The Evolution of Emergency Management

Overview

Throughout history events from daily emergencies to devastating catastrophes has served to help evolve the emergency response system in place today. The extent of the system's evolution is evident when comparing events dating back as far as the Chicago Fire of 1871, to more modern events like the 9/11 attacks in 2001. When analyzing events that occurred in vastly different time periods, it is easy to observe the improvements made. However, it is also startling to find faults in the system that are still prevalent in the pre-NIMS response system.

Infrastructure Sites

The Chicago Fire of 1871 and the attacks of 9/11 in 2001 both share many similarities in errors, hazards present, and response. In the time period of the Great Chicago Fire of 1871, Chicago was just becoming a major city. Chicago was becoming the capital point of the country, a place where railroads and waterways all met together. The city was thriving, and structures were being rapidly constructed out of the most readily available and economical material available to them at the time, wood. The city's infrastructure was growing so quickly that little to no building codes or rules were in place in regards to building safety and fire repellency. The World Trade Center was built from the 1960s to the 1970s in Manhattan, New York. On the day of September 11, 2001, nineteen terrorists hijacked four fully fueled commercial planes, crashing two into the World Trade Center. Both of these events resulted in catastrophic loss of life, the Chicago Fire had an estimated 120-300 fatalities, and the 9/11 attacks yielded two thousand nine hundred and seventy-seven in Manhattan.
Response

Both of these events also constituted a full-scale response of all first responders, which crippled the response capabilities in the city for daily emergencies. At that time, the Chicago Fire Department had a total of seventeen fire engines, three of which were out of service, and a total of two hundred and sixteen available firefighters. To make matters worse, the firefighters were all exhausted from battling multiple fires from the previous week. During the attacks of 9/11 214 FDNY units, 112 engines, 58 ladder trucks, five rescue companies, seven squad companies, four marine units, dozens of chiefs, and numerous command, communication, and support units all responded to the scene. It was stated by a dispatcher that police, fire, and EMS from all over the city were abandoning their posts to respond, crippling the city's response capabilities. At one point over 400 medical emergencies, not related to the attacks were on hold, and no one was able to respond.

Communication

A similar failure shared between the two events is communication errors. During Chicago, the dispatcher had poor means of communications between fire companies. The dispatcher initially not only dispatched the wrong fire company to respond, but also sent the company to the wrong area of the city. During the Chicago fire, the fire companies had no way to coordinate with each other to form a plan of action. During 9/11, fire companies did not encounter problems responding to the proper area, they did, however, share catastrophic communication issues. During the entirety of response police and the fire never communicated with each other, and the fire Chiefs had no way of communicating with responding units due to obsolete radios. During the 9/11 response, a police helicopter evaluated that the north tower was becoming increasingly
unstable, and recommended that the fire department evacuated the building. This information, however, was never communicated to the fire chiefs, and all firefighters in the north building were killed when it collapsed twenty-one minutes after the report. Once the North building collapsed, the call was made to evacuate the South building, the call was made out to the firefighters in the building, however, no one was able to receive the order as radio communication had failed in the building due to obsolete radios. The two events suffered from poor communications, resulting in poor response times, poor efficiency, and loss of life.

**Incident Command**

An additional aspect the two events shared with poor communication, both responding entities lacked training and a command structure. The Chicago fire lacked any form of organization. Fire Fighters simply attacked fires individually as they encountered them, and had no idea where other crews were and what they were doing. The crews lacked any form of order or a command structure to coordinate units to maximize efficiency. This is a problem the responders of 9/11 encountered. During the response, crews did not know who was in charge, and for that matter the chiefs lacked a central form of command, known today as an incident commander. Another issue pertinent of lack of structure was the inability to coordinate units. Off-duty persons responded in personal vehicles or tagged a ride with police. This caused a multitude of problems ranging from, not knowing the true extent of available resources, not being able to keep track of responders, overcrowding of the scene, and increasing the lack of communication.

**How the Disasters Were Handled at the Time They Occurred**

In present day emergency response, cities rely heavily on the assistance of mutual aid during events that turn into disasters. In some cities during large-scale events such as a shooting,
surrounding towns will take control of the local dispatch and respond to calls, allowing the town to handle the situation freely. However, during the time of the Chicago fire, mutual aid agreements were not in place. No official record exists in regard to surrounding towns coming in to assist; other than a report from the city of Batavia, Illinois saying that “With only buckets, and no equipment, Batavia’s Fire Company was not in a position to offer mutual aid to Chicago”. This left the Chicago Fire Department at a huge disadvantage, working off of the capabilities and the underprepared department and at the mercy of surrounding departments. During 9/11 the New York Fire Department called in mutual aid agreements from surrounding counties, including Denton County, Dallas County and the City of Grapevine. Mutual aid agreements were also in place from search and rescue teams, such as the Massachusetts Task Force One (MTF1), American Red Cross, and other agencies who respond during disasters. In present day emergency response, most all towns, cities, counties, provinces, etc., have mutual aid agreements between the surrounding areas to assist in the event of an incident that overwhelms the local responders.

**Mitigation: Chicago Fire**

As with any emergency, disaster, or catastrophe, many hazards that were not mitigated, or that could not have been mitigated become evidently present. In the time period of the Great Chicago Fire of 1871, Chicago was just becoming a major city. Chicago was becoming the capital point of the country, a place where railroads and waterways all met together. The city was thriving, and structures were being rapidly constructed out of the most readily available and economical material available to them at the time, wood. The city's infrastructure was growing so quickly that little to no building codes or rules were in place in regards to building safety and fire
repellency. In essence, the entire city was built out of tinder, with no fire safety protocols or building standards, and was a catastrophe just waiting to happen. To make matters worse, as the fire approached the Chicago River, the fire was able to cross over the river due to the large concentration of pollutants in the water, engulfing the other side of the city. As the fire progressed, it approached the cities only water distribution facility. The fire was able to engulf the flammable roof, causing it to collapse, consequently cutting off the city's major water supply. The Chicago Fire was a learning lesson for the country as to the importance of creating building codes, have a better-equipped fire department, and to tighten pollution levels in the water.

Mitigation: 9/11

The events of 9/11 can be broken down into a complex web of hazards, ranging from how the terrorists got into the country, to poor airport and aviation security. However, as an emergency manager, the main concern are hazards prevalent to public safety, and to rescue operations that affect response and recovery. During the attacks of 9/11 two thousand nine hundred and seventy-seven people died in Manhattan, including 343 firefighters, 60 police officers, and 8 emergency medical technicians. All of these individuals faced countless hazards, such as falling debris, fires, toxic material, collapsed buildings, and even falling people. One of the most obvious hazard present during 9/11 was the unstable towers of the world trade center. While people were running out of the building, first responders were piling into the building to rescue survivors. Inside the building, rescuers faced threats from fires and falling debris in the building. This hazard was exacerbated by a lack of operational radios, making it impossible for crews to communicate with each other to evacuate the towers as they become increasingly more unstable. Having non-operational radios in itself is a significant hazard, as it facilitated the death of many
people still in the building as it collapsed. An additional threat that was not so obvious at the time was the toxicity of the dust lingering in the air. Most of that dust contained asbestos and other carcinogens. The Natural Resources Defense Council estimates that 300 to 400 tons of asbestos fibers were used to construct the World Trade Center. An additional hazard present in addition to falling debris was people jumping from the building. One fireman, Danny Suhr, was killed as he made his way to the South Tower after a jumper landed on him, breaking his neck. While the hazards of 9/11 undoubtedly claimed many lives, the mitigation of building codes, firefighter training, equipment, and coordination saved many lives. Current mitigation steps that can be exhibited daily is at an airport. After 9/11 steps to mitigate plane hijackings were taking by an extreme increase in airport security and screenings of travelers.

Man-Made vs Natural Disasters

When it comes to classifying disasters, they can be classified into man-made disasters and natural disasters. The reason that is it important to classify these into two categories is to help prepare an appropriate response. However, using the NIMS all hazards approach to dealing with disasters, we can create one plan for handling most situations. The main difference between the two is that a natural disaster is an event that occurred without mal intent or human error. Natural disasters have occurred since the beginning of time, and society as a whole has had time to study them and test out different response plans. An additional difference between the two is that regardless of how much mitigation takes place, hurricanes, tornadoes, and floods will continue to happen. Manmade disasters, on the other hand, are usually considered results of mal intent and carelessness. An example would be a terrorist attack, or a nuclear reactor melting down due to poor maintenance. With manmade disasters, room for mitigation always exists to lessen the
chances of it occurring, and minimizing the impact. The Chicago Fire of 1871 is considered a natural disaster, as it occurred as a result of natural events. The fire was claimed to have been started by a cow kicking over a lantern, which ignited the barn. The attacks of 9/11 are considered to be a manmade disaster, as mankind was solely responsible for the attacks. While the two have many similarities and are handled in similar manners, the main difference is that natural events will always occur and have been studied for many years.

How the Chicago Fire Would be Handled Today

In the ever-evolving field of emergency management, the systems in place are always being adapted to the ever-changing world in which we live in. If similar circumstances of the Chicago Fire were to happen today it is much more likely that it would not have evolved into such a deadly event. Through mitigation, fire extinguishers could have been present in the barn, eliminating the hazard before it became out of control. Through better communications systems, dispatchers would have been able to mobilize firefighters faster and to the right location. With better firefighting equipment, the situation could have been much better handled. If the situation had been allowed to get out of control, fewer buildings would have become engulfed in flames due to strict building codes and fire suppression systems. If the fire were able to spread to the point where it exceeded the local fire departments capabilities, an incident commander would be established and mutual aid agreements would be activated. Once mutual aid arrived on scene the incident commander would be able to establish a command network, based off of NIMS. With designated commanders, a coordinated effort would be established to enable units to work together to eliminate the fire, triage and treat victims, and maintain order in the streets, and evacuate persons.
Today’s Technology and Training: Chicago Fire

If the Fire of 1871 occurred with present day emergency management standards, it could have been handled much more fluidly. One of the biggest problems at the scene was no communication and no command structure. The first step would be mitigation, and to try and use less flammable materials on the outside of buildings, to at least slow the progression of fires. In addition, mutual aid agreements between surrounding towns would be established to enable a fluid response. In order to be better prepared, firefighters would have training drills with surrounding towns so that individuals knew who was in charge, and how to work together. In addition, a system similar to NIMS would have to be implemented so crews knew who was in charge, and someone was coordinating the response. During the actual response, with command established, and mutual aid elements in place, the incident would likely not have grown out of control. As Chief Burns from the New York Fire Department wrote in the 1994 federal report. "Our effectiveness is only as good as our ability to communicate."

How 9/11 would be handled today

During 9/11, first responders from all around the city, and mutual aid crews from all around the country rushed in to help save victims and restore a normal status of living. While all levels of the response did a great job responding, there was ample room for improvement. One of the most detrimental flaws in the response effort was a lack of communication between agencies. Today agencies base their response on NIMS. NIMS mandates that all responding agencies be able to communicate with each other via the same radio frequency. It also mandates the use to common everyday language, and not department specific codes, in order to facilitate responder wide understanding. NIMS also creates an incident command structure, the established different levels
of command to ensure that responders are well informed. NIMS also expresses the importance of not simply arriving on scene and responding without being told to by a commander, in order to maintain organization. An additional element that hampered the 9/11 response was the fact that the fire department and the police department had never had a live drill together. It was not ideal that the first time the two agencies responded together for the first time was at a catastrophic event. The police helicopter that evaluated the North tower was supposed to also be staffed by professional firefighters, however since a drill had never been facilitated, no one was aware of how to execute the event.

**Today’s Technology and Training: 9/11**

If 9/11 were to happen with modern emergency management, crews would have had better training on how to work with the police department. Both crews would have been involved in a full-scale training exercise, to make personnel familiar with each other and become more comfortable with the protocol. In addition, crews would have had better radio equipment, up to modern standards. During the 1993 World Trade Center Bombing, firefighters encountered the same communications problems, and a competent solution was never implemented. Using NIMS, a unified command would have been established to better facilitate an effective, and informed response. In addition, checkpoints would be established to accommodate the off-duty personnel who come swarming in to assist. Overall, the response to the incident was well handled, including the implementation of mutual aid. However, the response could have been much more efficient, and possibly have taken fewer lives if better communication, and incident command structure had been in place.
Ending Thoughts

The field of emergency management is an ever-evolving field. Every day the world faces countless threats, and it is up to emergency managers (EMs) to ensure that communities are prepared for an event. However, disasters are unpreventable, and emergency managers must be ready to facilitate the most efficient response possible. EMs can do this through mutual aid, training, equipment, and good preparedness. Once the damage has been done, and victims have been rescued, EMs must be prepared to rebuild their community to restore a normal way of life for the community.


