additional resources may be what the fire department can muster within their own department or through mutual aid agreements for additional manpower, apparatus or specialty equipment and supplies. The purpose of the pre-planning before the incident is to assess where those potential necessary resources are and how quickly they can be brought to the emergency. In some cases, resource limitations can significantly change the operational mode of the fire department for a period of time, or determine the ultimate destiny of the event.

Following the Incident

When the fire department declares the incident under control, they still have a significant amount of work to do to ensure it is safe for the building occupants to return. During this salvage and overhaul operation the fire department is looking for previously hidden areas where the fire may have communicated to ensure it is completely out. They will also be attempting to determine the

stability of the structure and protect any belongings from further damage due to water. This does not include boarding of doorways, windows or roof ventilation holes – this would need to be arranged by the property owner. Depending on the severity of the damage, the occupants may never be allowed back in until the local building authority has inspected the damage and determined if condemnation is warranted.

Containment of runoff from firefighting operations, debris removal, and other post fire clean up generally do not fall within the scope of the fire department's responsibilities. These would be services that should be arranged through insurance carriers, or have been previously specified in the business continuity plan.

In Conclusion

If after careful evaluation of the steps that will be necessary to implement a plant emergency organization (fire brigade), success will depend on several key factors:

1. Commitment to start up and ongoing financial needs to keep the team well trained, well equipped and well supplied. Don't commit to something you ultimately cannot or will not deliver on.
2. Agree to open communication on an ongoing basis between the business representatives and the fire department. This includes both during the preplanning process where familiarization tours and practice drills; and as conditions change on site due to scheduled maintenance, renovations or shut downs. Meeting and/or communicating often is key to maintaining collaborative nature of this relationship.
3. Provide the necessary information in the form of data, maps, escorts, and access to the fire department personnel before (preplanning phase) and during the incident through designated individuals. Also participate in post incident and post training reviews to facilitate ongoing improvement from any identified shortfalls.
4. Always follow the standard hierarchy for safety and risk management!
Engineering: Prevention first – engineer out the hazards where practical. Protection systems installed where required or recommended.
Work Practices: Human response capabilities when prevention and protection systems fail
5. Watch out for unintended consequences.
6. Controlling a loss by preventing or minimizing damage is the major goal of your emergency response plan. Doing it right depends upon taking two assumptions seriously:
 - An emergency will occur at some point in the history of your company. Never assume it happens to someone else. Why should it?
 - Readiness isn't possible without management commitment. Management's dedication to conserving business property is essential if management expects emergency responders at the site to be committed to their jobs.