The ASPEP Journal 2002

The Journal of the American Society of Professional Emergency Planners

ASPEP

The American Society of Professional Emergency Planner (ASPEP) is a professional organization of certified emergency managers dedicated to the advancement of knowledge of disasters and to the improvement of the practice of emergency management. ASPEP works towards these goals through continuing education, through professional development and exchange, and through the publication of an annual Journal.

The ASPEP

The ASPEP Journal is published annually in the fall. The Journal is dedicated to the sharing of ideas, research, lessons, practice, and new ideas. It is intended to serve as a forum for all disciplines involved in emergency management. A formal call for papers is issues in early January of the year of publication. Articles which will contribute to the goals of ASPEP are welcome.

Types of Papers

A call for papers will be issued in January 2002 for papers to be included in the 2003 Journal. Publication of the 2003 Journal is planned for November 2003.

Articles or papers which contribute to the advancement of Knowledge and improvement in the practice of emergency management are welcome. We encourage breadth of subject matter and depth of discussion.

Examples of subject matter which would be appropriate include:

> The state of the profession of emergency management, where the profession has been, and/or how it is adapting to the new environment.
>
> Research which will lead to a greater understanding of disasters, to their prevention or mitigation, to more effectively respond, to better recovery practices. Research which will establish a base for further research.
>
> Discussion of particular emergency management problems, resources, or procedures which have not been well addressed in the past.
>
> New ideas which will lead to improved understanding and practice.
>
> Studies of events or exercises and the lessons which may be drawn from them that would be valuable to practitioners in a similar situation.
>
> Programs which may be used by other emergency managers.

Practices which have proven successful.

The Journal can not accept papers which are advertisements or infomercials for particular products.

Papers should be submitted electronically to the editor Papers are requested to be submitted in MS Word or as a rich text file. Articles submitted in other formats will be returned to the authors with a request that the article be submitted in one of those formats. The usual lengths of articles are between 2,000 and 5,000 words. Shorter articles may be published in the Bulletin of the International Association of Emergency Managers.

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EFFECTS OF THE TERRORIST ATTACKS OF SEPTEMBER 11, 2001 ON FEDERAL EMERGENCY MANAGEMENT IN THE U.S.

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Abstract: The Sept. 11th terrorist attacks were the first catastrophic terrorist event to occur in the U.S. and the first that required both civilian recovery and military responses. This report sought to determine the scope of the impacts and to begin the process of examining the implications for the federal emergency management systems, programs, and policies.

This report discusses the defining characteristics of the attacks, the role of the media, and the initial role and functions of two responding agencies – the U.S. Environmental Protection Agency (EPA) and the U.S. Coast Guard (USCG) in New York City (NYC). It also briefly describes the various impacts: economic and financial, damage to infrastructure, equipment losses, business interruption, human productivity, airline losses, insurance payouts, decreases in tourism, revenue losses, impacts on the stock exchanges, and donations and charities. The authors also evaluate the effects on public attitudes toward government, the new national public awareness of terrorism, public awareness of emergency management, and changes in public sector focus and workload. The authors describe anticipated changes in federal policy to better deal with such events in the future.

In the course of working on this report, the authors were stimulated to develop a related product: the *Terrorism Time Line: Major Milestone Events and Their U.S. Outcomes (1988-2001)*, which was first published in March 2002 [1].

Introduction

The terrorist attacks on the World Trade Center (WTC) and Pentagon are horrific events, of a scale and type never before seen in the U.S. or in the world. To our knowledge, no past terrorist disaster in the U.S. has resulted in both recovery and military actions to seek redress for the incident.

Given the timing, nature, and magnitude of the attacks, plus the immediate extensive media coverage, the topics of terrorism and emergency management received an unprecedented amount of attention not only in the U.S. but worldwide. Aspects of terrorism usually reserved to a small group of behind-the-scenes operational personnel suddenly became of interest and concern to citizens throughout the nation.

In researching and documenting the outcomes of the events in NYC and the Pentagon, the authors chose to focus primarily on emergency management at the federal level. Even with this limited focus, the effects of the Sept. 11th events on the federal government involve a vast array of impacts and outcomes. This report briefly describes the events and their effects, giving more time and space to some of the early impacts and ramifications. It does not cover the many problems and issues connected with the public management of health and environmental issues that began to emerge about four weeks after the attacks took place. Finally, our research relied mainly on secondary sources, because it was not possible to gain access to key actors for personal interviews in the first few weeks after the massive events.

The Unprecedented Role of the Public Sector. As noted by Waugh, "Emergency management is the quintessential governmental role. It is the role for which communities were formed and governments were constituted in the first place – to provide support and assistance when the resources of individuals and families are overwhelmed [2]." For the emergency management community these vastly destructive terrorist attacks have a large number of aspects, impacts, and implications that are unprecedented. Clearly, the September 11th events will go down in history as a major milestone in emergency management and probably will result in major changes in the emergency management systems at each level of government in the future.

Given the vast scope of impacts and ramifications for government actions and policies, at every level of government, this paper can only outline or briefly discuss some of the impacts and outcomes of the Sept. 11th event. This report should be viewed as an early step in what is likely to be a long-term sequence of analyses and reports about a milestone set of disaster events.

Approach

Our approach was to use the conceptual framework of the ***Disaster Time Line: Selected Milestone Events and Outcomes (1965-2001)*** as a starting point [3]. The authors set out to research and document some of the political and policy impacts of the Sept. 11th attacks and their ramifications at the federal level. While working on the **DTL**, the authors discerned a predictable sequence of actions and outcomes from major defining disaster events since 1965. The key categories are, major after-action reports and documents; legislation, regulations, and executive orders; response plans; and organizational changes.

Two issues arose while trying to apply this approach. (1) Initially, it appeared as that the Sept. 11th events did not fit into the sequence observed previously. The authors later decided that although these events have some aberrations, they did fit into the basic pattern. The details of this finding will be discussed later. (2) The authors prepared a new graphic; in order to focus on the level of detail and space

needed to adequately and appropriately display all of the details and underpinnings of the federal involvement in counter-terrorism, from 1988 through 2001. For the new Terrorism Time Line (TTL), the authors planned to document the expected sequence of actions and determine, to the extent possible, the causal relationships between the events and major outcomes.

Events of September 11th

Many researchers and journalists have produced detailed descriptions of the events and the response efforts. Highlights of some of the most pertinent facts and some observations about their implications follow.

At 8:45 am (EDT) on Tuesday, September 11, an American Airlines aircraft was hijacked by a group of terrorists after taking off from Boston and crashed into the north tower of the World Trade Center Complex in New York City. At that time, the severity of the incident, the numbers of people involved, and the reason for the crash were all unknown. At 9:03 am a second plane, this time a United Airlines plane, hit the south tower of the World Trade Center.

During the period between the first and second crashes in NYC, the Washington Area Airport Authority had begun evacuating Reagan, BWI and Dulles airports as a precaution. Immediately after the second crash, FAA issued a national "ground stop," which prevented all civil flights taking off, thereby acknowledging that these actions were deliberate and that more attacks might be underway.

The roads were being closed in Washington, D.C. and the mayor had just given the order to evacuate the city of Washington, D.C. when another American Airlines plane hit the Pentagon office building in Arlington, VA at approximately 9:40 a.m.. The Federal Aviation Administration (FAA) issued an immediate order to ground all the planes flying in the U.S. airspace. The news spread quickly through blanket media coverage that a fourth plane was heading towards Washington, DC with the expectation that it was aiming for the Congress or quite possibly the White House. The decision to evacuate the White House occurred around 9:45 a.m.

Around 10:00 a.m. a fourth commercial plane went down in Somerset County, PA, about 80 miles southeast of Pittsburgh. About the same time a partial collapse occurred at the Pentagon building in the area of impact. Shortly after 10:00 a.m. the south tower of the World Center collapsed. Within the next half-hour, the northern tower of the World Trade Center collapsed. At approximately 5:30 p.m. a third tower in the World Trade Center complex, Building #7 also collapsed.

The Defining Characteristics. These attacks obviously were extraordinarily well planned and coordinated. They clearly had the goal of damaging the symbols of power in the U.S., causing as many casualties as possible and spreading fear. Also, by hitting at the World Trade Center Complex in NYC, which is the heart of

the international financial community, there is no doubt that the terrorists hoped for long-term negative economic consequences.

Not just the people living in New York City or in Washington DC, but many millions of people all across the country felt they were potential targets, especially those living in other large cities. The local, state, and federal responses were immediate and massive amounts of resources were deployed to the attack sites. Initially, it was estimated that the casualties in the WTC could be around 10,000 and 800 people were estimated to be dead in the Pentagon incident. Sadly, the initial fire fighting teams, including the NYC Fire Chief, deployed to the scene were among the dead and missing. The loss of about 300 skilled fire fighters and their chief was a major blow to the response force.

In addition to responding to the known disasters, prevention of further damage was a major concern. As these catastrophic series of events occurred, it was not -- and it still is not – clear whether there were other attack plans and when the threat of further attacks would end. Both elected and appointed officials had to take immediate actions and make the kind of decisions that they had never done before to fulfill their duties to the citizens. No doubt the terrorists intended to shake the public trust towards the government. One immediate worry was how could four commercial jetliners have been successfully hijacked from different airports and their whereabouts while in the air remained unknown.

President Bush's mission changed profoundly in a matter of hours. He was forced to assume a defensive role for both himself and the country as a whole. And when the source of the attacks was determined, he had to mount a war offensive against the perpetrators and other allied terrorists located in many countries. Within hours, measures were taken to ensure the continuity of the government, to avoid mass panic, and to protect the nation and its citizens from further attacks.

As thousands of members of urban search and rescue, emergency medical, emergency response teams, and tons of equipment were deployed, it became obvious that the debris removal would take months, if not years, and hopes of finding any survivors quickly faded. The FBI, other federal teams and the New York Police Department (NYPD) began the enormous task of sorting and sifting through debris for bodies and evidence, a task that also could take several months.

The Role of CNN and other Media

Given the time of day, and the fact that many governmental and financial workers have access to Internet and TV news, word and pictures of the events spread fast. Thanks to CNN and other media, many public officials could see the actual scenes of the events in NYC and at the Pentagon only within minutes of their occurrence and were able to take action, such as opening emergency operations centers (EOCs) before being requested to do so officially.

Federal Response Actions

What follows are two brief examples of initial response actions on the part of federal and military organizations, U.S. EPA and the U.S. Coast Guard.

(1) U.S. Environmental Protection Agency HQ (EPA)

On Tuesday morning, Sept. 11th, at the time of the first attack on the WTC, at EPA headquarters, in Washington, D.C., the Emergency Coordinator for the Agency, Jim Makris, and his deputy were engaged in a previously scheduled briefing for the EPA Administrator about the Agency's emergency management system and capabilities. They received a call and were told to turn on the TV to see the attack details. The officials then ended their meeting and opened the Emergency Operations Center immediately thereafter to begin disaster operations, according to Ed Terry, the Manager of EPA's EOC. Shortly thereafter, EPA headquarters established links with all of its East Coast regional offices to begin coordination and support of the NYC response efforts.

EPA has the authorities and responsibilities needed to perform emergency response functions under the National Contingency Plan. Plus, when the Federal Response Plan is activated, EPA has the lead responsibility for Emergency Support Function #10: Hazardous Materials. In this case, no one waited for formal initiation of any of the emergency response plans, but went right to work with their existing authorities [4].

(2) U.S. Coast Guard– Initial Response in NYC

Captain Dennis M. Egan, U.S. Coast Guard (USCG), who is the Director of the National Response Team (NRT), first learned about the NYC disaster on CNN TV. He immediately ordered that the alarm to the FBI's Weapons of Mass Destruction (WMD) hotline be activated. Rescue helicopters were sent to NYC from USCG bases in Atlantic City and Cape Cod. When helicopters arrived one hour later, NYPD helicopters already were on scene. The USCG's Long Island helicopter facility was stocked for support of the NYPD for several days, but not used in the search and rescue. The NY City government immediately moved its resources from Staten Island to Manhattan.

Various ferry ships, under USCG direction, were used to evacuate civilians out of Manhattan. The ships involved were the Staten Island Ferry and three other ferries; there were no major USCG ships in the area. Capt. Egan commented on the fact that the USCG ships were heading in, while the Navy ships were heading out of harbor. Many people fleeing the fires and destruction from the WTC area ran toward the water, at the foot of Manhattan. The local police and Coast Guard officials on board the ferries

were armed and available for assistance. Egan commented that USCG was a counter-terrorism "node" in these actions. The USCG went quickly from the response to security phase when it began screening passenger vessels and putting armed guards on cargo ships.

When the second plane hit the WTC, CG area commanders were contacted. The Boston USCG Admiral invoked "'regional incident command," and was established as the senior USCG official in NYC. He was instructed not to be in charge of the entire incident. He joined in the governor's and the mayor's response activities, but returned shortly thereafter to his post in Boston.

The Coast Guard Strike Teams set up in NYC to get the stock exchanges open again. They also did air sampling in the area. The Coast Guard used the "Vessel Traffic System" for navigation around the city. Because the antenna on the WTC tower was a major part of the system, range was reduced significantly. A new antenna was rigged on Staten Island as a backup.

The Coast Guard observed that FEMA set up their Regional Operations Centers after a five or six-day delay, due to the communications failures at the Federal Center in New York City, discussed elsewhere in this report. Egan commented that there were no major initial turf wars to report. The mayor was "significantly in charge."

Communication was perhaps the greatest problem. All cell phone lines were dead. Only two major phone trunk lines into New York City remained, and both were completely saturated (this problem persisted for several days). The National Response Center sent three portable communication units by van to New York City the night of Sept. 11. Those units were established at Battery Park, Staten Island, and on the USS Comfort. Nevertheless, the CG had trouble setting up communications with those in charge in NYC.

Battery Park was taken over by the City of New York and by the FBI as a command center. The FBI Atlantic Strike Team had some initial trouble getting communications set up because their system was dependant on access by a self-contained van unit, which could not navigate the rubble-covered streets.

Within two hours of the start of the attacks, there was a National Response Team conference call. At about 1:00 p.m., there was another NRT conference call. The Coast Guard established a liaison at the FBI Strategic Intelligence Operation Center; this post was filled for two weeks.

Captain Egan noted that the most valuable preparations for the actual

response of the USCG on Sept. 11th was due to TOPOFF, which was a major federal disaster exercise, mandated by Congress, held in 2000. This exercise apparently created many contacts that were vital in the September 11th response [5].

Emergency Management Considerations

In NYC, initial efforts on the part of local federal regional offices to deal with emergency response were hampered by damage to the city's emergency operations centers. New York City had recently completed a multi-million dollar state of the art EOC; but it was housed in one of the WTC buildings that was totally destroyed. The State of NY seemed to fare better. The Federal center in NYC was not physically damaged, but telecommunications were knocked out, which meant that FEMA Region II, EPA II and other federal agencies had to find other operational locations [6].

In Arlington, VA, the response relationships appeared to be efficient and effective, since the Arlington County Fire Dept. and Pentagon officials had worked with each other and conducted response exercises prior to Sept. 11th.

At the national level, things moved very quickly with Presidential declarations of emergency for the Pentagon and disaster for NYC. The conventional procedures for obtaining a Presidential declaration were not necessary; "self-initiating" requests, as allowed by the Stafford Act, occurred and the federal government as well as the military services began their response actions very rapidly.
Among the response actions that are highly unusual or unique to the events of Sept. 11th:

- **Emergency and Disaster Declarations**: "self-initiating" declarations; use of an emergency and later a disaster declaration at Pentagon;

- **Problems with Emergency Operations Centers** at the local and federal levels due to destruction and incapacitation, respectively.

- **White House Involvement:** rapid creation and selection of a director for the Homeland Security Office. While fully operational, the White House and some federal agencies were making, or planning, major changes in processes, funding, and organizational arrangements for emergency management.

The Impacts

As of March 17, the latest information from federal and local officials give the following totals for the number of people dead or missing from the September 11 attacks:

- In NY City, approximately 2830 deaths have been confirmed. That number includes the 157 people on the two hijacked planes at the WTC. Only 773 of the 2830 people who died have been recovered and identified, though the remains of many are still being analyzed [7]. Additional remains were recovered almost daily for more than nine months.

- At the Pentagon site, a total estimate of 189 persons died; 64 persons, including the crew, died on board the hijacked plane; another 125 were dead or missing in the Pentagon building.

- At the Pennsylvania plane crash, 44 were confirmed dead on the hijacked plane initially. The number of injuries was a relatively small number, because all of the above events were so devastatingly deadly.

The Economic and Financial Impacts. It is a challenging task to calculate the overall costs of September 11th attacks. The destruction of the WTC obliterated about 12 million square feet of Class A office space, which is the equivalent of all office space in Atlanta or Miami [9]. An additional 18 million square feet of office space in downtown Manhattan was damaged.

Infrastructure. In NYC, a significant amount of infrastructure was ruined in the neighborhood of the World Trade Center Complex, including a crushed subway station, plus the loss of five phone-switching stations, two electrical substations, 300,000 telephone lines and 33 miles of cable. It has been estimated that replacing the destroyed subway lines would cost around $3 billion and that utility repairs, including 300,000 telephone lines, one phone switching station and six miles of electrical cable are estimated to cost $2 billion. Additionally, rebuilding the PATH NY/NJ station below WTC would be about $2.4 billion. The estimated total cost for replacing the basic infrastructure is $7.4 billion [9].

The Pentagon office building, which is owned by the Department of Defense, is estimated to have sustained $1 billion in damages. It was fortunate that the hijacked plane hit the Pentagon in the newly remodeled section, since relatively few people were in the not-yet-completed offices and the structure, windows and other construction details were more attack-resistant than the rest of the building.

Equipment Losses. Going beyond the infrastructure costs in NYC, there were equipment and related losses - such as fire trucks, thousands of computers furniture, and other equipment items - that disappeared with the towers. Early estimates suggested that anywhere between $2 to $5 billion worth of telecom and computer equipment was destroyed. The total property loss was estimated at $34 million, according to the New York City Comptroller Alan Hevesi. That is nearly twice the $16.8 billion record set by 1992's Hurricane Andrew [9]. Similarly, but on a smaller scale, at the Pentagon, there were computers, office equipments, and

other unknown equipment and supplies were consumed in the fire after the plane hit.

Another unusually large cost in NYC was related to dealing with the immense amount of debris over the multi-acre area disaster site. The debris had to be sorted first for human remains, evidence, and later deposited in a landfill. The NYC Controller predicted that it would cost a $14 billion just to clean up and police the site.

Business Interruption. The NYC site probably set an all-time record for business interruption costs, which were initially estimated at $21 billion; the most serious losses occurred in the downtown neighborhoods that were inaccessible for weeks after the attacks [10]. Six months later, an official from the City of New York, Office of Emergency Management, gave an estimate of $83 billion for the overall economic impact on the city from the attacks, based on her discussion with the business community [11].

Built in 1970, the World Trade Center housed more than 430 companies from 28 countries. They were engaged in a wide variety of commercial activities, including banking and finance, insurance, transportation, import and export firms, customs brokerage, trade associations and representatives of foreign governments. An estimated 50,000 people worked in the World Trade Center, and another 140,000 visited the complex daily. Estimates of how many people were in the WTC when the attacks began vary from 15,000 to 40,000, according to an article in the Washington Post [12]. Thus, the ratio of people who safely got out of the many impacted buildings was many times higher than the number who died there on Sept. 11th.

Companies like Morgan Stanley, which by far was the WTC's largest tenant -- with 3,700 employees (all but 15 unaccounted for) -- was fully operational less than 48 hours after the tragedy. Remarkably, Cantor Fitzgerald lost 680 of its 1000 employees but was operational for bond trading two days after the attacks.

Many Wall Street firms would have been inoperative for many more weeks after the attacks if it were it not for the careful contingency planning they began after the 1987 stock market crash and accelerated after the 1993 WTC bombing. These financial firms rely on two critical services to guarantee a quick rebound from natural and man-made disasters: (1) information backup services that collect computer tapes and store them in highly secure suburban facilities, and (2) alternative facilities that are fully equipped with mainframes and computer servers that replace lost computing power. For a subscription fee, plus a disaster assessment that may run into the millions of dollars, stricken firms were able to move their personnel to such a service provider's centers for up to six weeks [9]. (After that the companies had to find their own space). Many companies have decided that it is prudent to spread operations over multiple locations on different electrical grids and telephone networks [13].

Human Productivity. Another sad but important indicator of loss is the loss of human lives and their future productivity as indicated in purely financial terms. Given the average age of the workers who lost their lives (40), the NYC Comptroller estimated the "lost human productive value" to be about $11 billion. Measured by payroll, NYC, with less than 3% of the country's workforce, accounts for 37% of the U.S. securities industry, 20% of advertising, and 18% of book publishing. The best and brightest from around the world are drawn to New York because it is where they can do their finest work and reap the highest rewards. In the short run, the September 11 attack would add a $500 billion blow to a city economy already stumbling from the bear market on Wall Street and the nationwide slump. More than 100,000 New Yorkers thus would eventually be thrown out of work by the attack, according to New York State Labor Dept. estimates [13].

Airline Losses. The airline industry received a major blow due to the temporary shutdown of the air travel system and later widespread fear of flying by potential customers. Airlines and airfreight were down for weeks. People who chose to fly faced long lines due to increased security measures. Anything suspicious became a reason to ground planes. After the attacks, the airlines received a $15 billion government bailout, announced 100,000 layoffs and slashed 20 percent of their flights [13].

In the Washington, DC area, Reagan National Airport and its businesses were the hardest hit in this ordeal. The airport was ordered to shut down immediately after the attacks and was not allowed to open until 23 days later due to its proximity to so many potential targets. The cost for closing was $330 million per day to the airport and Northern Virginia businesses and $27 million to state and local tax revenue [13].

Insurance Payout. The $126 billion commercial insurance industry is facing a $30 billion payout. This industry will never quite be the same, since insurers and reinsurers had never considered terrorism when pricing their premiums. The uncertainty about how to predict the future attacks is a huge challenge for the insurance industry.

Tourism Income Losses. The tourism industry hit has been hardest in Washington, DC area and New York, but with secondary and tertiary effects in Boston, Los Angeles, Las Vegas and other major tourist destinations. About one-third of the nation's 265,000 unionized hotel and restaurant workers have been laid off. Hotel expansion plans have been on hold almost everywhere [13].

Revenue Losses. The U.S. economy, threatened by recession before September 11, has suffered a number of blows in the weeks since. The leading economic indicators dropped in September. Yet the nation's financial markets have thus far weathered the uncertainty, making up losses experienced in the days after reopening.

Former Mayor Rudolph Giuliani estimated the city would lose $1 billion in revenues this fiscal year – including a 20% decline in personal income taxes and more than 30% declines in hotel and real estate transfer taxes. Additional costs for additional police overtime, downtown cleanup, and other services would soar into the billions. Even with the help from Washington, New York was expecting a budget deficit of $4 billion in the next fiscal year. The city agencies would have to cut $1 billion from their spending plans. The federal government would reimburse the city for $11.4 billion in expenditures directly related to the attack, such as $5 billion for emergency construction at the WTC site, and $3.8 billion for police, fire, and health services. Congress approved $20 billion in aid for New York, Virginia, and Pennsylvania [13].

The NY and American Stock Exchanges were closed for a week until September 18th. The stock market declined by double digit percentages immediately after the terrorism attacks. The NYSE dropped 1, 369 points, the biggest point loss and the fifth worst week ever for the Dow Jones industrial average.

Charities and Donations. As a result of the attacks on the WTC, and all of the media attention given to it, an unusually large number of charities formed, in addition to the major ones already in existence – such as the Red Cross and the Salvation Army - - and an unprecedented amount of donations were received. The resulting problems ultimately had to be straightened out by the Attorney General of the City of NY. As a sidebar to this topic, the current President of the American National Red Cross lost her job as a result of some disputes with the Board of Directors of that organization. It should be noted that donations related to the Pentagon disaster do not appear to have the same complications.

Health and Human Services Operations. According to a news release from the U.S., Dept. of Health and Human Services (HHS), the "9/11" response in New York City, constituted the largest National Disaster Medical System (NDMS) response ever. Of the more than 9,500 rescue workers, 1364 were volunteer health and mortuary professions who provided their services as part of the national NDMS, and more than 600 others were health professions from HHS Commission Corps Readiness Forces and the Centers for Disease Control and Prevention. Disaster Mortuary Operations Response Teams (DMORTs) supported the NYC Medical Examiner's Office, processing 15, 528 human specimens, 270 bodies, and identified 750 victims. On Sept. 11, 2001, the Dept. of HHS declared a national health emergency; the Office of Emergency Preparedness immediately deployed NDMS and Commissioned Corps teams to the disaster site. The HHS funding totaled $301 million for response and recovery activities resulting from the Sept. 11 attacks [14].

Outcomes

It is not possible to overstate the dramatic changes in political culture, attitudes, and philosophy of the federal government regarding emergency management and counter-terrorism that have resulted from the Sept. 11th attacks. Plus, many of these changes were immediate. Some elements of the emergency response went extremely well, such as the personal leadership of Mayor Giuliani, Governor Pataki, and the high level of competence of the Arlington County, VA Police and Fire Services. But, many concerns about the weaknesses in the nation's ability to deal with a major terrorism event quickly surfaced, such as: (a) need for better detection and warning systems for a terrorist attack, (b) central coordination at the federal level, (c) weaknesses in the public health and disaster medical systems, and (d) core capabilities of some states and localities to manage a massive disaster.

Other related systems were severely criticized for failures of weaknesses, such as the intelligence gathering and analysis capabilities of the international and domestic federal agencies; lack of coordination among various federal agencies with information about suspected terrorists; and problems in tracking foreign visitors and supposed students. The ramifications and implications are so substantial that it will take years of research and documentation to capture them.

A Major Sea Change. Within days after Sept. 11th, the Bush Administration and the Congress rapidly made a major philosophical shift in their attitudes and willingness to combat terrorism, including major changes in national priorities, budget, and spending plans – all in a matter of a few weeks after the events.

Public Attitudes Toward Government. On Sept. 30th, a **N.Y. Times** article titled ***Now Government is the Solution, Not the Problem***, stated:

> *"After 20 years of exulting in the power of the private sector, in deregulation, tax cuts and reining in the Washington bureaucrats, Republics and Democrats alike are talking about a muscular role for the government in the aftermath of the Sept. 11th terrorist attacks. They are bailing out the airlines, establishing a new Office of Homeland Security, passing a big new aid package to rebuild the areas devastated by the attacks and pondering an even bigger effort to stimulate an ailing economy. When the chips are down, where do we turn? ... To the government's firefighters, police officers, rescue teams. To the nonprofit sector's blood banks and shelters. And to big government's Army, Navy and Air Force* [15]".

Another perspective is that of the professional public administration community, which noted that the aftermath of the Sept. 11th events, provided a unique glimpse at public employees at work. In the newsletter of the American Society for Public Administration (ASPA), it was noted:

"In a way unmatched in history, Americans had a chance to watch public administrators at work and, sometimes, under attack. They saw countless cases of unmatched bravery. The broadcast heroism, in fact, only hinted at the ways that government works rose to the challenges of their jobs."

ASPA further noted *"The real work – how to refashion the field to master the enormous new challenges facing it – begins now. Public administration will not only become more important, but its job has been dramatically transformed* [16]."

National Public Awareness of Terrorism. Given the timing, nature, and magnitude of the attacks, plus the immediate extensive media coverage, the topics of terrorism and emergency management received an unprecedented amount of attention not only in the U.S. but worldwide. Topics usually reserved to a small cadre of behind the scenes operational personnel suddenly were of interest and concern to citizens throughout the nation. This was captured in a **Washington Post** Article entitled ***Think-Tank Presses are Suddenly Best-Selling Publishers.*** The article noted, *"Across Washington, think tanks are finding their once obscure books, studies, and policy reports are hot with the general public* [17]." Discussions of terrorism, bio-terrorism, and weapons of mass destruction are now commonplace among the general citizenry in the U.S. The Sept. 11th events provided a crash course on the topics. What was a somewhat esoteric technical area of interest, pursued by a relatively small group of responsible persons, is now discussed everywhere.

Public Awareness of Emergency Management. Citizens have become more aware of their public officials and how they conduct emergency management at each level of government. In New York City, Former Mayor Giuliani and Governor Pataki were directly involved in the response efforts and were highly visible doing their jobs on a daily basis. It should have been clear to most citizens that their local and state government officials were working ardently and effectively to help them.

One interesting indicator of the level of commitment and depth of the local emergency management effort is that at the third and final location of the city's emergency operations center (EOC) ultimately contained 350 workstations, according to newspaper accounts. That huge number is a crude indicator of the amount of coordination involved in the response and early recovery activities.
Similarly, public awareness of the key roles and functions of local public officials in Arlington, VA was heightened by the attack on the Pentagon. Prior to the event, Pentagon staff had worked closely with Arlington County Fire Dept. in the event of a major fire in that building. The County Fire and Policy Departments also were highly effective and committed to their jobs, according to two reports in the **Washington Post**. They too received great support and encouragement from the local citizens.

Changes in the Public Sector Focus and Workload. As was noted above, the role of public practitioners in emergency management has changed and probably will continue to change as the U.S. goes into the recovery period. A related outcome is the effect on public officials, both elected and appointed and the long-term burden on their workloads. For example, Senator Hillary Clinton (Dem., N.Y.) described the economic damage as "incalculable" and said "... [She has] *been consumed with the details of organizing federal assistance for the city and expects that responding to the emergency on both the national and local levels will dominate her Senate career for the foreseeable future* [18]"

Major Policy and Program Outcomes. The five specific categories of observed outcomes of major disaster events that the authors developed and used in the **Disaster Time Line; Selected Major Milestone Events and Their U.S. Outcomes (1965-2001)** were applied to the Sept 11th events in order to capture some of the most frequently observed aspects of outcomes from a political and policy perspective.

(1) **Major Reports and Documents**. After examining dozens of major disaster events during the years 1965-2001, the authors noted that immediately after a major event, either the Congress or the White House initiated hearings, after-action reports, and/or studies to determine what the problems and deficiencies were in responding adequately to disaster events. This step occurred without exception in the 36 years examined [19]. Yet, in less than a week after the Sept. 11th events, major national legislation was enacted and organizational changes occurred. There were two highly unusual aspects in the immediate aftermath of the terrorist attacks: (1) no hearings or studies were ordered to determine what went wrong and what remedies were needed, and (2) the speed and bipartisan nature of the legislative process were unprecedented.

The authors noted the sequence with great interest because it was an aberration from the pattern observed since 1965. After making a rough time line chart of the sequence, the authors surmised that because several major reports about terrorism had already been completed by September 11th, they were used rather than ordering new studies and reports. Some relevant ones that were quickly updated and issued are several GAO reports on counter-terrorism ([20], [21], [22]) and on protecting critical infrastructure; Hart/Rudman Reports I & II, Gilmore Reports I & II, and the National Commission of Terrorism (Bremen Commission) Report.

It would appear that the information and knowledge about what to do already existed before Sept. 11th. What was lacking was the political backing for change and the political will to act. A rapid

sequence of actions regarding improved emergency management and protection of critical infrastructure then followed.

(2) **Legislation.** In a matter of about 16 weeks after the terrorist events, the degree of national attention and commitment to dealing with the outcome of the incidents led to the rapid enactment of four major pieces of legislation: the Supplemental Act for Response and Recovery; the U.S.A Patriot Act of 2001; the Defense Authorization Act; and the Aviation and Transportation Security Act.

Other unusual characteristics of the aftermath of this disaster are (1) the speed with which the federal government and the NY state delegation met and agreed to create and pass congressional legislation and appropriation of $40 billion to finance the costs of response and recovery efforts, and (2) that major federal organizational and coordination changes occurred relatively rapidly, even before Congressional hearing or special task forces were formed.

Since Sept. 11th, many new bills relating to terrorism are pending before Congress. The list of pending legislation is sizeable, and has been changing at a rapid rate.

(2) **Executive Orders.** Again, within about 16 weeks, three Executive Orders (E.O.) and two Homeland Security Presidential Directives (HSPD) were issued. They include: E.O. 13228, Homeland Security; E.O. 13231 Critical Infrastructure Protection, and E.O. 13234 Citizen Preparedness. HSPD1 deals with the Homeland Security Council and HSPD 2 covers Immigration Policies.

(4) **Key Federal Response Plans.** It is expected that both the Federal Response Plan and the National Contingency Plans will be reviewed and revised, based on the Sept. 11th attacks. It is too early to know the natural of these changes. The structural and organizational issues as well as the basic authorities for Homeland Security Office probably will have to be clarified before the implementing mechanisms and response plans are changed.

(5) **Major organizational changes.** There were at least three new federal offices created, the Homeland Security Office and the Homeland Security Council (in the Executive Office of the President) and the Transportation Security Administration (in the Dept. of Transportation.). Paramount among the changes here is the rapid creation of the **Homeland Security Office.** Other major changes pending include a wide array of security concerns, such as changes in airport and airline safety responsibilities, regulations, procedures; changes in immigration

and naturalization laws and regulations; and changes in the transportation systems in the country.

It is too early to know just what the Homeland Security Office (HSO) will do with regard to contributing to changes in response plans, systems, and even recovery. Given the breadth of the Executive Order mandating the formation of that office, it would be likely major changes are in the offing. Some of the other changes that are likely to occur in the coming months: improved warning and alert systems, improved detection and treatment for chemical and biological agents; improved intelligence gathering and analysis from both domestic and international sources; changes in emergency management systems and personnel training; changes in FEMA's National Preparedness Office, changes in the Federal Response Plan and the National Contingency Plan, and more national Counter Terrorism (C-T) exercises.

Given the vast complexity of the attacks and their aftermath, the authors created the **Terrorism Time Line: Major Milestone Events and their U.S. Outcomes (1988-2001).** Also under development are a narrative explanation of the chronology and a policy analysis of the major events and their outcomes.

In closing, in an article entitled ***Suddenly, Americans Trust Uncle Sam,*** noted author Francis Fukuyama is quoted as saying: *"Trauma and war bring out communal solidarity and remind people of why we have government."* Regarding the creation of trust in government, he said *"... a national crisis alone does not create trust in government. It's a combination of external threats and government effectiveness* [24]".

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A LOCAL GOVERNMENT PLANNING GUIDE FOR FIRST CONTACT EVENTS

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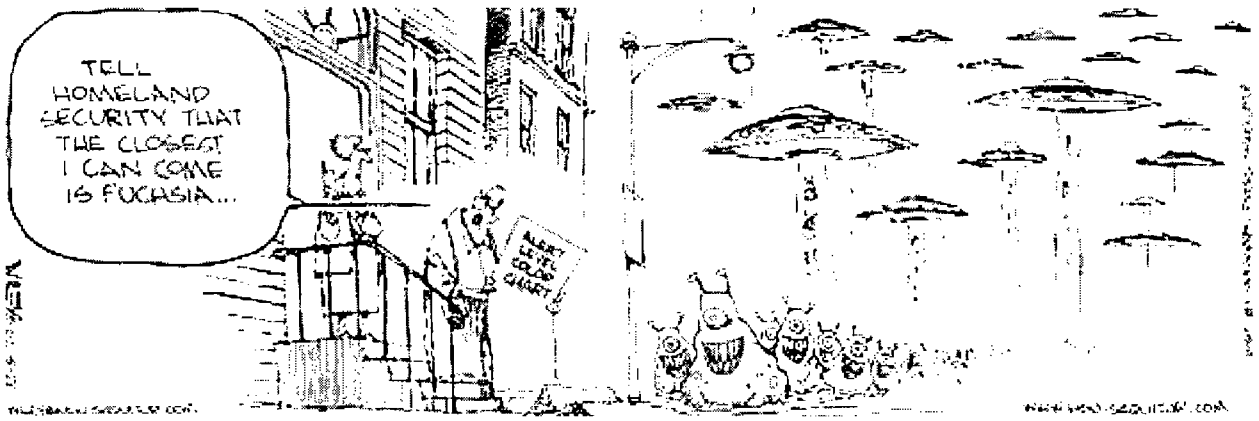


ABSTRACT

As more of the Earth is explored, as well as the planets in our solar system, there is an increasing possibility of finding that we are not alone. We may also find that we have not been alone in the ancient past. Writers of science and science fiction have posited this scenario for centuries. As of 1996 as much as 50% of the American public believed that flying saucers, or some type of Unidentified Flying Object (UFO), did exist and such devices were visiting the Earth[1]. If there were an actual confirmation of alien intelligence announced to the public, there might be a severe disruption of the public psyche. This would depend on the type and scope of the discovery. The results could lead to political instability, financial volatility in the marketplaces, and disruption in the fabric of civil authority. If the verification of extraterrestrial intelligence (ETI) does occur in our near future, emergency planners in local government need a basic planning guide for developing response strategies. Federal agencies and nationally acclaimed think tanks have helped developed federal policies for such an event. Initial impacts will be on local government, but there are no guidelines for managing these impacts at the local level. This paper provides a summary of related past occurrences with relevance to possible future public response and proposes a set of event scenarios that are weighted by intensity and impact. A local government strategy checklist is provided for planning initial response for impacts due to an ETI verification announcement.

INTRODUCTION

There is nothing new about the consideration that there might be extraterrestrial life. The idea of alternative life forms has a long history in ancient religious texts. Science fiction, starting in the 1800's, has also mused over this issue. The UFO and flying saucer reports have emerged as a major discussion topic since the 1940's, starting with some of the "FOO" fighters experienced by U.S airmen over Germany (some of which were not the early jet planes of the Nazi regime). These reports would seem to have little value as a basis for emergency management. Although every emergency plan should have a basis in all-hazards management, there is little time for local planners to prepare contingency plans for every possible event. That is why emergency plans focus on *most likely* events. What does have value is the continued effort to evaluate contingency planning for even the most unlikely events, if such events would result in substantial and immediate impacts to the public health and safety. This paper provides the information local planning officials simply would not have time to generate if there was fast breaking news of an ETI presence.

DISCUSSION

> **"Mitigating man-made disasters is essentially a function of protecting people from themselves and one another. Individualism is a core American value, and there is a notion ingrained in the American psyche that people should be able to do whatever they wish as long as they do not hurt other people. Despite periodic efforts to protect us from ourselves, such as Prohibition and current anti-drug laws, Americans have a remarkable amount of freedom. As population grows, however, it is becoming more and more dangerous for people to behave as they did when the nation was largely rural..."**
> William L. Waugh, Jr., *Living with Hazards: Dealing with Disasters*[1]

The starting point for this paper is an assumption that in our future, an authoritative body will provide indisputable proof that an alien civilization has existed or does exist. This paper briefly explores where such a disclosure will come from, and why the source of the disclosure may influence public response. Emergency managers must consider the impacts such a disclosure will have on the various sectors of culture. Emergency services professionals of every discipline must evaluate what those impacts mean in the context of protecting the public health, safety, property and the environment.

A Brief Historical Perspective On ETI

The public perception of extraterrestrial phenomena and alien life is peppered with anecdotal information, Hollywood hype and anti-government sentiments. The belief foundations in the American public reflect this, and indicate the levels of impact a major discovery announcement might have on the public psyche. Belief in UFOs has been measured by various polling mechanisms. The results indicate a strong supporting belief for the existence of extraterrestrial life.

> **"Between one-third and one-half of Americans believe in unidentified flying objects (UFOs). A somewhat smaller percentage believes that aliens have landed on Earth (Gallup 1996; Southern Focus 1998)...**
> **Belief in most—but not all—paranormal phenomena is higher among women than men. More women than men believe in ESP (especially telepathy and precognition), astrology, hauntings, and psychic healing. On the other hand, men have stronger beliefs in UFOs and bizarre life forms, for example, the Loch Ness monster (Irwin 1993) ..."**[2]

If half of our adult population already believe in UFOs, that indicates a potential for strong responses, if their previous beliefs are strengthened by formal validation. The results of these beliefs could be suddenly fortified by a truly historical finding.

From a historical perspective it is clear that past great archeological discoveries did not create panic in the streets or bizarre public behavior. Outside of the continuing battles of creationism vs. evolutionary theory, few scientific finds have created a furor of public unrest. The discovery of King Tutankhamun's tomb, the City of Troy, the Ark that remains on Mt. Ararat, and the Shroud of Turin have not incited public turmoil. The public does not incite civil disorder over the stories of Roswell, New Mexico, or over announcements of ancient ruins off Cuba that seem to reveal ancient civilizations in the Western Hemisphere. So, how can the actual release of data on an extraterrestrial civilization be considered as a threat to local government? **Simple: the lingering effects of one radio broadcast in 1938.**

When Orson Welles broadcast his famous *The War of the Worlds* it was meant as public entertainment on the Mercury Theatre of the Air. It was supposed to be an interesting adaptation of H.G. Wells famous science fiction story published in 1898. As noted in such books as, "*The Invasion from Mars: A Study in the Psychology of Panic*", it had substantially different effects[3]. The result was terrorization of a 20th Century, educated population. This was before *Star Wars*, *2001: A Space Odyssey*, *Star Trek*, *E.T.* and a plethora of other films on aliens, both positive and negative. The *Adventures of Buck Rogers* might have stirred some of these responses, but afternoon adventure movies would not have created such a subconscious response to produce such chaos. Some researchers have justified the wild public reaction because many late-arriving listeners missed the disclaimer at the beginning of the presentation. Some claim it was the angst over the looming dangers of WWII. Those suppositions do not

explain the impacts resulting from the same presentation being played in ensuing years:

> **"Over the next fifty years *The War of the Worlds* was rebroadcast several times, causing panic and riots in Chile (1944), Ecuador (1949), and most recently, Portugal (1988). In some cases, lives were lost. After the crowds discovered that they had been deceived, fear turned to anger and unruly crowds stormed the radio stations, in some cases setting them on fire."[4]**

The Tobin 1% Hypothesis

The Tobin hypothesis of the 1% response might provide an answer. The hypothesis states that approximately 1% of the general population becomes significantly unbalanced during times of strong cognitive dissonance...when fragile belief systems run into a wall of conflicting reality. This 1% of the populace can be the source for anti-government survivalists, home grown terrorists, abortion clinic bombers, and rioters at a World Trade Organization meeting. They may become self-destructive individuals who see the unfolding of an end-of-the-world scenario (e.g., the Heaven's Gate cult mass suicide in 1997 at the approach of the comet Hale-Bopp, *which was tied to their belief in an ETI contact).* Part of this mental stress is generated by super-credulity: when the mind is focused on accepting anything to fill the voids of inexperience during a foreign, unknown event. This struggle of personal faith and understanding can be a time when rumor and imagination have as much weight as fact. The 1% cohort can become extremely anxious about an imminent event, which has no reference point in their reality, causing them to be overcome with unbridled paranoia. I have experienced the 1% cohort in public hearings for nuclear facilities, in school board meetings and on America's roadways. Many of them are emotionally unstable and prone to violent outbreaks. These outbreaks seem to empower them when they feel victimized and without control of their environment. They sometimes have little perception of the ramifications of their actions on other people or themselves during their catharsis.

As I look out my office door, I can see two ridges over into the Sierra Nevada Foothills. There were two men living there, just a short time ago, who might well have qualified for the 1% ranks. Just prior to Y2K, they planned the demolition of a large propane tank farm in a Sacramento, California suburb. This could have resulted in thousands of fatalities. Their goal was to provide a catalyst for instigating civil unrest and the fall of the federal government. These individuals saw the year 2000 as the date when the world would end, or at least the society they hated. Since that was not occurring, they thought they should initiate it...no matter the cost. They were going to make it happen according to their beliefs! That is the real concern with this sector of our culture—they will act out when their beliefs reach a crisis point.

Just a few of these people can lead many others to acts of violence and disruption, as was evident during the riots in Los Angles in 1992. If similarly unstable citizens were to incite the 50% of the UFO faithful in an inappropriate

direction (or if this element reacted to a report of extraterrestrial life in a destructive response) then public health, safety and property would be at risk. Contingency planning should anticipate these reactions.

Implications of ETI Verification

These instances should be sufficient to consider not just the content of the report of ETI, but how the report is released – especially by which official body. The source may be as important as the message. This consideration has already been explored by the Brookings Institute in their 1961 Report, "Proposed Studies on the Implications of Peaceful Space Activities for Human Affairs," pages 215-216:

> *"The implications of a discovery of extraterrestrial life---*
>
> **Recent publicity given to efforts to detect extraterrestrial messages via radio telescope has popularized—and legitimized—the speculations about the impact of such a discovery on human values. It is conceivable that there is semi-intelligent life in some part of our solar system or highly intelligent life that is not technologically oriented, and many cosmologists and astronomers think it is very likely that there is intelligent life in many other solar systems. While face-to-face meetings with it will not occur within the next 20 years (unless its technology is more advance than ours, qualifying it to visit Earth), artifacts left at some point in time by these life forms might possibly be discovered through our space activities on the Moon, Mars, or Venus. If there is any contact to be made during the next 20 years it would most likely be by radio—which would indicate that these beings had at least equaled our own technological level.**
>
> **An individual's reactions to such a radio contact would in part depend on his cultural, religious, and social background, as well as on the actions of those he considered authorities and leaders, and their behavior, in turn would in part depend on their cultural, social, and religious environment. The discovery would certainly be front-page news everywhere; the degree of political or social repercussions would probably depend on leadership's interpretation of (1) its own role, (2) threats to that role, and (3) national and personal opportunities to take advantage of the disruption or reinforcement of the attitudes and values of others. Since leadership itself might have great need to gage the direction and intensity of public attitudes, to strengthen its own morale and for decision making purposes, it would be most advantageous to have more to go on than personal opinions about the opinions of the public and other leadership groups.**
>
> **The knowledge that life existed in other parts of the universe might lead to a greater unity of men on Earth, based on the "oneness" of man or on the age-old assumption that any stranger is threatening. Much would depend on what, if anything, was communicated between man and the other beings: since after the discovery there will be years of silence (because even the closest stars are several light-years away, an exchange of radio communication would take twice the number of light-years separating our Sun from theirs), the fact that such beings existed might become simply one of the facts of life but probably not one calling for action. Whether earthmen would be inspired to all-out space efforts by such a discovery is a moot question. Anthropological files**

contain many examples of societies sure of their place in the universe, which have disintegrated when they had to associate with previously unfamiliar societies espousing different ideas and different life ways: others that survived such an experience usually did so by paying the price of changes in values and attitudes and behavior.

Continuing studies to determine emotional and intellectual understanding, and attitudes—and successive alterations of them if any—regarding the possibility and consequences of discovering intelligent extraterrestrial life.

Historical and empirical studies of the behavior of peoples and their leaders when confronted with dramatic and unfamiliar events or social pressures. Such studies might help to provide programs for meeting and adjusting to the implications of such a discovery. Questions one might wish to answer by such studies would include: How might such information, under what circumstance, be presented to or withheld from the public for what ends? What might be the role of the discovering scientists and other decision makers regarding release of the fact of discovery?"[5]

As reported to the Committee on Science and Astronautics, U.S. House of Representatives, Eighty-Seventh Congress, April 18, 1961

An additional source of information evaluation can be found in a Central Intelligence Agency document, "*Report of Meetings of Scientific Advisory Panel on Unidentified Flying Objects Convened by Scientific Intelligence*, January 14-18, 1953 (led by Chairman, Dr. H.P. Robertson, thus often referred to as the "Robertson Report"):

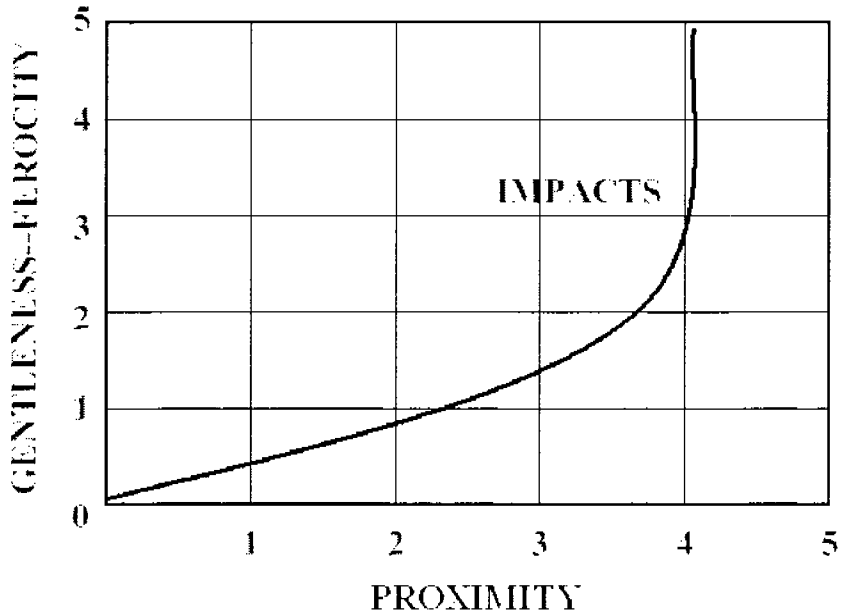
> **"2. As a result of its considerations, the Panel concludes: a. That the evidence presented on Unidentified Flying Objects shows no indication that these phenomena constitute a direct physical threat to national security. We firmly believe that there is no residuum of cases, which indicates phenomena, which are attributable to foreign artifacts capable of hostile acts, and there is no evidence that the phenomena indicate a need for the revisions of current scientific concepts. 3. The Panel further concludes: a. that the continued emphasis on the reporting of these phenomena does, in these perilous time, results in a threat to the orderly function of the protective organs of the body politic." [Misspellings were corrected for reader benefit.]"**[6]

CONSEQUENCE ASSESSMENT

To assess the likely impacts of ETI verification, we need a tool to measure the intensity of the information. For this, I've used the Tobin Ally-Enemy Impact Evaluation Curve. This curve was used in the past to analyze historical responses of cultures to external threats, although it is not necessary to consider every ETI scenario as a threat. Some contacts may be beneficial, which is why the chart reflects both ferocity and gentleness. However, the Ally-Enemy Impact

Evaluation Curve in Table 1 is a good starting point for the type of responses often elicited by mankind.

TABLE 1: TOBIN ALLY-ENEMY IMPACT EVALUATION CURVE



When a threat is far away (a 1 on the proximity axis) there is little impact. When there is little perceived threat of danger (a 1 on the gentleness/ferocity axis) there is also very little impact. Any increase in either proximity or ferocity will increase the steepness of the impact curve. If they both variables approach a catastrophic crisis mode (a value of 4), there might be major losses of societal integrity. A description of values for proximity and ferocity for an ETI announcement are provided in Table 2.

ETI Verification Scenarios and Their Impacts

The next logical approach is to discuss the categories of verification scenarios that might occur and their context regarding societal impacts. Stan Swihart, a colleague with many decades of experience in high-level emergency planning for government and the private sector, suggested a series of event categories that I then expanded and organized into a matrix. The matrix of possible triggering events (See Attachment A) provides the events, their overall impacts value (based on proximity and ferocity), and some possible repercussions on society and government.

TABLE 2: PROXIMITY AND GENTLENESS-FEROCITY VALUES

VALUES:	1	2	3	4	5
PROXIMITY	ETIs are millions of light years away and are revealed only by radio or other long-term transmissions	ETIs are traveling in space but beyond our solar system	ETIs are found traveling within our solar system	ETI culture is established in our solar system with the capability to reach Earth	ETI culture was established on the Earth recently
FEROCITY	Unknown characteristics, of a dead ET civilization, with no signs of returning, or the presence of a benign ETI	Indications of past aggressive behavior by ETI, or aggressive messages received by electronic transmission	Aggressive acts occur in nearby space against other planets/ Moon, to show ETI advanced weapon capabilities	Aggressive actions taken by ETI against our space probes, satellites, or astronauts	Direct hostilities, threatened/actual, against Earth... its people or its biosphere

STRATEGY SUMMARIES FOR LOCAL GOVERNMENT

Ranges of Impacts Affect the Ranges of Strategies

Steven J. Dick, an informed author in the field, believes that the range of response to a first contact event may be limited to debate and legal arguments, not unlike the trials of Copernicus for his heliocentric theories, or Darwinian theories in the American educational system. In writing of the potential impacts similar to the previous conceptual battles, he wrote:

> **"Many of these characteristics are likely to be mimicked by the discovery of extraterrestrial intelligence: an immediate strong reaction despite a long prehistory of the idea; the short-term heated controversies; the spur to scientific research punctuated by a period of relative neglect; the diversity of opinion among and within groups; the widespread effect on areas of society that we cannot now predict; and above all, the transformation of the way in which we view our place in nature..."**[7]

SETI and NASA are aware that the public and institutional response might be wider in scope than envisioned by other voices presented in this paper. In a

recent workshop, the following notes were provided that would apply to the SETI Phoenix project finding ETI verification:

> **"Reactions to a detection (or non-detection) can range from indifference through mild positive or negative curiosity, through millennial enthusiasm or catastrophist anxiety, to full scale pronoia or paranoia. Most individual reactions to an announcement would include active expanded searches for additional information, with significant coalescences of like-minded individuals in support (or opposition) groups. A few reactions would probably be irrationally extreme or even violent."[8]**

The Psychology of Crowds

In the face of these kinds of discussion forums, we could expect large crowds to appear, with volatile protests on either side of whatever question was being raised. Emergency Management Australia developed a text, "Safe and Healthy Mass Gatherings,"[9] that might have value in developing local strategies. One reference in the guidance discusses the psychology of crowd response.

FEMA now offers a related independent study course through the Emergency Management Institute. The course is called, "Special Events Contingency Planning for Public Safety Agencies, IS-15." This would be of particular value for local government planning for an ETI verification announcement. The course is free of charge and can be ordered via the Internet at: http://training.fema.gov/EMIWeb/is15.htm

These guidelines, however, provide a weak basis for the strategic planning needed for an ETI event. There is no previous context for acceptable or reasonable behavior for a large public response to an ETI announcement, or for a widespread, close visual ETI contact. These events call for special attention to new tactics to support sound emergency management strategies in a potentially volatile environment.

Establishing Reasonable Strategies

It is difficult to assess a reasonable strategy for local government when there is such a range of views on the impact of ETI verification. NASA and SETI have devised some direct policy for working with educational institutions, news media, entertainment media, and federal government policy makers. With these policies in mind, I have developed what is often termed in California "the first ten plays" as the basis for local government strategies (Attachment B). If these steps are taken before, during and after an ETI announcement, local government has a better chance of weathering peculiar human responses. This approach assumes a moderate level of impacts, somewhere between mere scientific interest and

total societal collapse. Neither end of the spectrum seems meaningful for local government planning standards. The low impact elements would require little if any local response. The highest impacts would soon overwhelm local government resources, and in some case national and international capabilities. The strategies provided as Attachment B, should also be adjusted for the size of local government (a Los Angeles response would be far different than a small, rural county in North Dakota).

An additional strategy, beyond those in Attachment B, is to educate the local emergency management communities ahead of time regarding larger public events. This could be accomplished by briefing them on the highlights from the resources previously mentioned.

SUMMARY

While there is no immediate indication of a verification of extraterrestrial intelligence, the possibility of such contacts is compelling. The impact of a verified contact with other life forms can be hypothesized based on past human behavior to extraordinary changes in knowledge that challenged general concepts and beliefs. Although there is no existing local guidance for response to such an event, some basic, sound steps were recommended as an extrapolation of suggestions and policy from federal agencies, think tanks, and formal studies of the subject. The focus of local government will always be to protect the immediately safety, health and life of its public. An ETI verification, in the range of impact that is most likely to occur, would not require substantial resources outside of those already available.

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ATTACHMENT A:
MATRIX OF TRIGGERING EVENTS

NOTE: 1= LOWEST IMPACT 5=HIGHEST IMPACT

IMPACT 1-5	EVENT	POSSIBLE RESPONSES
1	If astronauts find extraterrestrial artifacts on Venus, Mars or the Moon.	If only evidence of past civilizations are found it is unlikely that the information would cause civil unrest, stock market crashes, or government instability. If there were no aliens there now, there would be no immediate threat. The findings in this case might include artifacts that prove prior contacts with Earth cultures. Special significance might be given to actual civilization sites that show structures similar to ancient sites on Earth.
1	If records of past contact with extraterrestrials are found on Earth, but only as brief visitations.	Substantiated recorded information from an archaeological site could bring to bear on early stories featured in many religious texts, which previously only held anecdotal information about such contacts. Earlier interpretations were considered misreading of such stories as fiery whirlwinds, angels, Noah's and Elijah's trips into heaven in a whirlwind. If new information gives new meaning to stories of Jesus, Mohammed, and Buddha all visiting the sky, then there may be substantial reconsiderations of ancient knowledge. This would include Sumerian, Indian, Babylonian and early Egyptian writings that had previously been considered as mythology or misinterpretations.
1	If there is verified documentation of spacecraft and creatures as being established in the ancient past on Earth with cities and/or colonies, but with no evidence of any current presence.	This could raise considerable concern and speculation amongst scholars about the history of human beings and their origins. It could create a vacuum of faith and cause irritation in the 1% group, but probably not to the level that they would take an action other than calling talk shows or writing letters to their local papers and Congressional representatives. The most impacted arenas will be the faith-based communities and the local schools. The Work Group established to discuss such issues could help with some of the confusion that children, parents and educators will face with this revelation.
2	Astronauts find other life forms living on another planet, moon or asteroid in our solar system. Astronauts find other life forms living on another planet, moon or asteroid in our solar system. (***Continued***)	These life forms might be very primitive, such as bacterial, fungal or spore-based molds. If more advance forms were discovered, such as air breathing, mobile life forms then there would much more interest and concern in two areas: 1. In identifying the basis of the life form and its potential threat to human life. 2. Whether such a live form should be brought back. There could be substantial public protest to bringing anything alien back to our planet. This could be

IMPACT 1-5	EVENT	POSSIBLE RESPONSES
		instigated by the 1% element or by legitimate scientific disciplines. If the life form were hominid, there would be substantial concern about crossing-over of a disease pathogen for which we have no immune resistance. This could lead to devastation of our species. If the life forms are both advanced and capable of communication, there may be substantial concern about the discovery. If it is kept silent by the military/federal government of the discovering country, and then revealed by accident, substantial damage may be caused in support of government institutions. This would give the 1% cohort a substantial reason to take active and possibly dangerous acts.
2	If the ETI contact occurs with a country hostile to the United States	If it were confirmed that advanced ETI life forms were in contact and allied to North Korea, Iraq, Iran, Yemen, or even China there would be great anxiety created immediately at all levels of national governments. This could escalate tensions to the point that some of the newly allied countries may no longer have concerns about the military strength of the United States and its allies. This could lead to unprovoked attacks of military and civilian targets, including the use of weapons of mass destruction. Local governments may be directly involved in a State of War declaration and have to activate all resources to protect and defend the public within its jurisdiction, as well as support the federal government to protect and defend our borders.
3	If extraterrestrials offer advanced technology to Earth's governments/people; this could include the volatile changes in technology including the dissolution of the need for fossil fuels, utility companies, pharmaceutical firms, medical facilities, mass food production and distribution, or any number of other revolutionary, immediate changes.	If many new technologies were introduced in a short period, it could create financial chaos. Markets would fail. Banks might fail. Many people dependent on jobs tied to the old technologies would be unemployed. This could result in massive demonstrations against the new alien technologies and lead to sabotage and acts of violence against those who wanted to use the new technologies.

4	If there is confirmation that ETIs have directly contacted world leaders by remote communications and described their imminent arrival. This might include verification that such contacts have existed with our government for many decades.	This information might not be shared with the public until just shortly before the arrival. This may be planned to reduce anxiety by reducing the time to consider the implications of such an approach. Some more radical members of the 1% cohort may take immediate drastic actions to harm themselves or others. Monitoring should be considered. The local leadership group will most likely be activated in preparation, but little complete information will be available to prepare local populations as to what to expect. The media may provide speculation.
5	If there is confirmation that ETIs have power over Earth resources.	Advanced ETI forces might control satellites, communications, power generation, water transportation, food production, weather and all electronic devices. This could mean stopping all means of contact and modern transportation. Even with reassurance from government, the public is likely to panic and take various desperate actions if they feel they are in direct danger from an uncontrolled, unstoppable outside force, even if there is no violent intent identified with the acts of control.
5	If extraterrestrials were to appear and demand our leaders meet with them in space or another body in space.	The 1% cohort would undoubtedly taken this as a sign of some kind. They would oppose the move and demand all people to arm themselves for a coming invasion. There might be direct, violent clashes between this part of society and the standing government authorities.
5	If there is a verification that ETI are presently on Earth, mixed in with the general population AND a number of new, serious diseases were brought with them that may destroy humanity, as Western diseases decimated native cultures in the New World.	If there is no clear announcement of vaccines and other treatments for these diseases, the world culture could be come fractured and violent. If there was no clear method for delineating the alien from human forms, witch hunts and inquisitions would take over law and order. Anyone who was not like the rest of the community (new arrivals, other races, other religions, those with pronounced different physical or mental characteristics, etc) would be sought out as targets as the bringers of diseases, and then punished by vigilante justice. If history were repeated, this opportunity would be used by the greedy to obtain properties, and by the wicked to settle personal vendettas. The bastion of our society would crumble: government, schools, hospitals, religious centers, public venues, open travel, freedom of speech and religion, and rule by law.

5	If there is verification that extraterrestrials have been or are going to control the government leaders of the entire world.	General panic might arise with strong likelihood of hoarding, the collapse of the value of paper money, and the establishment of barter societies. Witch-hunts would be common, especially by those who had old grudges to settle. Many would be falsely accused of cooperating with the alien intelligence, whether they claimed to be benign or not. Lawful processes would fall prey to chaos and anarchy, especially in the urban centers. Government leaders might be subject to public executions similar to the guillotine massacres of the French Revolution.
5	If there were verified violent confrontations with extraterrestrials: this could include abductions (including leaders), murders, torture or outright warfare. This could also include proof that aliens were "terraforming" the Earth to match the environment on their own world—which would result in the destruction of humanity.	All communities would band together to arm and prepare its citizenry to fight the invading forces. Local authorities would be responsible for preparing and protecting the populace to the best of their capabilities, but only federal or international intervention might have any effect.
5	If extraterrestrial arrived and warned of an impending catastrophic collision between he Earth and another body in space. This might include the offer to begin evacuations.	Local governments would face the daunting task of evaluating the process of organizing evacuations. If only a limited number, or type, of evacuee was allowed there could be massive civil disorder and disruption to prevent anyone from evacuating. The 1% cohort might also raise a movement to stop all attempts at evacuation because the events that were proceeding were punishment by some higher force, and that everyone deserved to die (especially if the 1% types were excluded from evacuation). Substantial disruption of culture could be expected unless there was evidence of a timely and fair evacuation. Disruptions could go as far as war between neighboring countries with long-seething tensions that would want final revenge before the Earth was destroyed.

ATTACHMENT B:

LOCAL GOVERNMENT STRATEGIES FOR FIRST CONTACT

1. Verify any ETI announcement with at least three sources, which could include: state authorities, federal authorities, local university or college experts, military contacts in the community, local media, and local experts in this topic area.
2. If verified, activate at least the Director level of the EOC.
3. Contact the community leadership group to discuss the matter.
4. Contact other local elected officials and brief them on what is verified. Be prepared to state the plan of action if there is any civil disorder.
5. Work with the local government PIO to establish an early news release regarding the event, which should reflect the consensus/discussion of the local leadership group as well as the local elected officials. A news release should have already been drafted that contains most of the information/approach the local government will take with the release of ETI verification information.
6. Ensure local first responders (fire, law, medical) are briefed and made aware of the incident status. Share the action plan with each discipline. Establish a 24-hour point of contact in the emergency services office for the duration of the event's impact.
7. Monitor media and pre-identified web sites that would have relevant updates on the ETI verification announcements (e.g., SETI) ETI actions or other relevant information.
8. Based on the impact of the events, establish a public meeting at a local auditorium or meeting hall to include local elected officials, experts from a local university or college, a member of the faith-based local leadership group, a member of the local medical community/hospital, and a member of the media. Fire and law enforcement representatives can also be included.
9. Evaluate the resources needed to manage any public reaction or concerns that last past a week after the event.
10. Prepare and distribute educational flyers through the schools, clubs and organizations, religious organizations, hospitals, libraries, the Chamber of Commerce, local grocers, and through interested members of the media.

3/30 Rule – Rescue in the Hot Zone

By Dave Hunt and John Eversole

Since the recent terrorist attacks, the potential for further incidents against the United States using biological or chemical agents has risen dramatically. Because of the increased risk, Incident Commanders need a guideline to determine when they can commit personnel into a contaminated scene; either to rescue the public or to aid fallen responders who entered the scene with little or no personal protective equipment.

Following the Tokyo subway sarin nerve agent incident and Oklahoma City bombing, the federal government began seriously debating how best to prepare for terrorist attacks. Many envisioned large-scale federal response teams, with specialized training and equipment, ready for immediate deployment anywhere in the country. As this vision has matured over the past several years, the realization has emerged that the United States cannot rely solely on large federal teams as the first line of defense because of lengthy deployment and response times. Consequently, the focus of Domestic Preparedness has changed to train and equip our civilian first responders to handle the first several hours of a weapon of mass destruction (WMD) response.

A major concern arising from the many full-scale chemical WMD exercises that have been conducted across the country is the extensive delay in removing contaminated or injured victims from the "hot zone". In many cases HazMat teams, if they are available within the jurisdiction, require over an hour to respond, set up and reach the first non-ambulatory patients. Because much of the training for WMD has focused on horrific effects of chemical/biological agents rather than methods of protection, we may have frightened our responders into paralysis. As a result, many jurisdictions plan to wait for the nearest HazMat team to handle the incident, rather than implementing viable solutions to immediately assist the injured or affected. Waiting 45 to 60 minutes or more to get a HazMat team on the scene, prepared to enter the hot zone in support of potential victims virtually assures that non-ambulatory victims will become fatalities. While efforts to speed the entry procedures for HazMat teams are recommended, a significant delay in rescue efforts will remain.

Most Incident Commanders recognize a duty to act in a situation with many injured victims, but may be afraid to commit personnel into an unknown environment, fearing loss of personnel or potential regulatory actions of the Occupational Safety and Health Administration (the wrath of OSHA). In response to this need for guidance, the Domestic Preparedness Program

conducted testing on firefighters' protective gear to determine suitability for use in a chemical terrorist incident. The results of this testing provide the data needed to develop guidelines in response to chemical terrorist incidents.

Funded under the Domestic Preparedness Program, the Chemical Weapons Improved Response Program evaluates methods of enhancing response to chemical terrorism incidents. Noting the composition of firefighters' protective equipment bears a striking resemblance to military chemical gear, several jurisdictions requested that the military test the effectiveness of firefighter's personal protective gear in a chemical agent environment. The test findings, Guidelines for Incident Commander's Use of Firefighter Protective Ensemble (FFPE) with Self Contained Breathing Apparatus (SCBA) For Rescue Operations During A Terrorist Chemical Agent Incident, commonly known as the "3/30 Rule", provides guidance to the incident commander to direct rapid rescue of viable victims in a contaminated environment. While the full report runs over 60 pages, the two primary findings it presents are very simple:

"Standard turnout gear with SCBA (self contained breathing apparatus) provides a first responder with sufficient protection from nerve agent vapor hazards inside interior or downwind areas of the hot zone to allow 30 minutes rescue time for known live victims"

"Self-taped turnout gear with SCBA provides sufficient protection in an unknown nerve agent environment for a 3-minute reconnaissance to search for living victims (or a 2- minute reconnaissance if HD is suspected)."

The recommendation limiting recon exposure to 2 minutes if HD (distilled sulfur mustard agent) is suspected is not highly relevant when discussing immediate rescue, as HD symptoms may not appear for hours, and victims would most likely be asymptomatic initially.

While no single guideline can address every situation the Incident Commander may face, the logic behind these guidelines is straightforward; if first arriving responders operating with a full running gear and SCBA find viable patients/victims upon arrival at the scene, approximately fifteen minutes after the chemical release, the atmosphere is not likely to be at the IDLH level (immediately dangerous to life and health) and responders should be sufficiently protected to remove VIABLE victims and perform initial gross decontamination. If they enter the site and find no viable victims, the level of exposure is clearly above the IDLH level, and the rescuers

should limit their entry to a rapid recon, minimizing their on-scene time and thus exposure. Gross decontamination of responders prior to doffing their PPE is required.

Tests performed on the protective clothing by the military showed a significant level of protection from nerve agent vapor with either the PBI or Nomex types of structural firefighting gear. Higher levels of protection were obtained by taping seams with duct tape, further limiting routes of exposure. Use of positive pressure SCBA provides 10,000 times greater level of protection from inhalation of vapors than an unprotected person, and is the same level of respiratory protection used at the highest levels of HazMat entry. Responders should be instructed to avoid contact with liquid or dissemination devices and minimize exposure time utilizing rapid extraction techniques. Use of air monitoring equipment and a quick check with M8 paper, if available, would help determine if the responders are dealing with a credible terrorist scenario, prior to the arrival of more sophisticated detection equipment to check the area.

Although the 3/30 Rule was released in August, 1999, most fire departments have not formalized response plans or exercised first responder capabilities to handle rapid extraction of potentially contaminated victims. However, several departments around the country have implemented the 3/30 Rule, among them Chicago, Illinois and Montgomery County, Maryland. Guidelines from Montgomery County Fire and Rescue Services, written by Ted Jarboe, Bob Stephan and Jack Crowley are provided in appendix A of the report.

The 3/30 Rule does NOT advocate handling routine hazardous material incidents with lower levels of protection. When time permits and lives are not at risk, normal procedures should always be followed. There is an expectation on the part of the public, whom we serve, that we are willing to take educated risks when lives are at stake. We follow this premise daily in America to rescue victims of fire, floods, tornadoes, hurricanes and confined space. In a chemical attack with multiple victims, the expectation for first responders to patiently wait for a HazMat team to arrive before taking action runs against the grain of their years of training and experience. While OSHA has not provided a written opinion on the 3/30 rule, discussions have indicated they would rule in favor of immediate rescue, based on the results of the scientific testing. Other rules such as Rapid Intervention Teams are waived for situations involving the need for immediate rescue. Ultimately the Incident Commander must make this call based on the unique circumstances of the event.

The question of how this rule should

be applied beyond a suspected chemical attack using nerve agents is a legitimate issue. The argument can be made that nerve agent vapor is one of the most highly toxic hazards we would ever face, beyond the danger posed by most industrial chemicals. Ultimately the decision is left to the Incident Commander to determine the appropriate actions and the acceptable level of protection. The fact remains that we have not lost a single responder in the United States at a hazardous materials incident from inhalation exposure while wearing positive pressure SCBA. By limiting responder exposure to rapid recon of the scene (from an appropriate distance, if possible) and rescue of viable victims only, we provide a valuable tool to be incorporated into the arsenal of response options. The lives we may save could very well be our brethren who enter a scene unprotected from the dangers they face.

Jurisdictions should evaluate and consider training and implementation of the "3/30 Rule" suited to their level of training and capability. The 3/30 rule is simple and easy for responders to remember six months or six years from now. By training, exercising and incorporating this as a response option, responders will develop a level of confidence that they can handle the initial response to a WMD incident.

While many jurisdictions cannot afford the significant expenditures in training and equipment to maintain a Level-A trained HazMat team, what responders do in the first few minutes of the incident will set the stage for what the next few hours will require. By providing training for the awareness and operations level personnel to recognize the incident as a chemical mass casualty incident, make the appropriate notifications, don full structural protective gear, take steps to isolate the scene, evacuate contaminated, viable victims and provide gross decontamination, they will pave the way to effective management of the incident. This limited level of training is within the reach of all jurisdictions, and this level of protection is already in the stations, ready for the next run.

Guidelines for Incident Commanders – FFPE Use in Chemical Agent Vapor, is available on line at:
http://www2.sbccom.army.mil/hld/downloads/cwirp/cwirp_final_incident_command.pdf

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Government-to-Government Emergency Management: Partnerships in Indian Country

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What makes a Major Disaster? The law that authorizes FEMA, *The Robert T. Stafford Act* (Public Law 93-288), requires that a Governor's request must be "based on the finding that the disaster is of such severity and magnitude that effective response is beyond the capabilities of the State and the affected local governments and that Federal assistance is necessary." In most local emergency situations, the response required to effectively manage a small flood, a fire, damage from strong winds, or a hazardous materials incident will never exceed the local capability. So when FEMA personnel deploy to a disaster site at a Governor's request, we are usually looking at serious damage and heavy impacts on populations.

FEMA processes are designed to deliver assistance quickly: we are very good at making sure that disaster victims do not become permanently homeless, and that communities remain stable and economically viable. Following a Major Disaster declaration, FEMA issues checks faster than any other federal agency. In order to achieve the *Stafford Act* mission, the Agency has designed a meet-the-needs-of-the-most-customers process, based on "typical" applicants, damages, ownership, disaster events, insurance, dwellings, personal property, and typical disaster losses. Our system works great for the vast majority of "typical" disaster assistance applicants, whether they are individuals, families, State governments, or local public works departments.

However, "typical' does not apply on Indian Reservations. In 1992, a flood recovery operation in Arizona forced our disaster management team to flex *The Stafford Act* to its limit in order to achieve the congressional mandate of getting assistance to all eligible applicants. The Major Disaster area on that operation included 11 federally recognized Indian Tribes – among them the Navajo (the largest landed Tribe in the US); the Hopi (who have lived on ancient mesas for hundreds of years); Havasupai (their Reservation is at the bottom of the Grand Canyon); Tohono O'odham, White Mountain Apache, and others. These Reservations are remote and isolated, and at that time, possessed minimal emergency management capability of their own. The State of Arizona recognizes and acknowledges the sovereign status of these Tribes, and restricts the State from administering federal funds to Indian Tribes. The FEMA Emergency Response Team (ERT) – most of us from the Seattle area and few of us with Tribal experience -- set out to deliver assistance in communities that existed before Columbus landed; where English is a second language; and where the federal agents and other non-tribal governments are viewed with

suspicion and considered to be the cause of cultural alienation and political disenfranchisement.

In Arizona we struggled to make our one-size-fits-all program accessible to the Reservation residents and Tribal agencies. On the Hopi Reservation, where some of the adobe homes on the mesas are over 500 years old, FEMA inspectors set out to verify that a single, recent weather event had caused the clay roofs to leak and walls to wash out.

When the Hopi Tribe applied for assistance on behalf of a *Kiva* resident, my boss thoughtfully considered our options. *Kivas* are the sacred dwelling places of Hopi Spiritual Beings – beings as real to the Hopi as any human disaster victim. But of course, spirits do not fit the criteria for eligibility within our program regulations. Rather than reject the application outright, my boss was willing to consider all the alternatives, in the cultural environment of this disaster impacted community; he met with the Hopi leadership to listen to their story, to acknowledge their claim and to explore alternatives for assistance. Ultimately we determined that we were able to assist with repairs to the Kiva because it was a Tribally-owned property.

That is what government-to-government means – to find a way to deliver assistance to Tribal governments and members, even if the programs and systems are designed for "typical" non-tribal applicants.

Most Government-to-government policies, whether they are State or federal, stress *finding a way* to include Indian communities and governments in programs that they otherwise would not be able to access. These policies are intended to allow agencies to work around their own regulations but within the law, in order to give Tribes access to programs that other governments or populations already enjoy. The federal policies allow agencies to address the needs of Indian governments and communities specifically, not at the exclusion of State and local governments, but in recognition of the Tribal government. The FEMA Tribal Policy (read the *FEMA Agency Policy for Government-to-Government Relations with American Indian and Alaska Native Tribal Governments* on line at http://www.fema.gov/library/natamerpolcy.htm) also encourages the development of emergency management capability within communities and jurisdictions, primarily through building partnerships among federal, state, local, and governments.

Since that disaster in Arizona, I have worked many disaster recovery operations in communities all over the US – the Pacific Islands, the Deep South, the Midwest, Puerto Rico, Guam, California, and numerous other operations in the four FEMA Region 10 States of Alaska, Washington, Oregon and Idaho. Every community in our Nation is unique and has its own culture, whether it's Albany, New York, Albany, Georgia, or Albany, Oregon. As a public servant, I respect those unique cultures. But the challenges of administering FEMA programs in

Tribal communities go far beyond the usual chaos and uncertainty of typical disaster operations, because in general, *no relationships exist between the responding agencies and jurisdictions and the Tribal governments.*

Initially many States and some Indian Tribes interpreted the FEMA *Tribal Policy* to mean that the Federal government was now assuming responsibility for all disasters that occur on Reservations. In fact, the goal of *The Policy* is to build and enhance response capability in Tribal communities, through partnerships with surrounding jurisdictions, with technical assistance for plans, with training, and by inclusion in the Emergency Management community.

Conventional wisdom in Emergency Management tells us that "Disasters don't respect borders." We all say it, and we all understand that it means we must plan and practice with our neighbors and partners, whether our neighbor is a borough, a township, a major city, a parish, a Native Village, a county, a state, an Indian Reservation, a military reservation, or a federal agency. The objective of protecting populations is the same, regardless of which jurisdictions are participating. We plan, train, and exercise together because, in Emergency Management folklore, we "don't learn to dance on the day of the party." We plan together, and then rehearse the plan during cross-jurisdictional exercises. Unfortunately, the disagreements, resentments, and mistrust between Tribes and States, Tribes and Counties, or even Tribes and Tribes, hinders our overall National emergency management capability. To those leaders who say that the disagreements are too strong and the differences too big, I say, "You don't have to be in love to dance."

The commitment of time and effort that is required to build government-to-government relationships is only part of the challenge. Indian leadership and government officials historically mistrust one other. Both parties must come to respect and understand the terms and conditions under which we all come to the table. Unfortunately, the bureaucratic frame-of-reference is inevitably limited to the context of the Agency's rules and laws, which of course are designed for dominant-culture communities. A major part of the Tribal Liaison job in federal agencies is to guide staff and managers, as well as State and local officials, to an understanding of our obligation to work Government-to-Government with Indian Tribes, and to gradually chip away at the firmly held misconceptions about Tribal communities and governments.

Our efforts to develop cooperative working agreements and viable mutual-aid compacts between tribes and neighboring jurisdictions are confounded by misconceptions about which level of government has responsibility to work with tribes, and confusion over what the relationship between Tribal and other forms of government should look like. Proximity and shared histories don't necessarily make for good partners, but good partners on all levels of government are able to recognize and work around our differences. We commit to building these relationships because we share a mutual interest in protecting lives and property,

and there is no law or policy that restricts this partnering. In my experience, restrictions on relationship building are caused by the mistaken assumptions that we cling to.

"They should learn to live like Americans." A State of Alaska official made that remark to me years ago. In Alaska, 18% of the State population is Native, and archeological evidence indicates 30,000 years indigenous presence. That official's remarks serve to remind us that living as an "American" is not always easy. Racism and insensitivity are obvious and cruel realities that detract from the goal of building a strong, inclusive, national emergency management community. Nonetheless, it is important to recognize why non-Native and Native officials often struggle to work harmoniously. Predominately non-native government officials carry the prejudices of the larger society.

In the name of Westward expansion in the 1800s, the US Government carried out a deliberate policy of annihilation and genocide in Indian communities. Small wonder that few government programs or officials consider the unique conditions of Reservation residents when developing regulation, law, and policy. Well-documented starvation, broken promises, murder, destruction, and land and resource claims have undermined the credibility of the US Government, and cultural oppression has reinforced the sense that Indians are not entitled to much from Government. While the attitudes have changed significantly, the racism is still evident, particularly in communities that surround reservations.

"We should implement these programs because it is *the right thing to do.*" Emergency management and public safety are priorities in nearly every jurisdiction across the country, including Indian Reservations. However, Tribal priorities may not be the same as those of the State or federal governments.

When the Agency first finalized the *Tribal Policy*, I was determined to create the long-needed link between Tribal emergency managers and the Feds. I quickly discovered that the responsibility for emergency management planning fell to a wide array of Tribal employees, from the environmental officer to the head of the health clinic, or the tribal police, a council member, tribal fire chiefs, and in some cases, nobody. Many Alaskan Native Villages don't even have a permanent school teacher, let alone a full-time public safety officer. And the more I tried to engage Tribal representatives in the dialogue of emergency management, the more I realized that Tribal leaders are faced with much more urgent and critical problems on their Reservations – problems like alcoholism and drug abuse, domestic violence, assault, unemployment (the reservation rate of unemployment is 40% nationwide), housing, education, health care, and suicide (the number one cause of death for young men in western Alaska between the ages of 18 and 25 is suicide). I realized that it was not my place as a federal agent to tell Indians what is important to them. However, following the World Trade Center and Pentagon attacks, the issue of public safety has become more of a focus in Tribal

communities, particularly those on the borders, in urban areas, or near major interstate highways.

"They all have those casinos, why don't Indian Tribes use their own money for emergency management programs?" Of the 558 total federally recognized tribes, 198 Tribal Governments are engaged in gaming. Not all Tribes have casinos, and not all Indian casinos operate profitably. Some analysts estimate that as few as 5% of Tribally owned casinos are operating in the black, and many have closed.

While some Tribes are beginning to stabilize economically – from a variety of industries, not always casinos – they may have more urgent issues to address, as noted above. On the other hand, some Tribes are far more empowered as a result of having revenue from a tribally owned casino, and that benefits all surrounding communities. For instance, the number-one employer in Lincoln County is the Chinook Winds Casino, owned by the Siletz Tribe in Oregon. The large numbers of visitors to reservation casinos and resorts, and the problems inherent with protecting those economic interests and properties, has indeed resulted in improved Tribal emergency management programs, and has increased planning in partnership with surrounding jurisdictions.

"Why should government agencies treat Indians differently than any other community?" The legal acknowledgement of the US Government's responsibility to Indian Tribes appears in Article I Section 8 of the United States Constitution, though commitments through treaties and agreements were made prior. In 1831, US Supreme Court Chief Justice John Marshall defined the protectorate status of tribes when he wrote that, though the Tribes were protectorates of the US Government, the relationship "was that of a nation claiming and receiving the protection of one more powerful; not that of individuals abandoning their national character, and submitting as subjects to the laws of a master."

Some Indians are the descendents of groups that signed treaties with the US Government, though not all. In general, the treaty agreement was this: the Tribes gave up claim to vast amounts of land, in exchange for a promise from the US government that the Tribes would be taken care of, giving them the legal status known as "dependent sovereign." In these treaties the federal government committed to taking care of the Indians in perpetuity, and though the government has not historically kept this commitment, the trend toward encouraging self-determination has continued since the 1970s. The previous administration, as well as the current one, made determined efforts to ensure that federal agencies fulfill their trust responsibilities – a responsibility that was reinforced by executive order under Clinton.

Another more complex aspect of the federal government's relationship to Indian governments is based in their sovereign status, which defines their legitimate

jurisdictional and political existence, separately from but essentially on par with the State government. Each individual Tribal government decides in what ways it will relate to the State, the Federal government, and other jurisdictions, as well as how it will run the internal governmental business and politics.

Tribes, States, and FEMA have collided several times over disaster declarations and requests for Federal disaster assistance. Section 401 of the *Robert T. Stafford Act* (PL 93-288) clearly defines the process for requesting federal disaster assistance: "All requests for a declaration by the President that a major disaster exists shall be made *by the Governor of the affected State.*" Tribal leaders have insisted that the Federal Government honor its special relationship to tribes as sovereign nations, and not force them to access disaster assistance through the State executive. FEMA has struggled to work around the statutory restriction, and the Agency now will administer Public Assistance and Hazard Mitigation Program grants directly to the Tribes, rather making them sub-grantees of the State -- but only after the Major Disaster is declared by the President at the Governor's request.

Why don't States fund emergency management programs on Indian reservations? Some States do and some don't. Like most federal programs, the amount of money FEMA grants to States for planning and preparedness is based on total population. States count Tribal residents, including Reservation residents, as part of their total population. FEMA requires that State emergency management plans protect all State residents, but tribes have historically been excluded from most State plans and grants. States argue that the funding they receive is too little to share with Indian Tribes, and the federal funding has not increased much in recognition of this deficit.

However, many Western States are committed to enhancing Tribal capability, and they do invite Indian emergency managers to participate in State sponsored training and exercises. Montana, Washington, Oregon, Utah, and now Arizona and others are directly engaged in providing technical assistance and some funding to assist with comprehensive planning, first responder training, and overall program development. The Alaska Division of Emergency Services works directly with Alaska Native Villages, each with a federally recognized tribal government – and nearly half of all federally recognized tribes are in Alaska, a total of 227.

Recognizing the critical need for increased capability in Indian Country, many States are willing to work with Indian leadership to develop more cohesive response and recovery plans. FEMA's role is a challenging one – to encourage relationships among all jurisdictions, but not to build an expectation that FEMA is the single Agency that Tribes need to work with in emergency management. Tribal governments are putting more effort and funding into building emergency management programs, but they recognize that this vital governmental function is not one that evolves in a vacuum. Overall, the relationships among various

jurisdictions and Tribes have continued to improve – but only with the commitment of dedicated emergency managers on all levels of government.

Joan Rave is the Individual Assistance Program Officer in FEMA Region 10, where she has worked since 1990. She has served collaterally as the Region's Tribal Liaison since 1998. FEMA Region 10 serves Alaska, Idaho, Oregon, and Washington, and 270 federally recognized Tribes and Alaska Native Villages.

A Functional Approach to Comprehensive Emergency Management

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Abstract
This paper discusses the Comprehensive Emergency Management concept to assess the common characteristics of each phase of disaster. Traditionally, Comprehensive Emergency Management has been thought of in a circular, albeit linear, motion shown in the introductory texts of emergency management. With the assistance of the emergency management literature, this paper will seek to underscore the recurring patterns of activities in emergency management through the creation of a matrix. The matrix will illustrate common functions or requisites within and across the mitigation, preparedness, response and recovery phases. These consistent themes include: information requirements and media relations, special population, communication, cooperation and coordination, assessment and planning. Implications of this research will be mentioned for academics as well as practitioners.

Introduction

Since its introduction by the National Governors Association in 1979, the concept of Comprehensive Emergency Management (CEM) has played an important role in the administration of disaster related activities (Drabek & Hoetmer 1991). While attention given to CEM is currently waning due to the exploration of alternative ways of approaching the disaster problem (Mileti 1999; McEntire 2002; Britton 1999), there is still much utility in this concept. Among other things, this notion is holistic in that it suggests the need to integrate all hazards, all phases and all actors into an encompassing view to facilitate the reduction of disasters (Godshalk 1991, 145). In contrast, some of the recent theoretical and policy relevant approaches to disaster reduction are only partially built upon the notion of comprehensive emergency management. For instance, sustainable development does recognize the crucial roles of the public and private sectors in natural hazard mitigation as well as the importance of citizen participation for disaster reduction (Mileti 1999). However, the sustainability concept is less clear

about its relation to all types of triggering agents (McEntire 2002) and each phase of emergency management (McEntire 2002; Berke 1995). Therefore, CEM seems to have some advantages over at least some of the recent approaches that have been espoused by academics and practitioners.

While the concept of comprehensive emergency management possesses many benefits, it is not devoid of certain drawbacks. Neal illustrates that one phase of CEM may occur simultaneously during another phase (1997). As an example, tasks in response can occur while recovery is being performed. In addition, the CEM concept does not necessarily indicate those activities that recur in each phase or are of paramount importance for emergency management. In essence, CEM may look at the administration of disaster activities over time (e.g. those before, during and after disaster) rather than through a functional lens.

The following paper attempts to address this deficiency by reviewing the research literature. Its goal is to draw out the themes that are common to each phase of Comprehensive Emergency Management. The paper suggests that emergency managers should focus their attention on information/media, special populations, communication/cooperation/coordination, assessment, and planning. Before doing so, it will be necessary to review the four phases of comprehensive emergency management and discuss the methodology utilized for the paper.

Comprehensive Emergency Management

In the late 1970s, the National Governor's Association (NGA) produced a document, which entertained the idea of dividing the process of a disaster into a linear, but circular format called Comprehensive Emergency Management. An important aspect of the CEM model is the idea of integrating all types of hazards and participants into the different phases of emergency management.

The NGA report segmented the different aspects of the disaster process into four groups. By dividing the groups into distinct phases, the emergency manager is better able to focus his/her work on the different aspects of the program. These phases are mitigation, preparedness, response, and recovery.

Considered the starting point of the disaster process, mitigation includes long-term actions taken to eliminate or reduce the degree of risk to human life and property from natural and technological hazards (Godshalk 1991). It includes such things as the careful choice of location (for the purpose of risk reduction), building codes, dams, etc. (Drabek and Hoetmer 1991).

The second phase is that of preparedness, which includes actions taken in advance of an emergency or disaster to develop operational capabilities and facilitate an effective response (Godshalk 1991). It includes the creation of plans, community education, development of early warning systems, acquisition

of supplies, resource lists, training and exercises, evacuation plans, and shelter agreements (Drabek and Hoetmer 1991; Kreps, 1991; Scanlon 1991).

At this point, a natural hazard or other triggering agent occurs which creates the need for emergency response activities to deal with the disaster. Response includes actions taken immediately before, during, or after an emergency or disaster to save lives and minimize property damage (Godshalk 1991). It includes search and rescue, medical care, emergency operation center activation, and coordination of resources (Drabek and Hoetmer 1991; Gillespie 1991; Perry 1991).

The last phase an event goes through is that of recovery, which involves activity to return vital life support systems to minimum operating standards or to normal or improved levels (Godshalk 1991). It includes damage assessment, debris removal, infrastructure repair, rebuilding and relocation (Drabek and Hoetmer 1991; Rubin 1991; Rubin, Saperstein, and Barbee 1985). In essence, this phase attempts to return the jurisdiction back to its pre-disaster state. The recovery phase will incorporate aspects of mitigation phase and so the community goes thought the CEM process again.

Recurrent Themes of the Comprehensive Model

It is the proposition of this paper that the field of emergency management could be better served by applying a matrix of tasks to the Comprehensive Emergency Management model. Within this matrix, the emergency manager will be able to draw out certain recurrent themes in each phase of disaster. This will assist the emergency manager in focusing his/her program on the repetitive goals or functions of emergency management. The common themes include the importance of information and the media, special populations, communication and cooperation and coordination, assessment and planning.

Information and the media

Information dispersal and appropriate interaction with the media recur in every phase of the Comprehensive Emergency Management model. For instance, the media can be a key component of a public education program wherein they are able to produce the videos or radio announcements to help promote mitigation. The media could be an invaluable tool for showing how people may protect their homes from hazards. They may also assist in explaining the importance of insurance as well as the benefits of the safe location of housing and other buildings. In preparedness, the media are tasked with the testing of the emergency broadcast system (EBS) on television and radio outlets (Auf Der Heide 2000). The media can create a plan of disaster operations for each medium (Quarantelli 1996). By including media, the plan assures print, radio, and television media they will be able to get reliable information and appropriate images to convey to the public. Activation of the EBS preceding an event is

certainly an important aspect of response, which can save lives. Following the triggering agent, the media is also able to broadcast quickly and efficiently the opening and closing of shelters during recovery (Scanlon et al. 1985). The media is likewise an intricate part of the recovery process as far as they can denote the phone numbers and/or addresses of the relief and recovery agencies, such as the Federal Emergency Management Agency and the Small Business Administration. Therefore, the media has a close relationship to each phase of CEM.

Special populations

The consideration of special populations is another theme, which permeates all four phases of the CEM model. Special populations refer to minorities, women, children, as well as the poor, elderly, disabled, and incarcerated, etc.

In the mitigation phase, emergency managers must consider what steps can be taken to reduce the vulnerability of the aforementioned groups. The literature has shown that these groups are most likely to live in hazardous areas. Research has also shown these groups are more likely to die from a triggering agent than are others, especially in low-income countries (Fothergill 1996; Haider et al. 1991). Steps must therefore be taken to reduce the vulnerability of these special populations before disaster occurs.

Emergency management coordinators must also examine the merits of planning for special populations in the preparedness phase. These groups will have different needs after an event than others. For instance, the elderly may need special medications, women may need day care for children, and ethnic groups may need multi-lingual disaster warning messages. It is imperative that emergency managers plan and prepare for these needs

Special populations will also have to be addressed in the immediate post-impact period after a disaster. As mentioned, these groups will need different resources from others, as they may not have the human or capital resources to properly respond and recover from an event. For instance, emergency management personnel will need to consider appropriate food for the special populations located in community shelters based on cultural preferences.

Special populations groups will most certainly require unique measures for the short and long-term recovery periods of the disaster process. A number of unmet needs may occur during the recovery phase of an event as special populations may fall through the cracks of traditional relief operations. In some cases, they may not qualify for disaster loans or they might not have any or the correct type of insurance to cover the damages incurred (Morrow and Enarson 1994; Fothergill 1996; Bolin and Bolton 1986). The emergency manager will consequently need to coordinate with non-profit organizations in order to fill the needs of special populations. They can turn to entities such as volunteer

organizations active in disasters and others to identify and address unmet needs. Special populations are therefore of paramount concern for the emergency manager.

Communication, cooperation and coordination

Communication, cooperation and coordination are another theme that permeates the emergency management literature (McEntire 1998). These three concepts are important foundations to a well-managed emergency management program and disaster event.

Prior to disaster, it is important to use the knowledge, skills and abilities of all involved parties in the hazard mitigation and vulnerability reduction process. Partnerships are a key to getting people to work together in reducing vulnerability. The building of public/private partnerships is one way to provide a community-wide approach to vulnerability reduction. A plethora of actors is required to create a safer environment. For example, geographers are able to identify and map dangerous or repetitive loss structure through geographic information systems. Engineers are able to create increasingly hazard resistant buildings through the application of engineering principles and alternative building materials. Developers and urban planners can consider hazards when designing new subdivisions. Politicians help to make hazards awareness part of the public's interest and concern. Building officials can lobby to pass stringent building codes and provide enforcement of existing ones (Gillespie 1991).

Various public agencies also work together to assist in the community's overall preparedness. Preparedness in the CEM cycle looks to emphasize the jurisdiction's ability to respond to an event. The entire community can assist in assessing the community's response capabilities. Agencies such as the Red Cross, Local Emergency Planning Committees, hospitals, fire and police departments, business, and other government agencies all can assist in preparing. Departments and others in the jurisdiction will also work together through planning, training and exercising to increase the abilities of all involved agencies. By practicing together, the community will be better able to respond in an event (Sikich 1996).

Communication, cooperation, and coordination are intricately sewn into the fabric of the response phase. Communication is commonly considered one of the first things to go wrong during any type of event, which may have an adverse impact on cooperation and coordination. The community may consequently suffer any number of problems, including duplication of work and the loss of citizen or responder lives. On the other hand, the emergency operations center can be the conduit for interagency communication, cooperation, and coordination (Scanlon 1994). Responders in the field will also rely on these activities as they work with emergent groups in the wake of an event (Neal and Phillips 1995).

The recovery phase is laden with communication, cooperation and coordination issues. These recurrent themes are vital for a quick and effective disaster declaration the proper location and operation of disaster recovery centers, effective debris removal operations, and attempts to use the recovery phase to mitigate future hazards. Communication, cooperation, and coordination are therefore extremely important to assist families, businesses and communities recover from and prevent a disaster event.

Assessment

Assessment is an intricate part of the emergency manager's activities. We find a number of different types of assessment utilized to provide the appropriate information to properly mitigate, prepare for, respond to and recover from a disaster event.

In the mitigation phase of the CEM process, communities must assess the most likely hazards that may/will impact the community. The community must discern the possible impacts from a host of different threats including floods, high wind, and terrorism to foot and mouth disease. In addition, another assessment that must be performed is the vulnerability analysis. This tool is used to find the areas that are most likely to be impacted by a particular hazard along with the population and infrastructure to be affected (Sikich 1996). To look at the totality of the impact of the event is the risk assessment, which combines the hazard assessment and vulnerability assessments. In the risk assessment, the emergency manager can employ the production of geographic information system maps, which show the height of water in a particular area with a layover of the neighborhoods, which may be inundated.

The preparedness phase seeks to find what the response capabilities of the jurisdiction will be. Through assessment, this phase understands weaknesses that can be corrected through tabletop and full-scale simulations. Emergency managers may also seek to evaluate the responders skills in order increase capacities during preparedness (Scanlon 1991; Gillespie 1991).

Assessments need to be made in the response phase of the CEM process as well. Data must be gathered on the number of injuries incurred as well as fatalities, and damaged or destroyed structures. Assessment will also assist in evacuations and cordoning off particular areas, which may be deemed unsafe for non-response personnel. Emergency managers will also need to periodically examine response efforts, including the location and use of resources to maximize manpower (Schneider 1995).

The primary assessment data to be collected in the recovery phase of the event deals with the amount of damage occurred in the wake of the event. A jurisdiction must efficiently and effectively obtain data on the number, type, and amount of damage done to structures and infrastructure. This information is of the utmost

importance because it is used in the declaration process and determines the amount and type of disaster assistance the government will provide. Assessments must also be made to determine the debris removal requirements for the jurisdiction. (Schneider 1995; Schwab et al. 1998) Assessment is therefore a recurring activity for the emergency manager.

Planning

Another recurring theme, which occurs in all phases of emergency management, is that of planning. Emergency managers are required to create a number of plans that pertain to different phases. During the mitigation phase, the emergency manager writes plans to reduce the jurisdiction's vulnerability. Federal, state and other authorities give local emergency managers model plans on coping with hazards. Via planning, communities are able to take long-term steps to reduce the exposure of its citizens to extreme events. For instance, communities are therefore better able to identify flood-prone structures for buy-out via grant acquisition (Gillespie 1991).

In preparedness, the emergency manager must update emergency operations plan. They must also plan for exercises by determining such things as the time, location, participants, and goals of the training (Scanlon 1991). Attempting to involve community-wide partners in the planning process will thus ensure a more effective response.

Planning in the response phase will guarantee that responders will coordinate. Planning is an important aspect of the Incident Command System and may help to minimize unwanted duplication of efforts and other waste in the response process. Emergency managers must plan before performing or coordinating emergency support functions including search and rescue, mass care, or firefighting.

Planning is also important for recovery. The emergency manager must also plan how to overcome political turmoil owing to strict building codes after disaster occurs. Emergency managers also need to plan how to conduct damage assessment or debris removal, and whether to rebuild or relocate the homes in affected areas (Schwab et al. 1998).

Interrelationships of Common Themes

Many of the previously mentioned themes interact in interact in interdependent ways in the CEM model. (See Table 1) The following are just a few of the inter-relationships that can be derived from this examination of Comprehensive Emergency Management.

Information, for instance, is needed to help special populations during each phase of disaster. The print, radio, and television media can provide educational

segments and stories directed towards special populations in order to explain the benefit of acquiring insurance on homes and property. The media may also help special populations prepare by recommending disaster kits or showing them how to conduct disaster drills with their families. The media also plays an important role in warning and evacuating special populations during response, and they likewise give valuable information to vulnerable populations in order to help them find shelter and additional disaster relief.

Table 1:
Matrix of Comprehensive Emergency Management Recurrent Functions

	Mitigation	**Preparedness**	**Response**	**Recovery**
Information & Media	Public Education Programs to reduce vulnerability	Involved in planning process	Activation of Emergency Broadcast System	Publicity of Disaster Recovery Centers.
Special Populations	Educate on techniques to reduce vulnerability	Make arrangements for anticipated needs	Take action to meet immediate post-disaster needs	Address short and long-term needs to reduce future vulnerability
Communication, Cooperation and Coordination	Include all actors in risk assessment process	Involve all responding agencies in preparing for an event through an exercise	Utilization of Incident Command System and Emergency Operations Centers	Facilitate interaction of agencies to maximize recovery resources
Assessment	Assess hazards and vulnerabilities to determine risk	Perform capabilities assessment of community	Appraise post-disaster situation to determine appropriate response	Perform damage assessments for disaster declaration and mitigation opportunities
Planning	Write and implement mitigation plan	Create emergency operations plan; plan exercises to test capabilities	Create and implement ICS plans for effective and efficient response	Create and implement plan to speed up recovery

A second and final example, accurate and prompt information is important for communication, cooperation, and coordination in the comprehensive emergency management process. Information needs to be communicated to each of the stakeholders in mitigation so that they are better able to consider an appropriate level of risk when developing an area for urban or rural use. Information about the different roles of agencies is required to create and maintain an effective emergency operations plan for a community. During response, the emergency operations center can work closely with the media to reduce the amount of misinformation and rumors that may occur in the wake of an event. Situation reports may also be disseminated to those in and outside of the affected community in order to acquire the necessary resources for recovery.

Implications

A few important implications can be drawn from this exploration of the recurring themes of Comprehensive Emergency Management. For the academic, this research illustrates that the relationships between the different functions and phases are complex and need to be the basis for efforts to generate knowledge for emergency management professionals. More research should therefore be conducted on information and the media, special populations, communication, cooperation and coordination, and assessment and planning.

For the practitioner, this research underscores the activities that emergency managers should focus on in order to improve their efforts to reduce disasters in both quantitative and qualitative terms. Enhancing these five areas of emergency management could bring about significant changes in our ability to prevent and respond to disaster.

Conclusion

This paper has attempted to explore the redundant tasks in the Comprehensive Emergency Management model. With the matrix that has been developed in this article, emergency managers may be better able to concentrate on those crucial tasks that promote an effective emergency management program. These activities include: effective utilization of the media; working with special needs groups; increasing coordination, cooperation, and communication; using appropriate assessment in all phases; and promoting successful planning.

Nevertheless, this research should be regarded as preliminary. Further research is undoubtedly needed to confirm the importance of the above themes, and to determine if additional recurring patterns should be underscored for practitioners. In addition, more work should focus on the complex interactions among the themes and phases of comprehensive emergency management. Likewise, future research should focus on how the mentioned themes impact various emergency management organizations. In short, follow up work will be needed to

determine the merit of examining Comprehensive Emergency Management through a functional lens.

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THE PUBLIC AND ANIMAL HEALTH CONSEQUENCES OF PET OWNERSHIP IN DISASTERS

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Introduction

In two epidemiological studies of evacuations from disaster, risk factors for household evacuation failure, pet evacuation failure, and pet rescue attempts were characterized. Risk factors were identified using multivariate logistic regression. Case households were defined as those which either failed to evacuate as a unit, evacuated but without their pets (dogs or cats), or evacuated without their pets and later attempted to rescue their pet. Control households were those that either evacuated as a unit, evacuated with their pet, or evacuated and did not attempt to rescue their pet.

Materials and Methods

Weyauwega, Wisconsin: Train derailment and chemical spill

On March 4, 1996, at 5:50 A.M., 35 cars from a train derailed in the immediate proximity of Weyauwega, Wisconsin. Several of the 15 cars carrying propane caught fire. All residents were instructed to evacuate because of the concern of a major explosion at 7:30 A.M. In the first few days after the derailment many residents expressed concern about the well-being of pets that had not been evacuated, and several illegally reentered the evacuation zone to rescue pets. Personnel at the Emergency Operations Center organized an official pet rescue on March 8 to reduce these security risks. In February 1997, a self-administered questionnaire was mailed to pet-owning households of Weyauwega, to which 241 pet-owning households responded.

Yuba County, California: Flood

Residents in Yuba County, California, were issued a voluntary evacuation notice on the morning of January 1, 1997, because of flooding. The next day a levee broke a mandatory evacuation order was issued that remained in effect for 2 days and resulted in the evacuation of an estimated 64,000 people. A population survey of 863 households was conducted in July, 1997, using a random digit dial telephone survey. Three hundred and ninety seven households were interviewed in detail.

Results

Household evacuation

The comparison among households that evacuated and those that did not was only possible for the evacuation from the flood, because all households evacuated from the train derailment.

Of the 397 households surveyed in Yuba County, there were no statistically significant differences between the proportion of households with or without children, seniors, or pets that evacuated in the voluntary versus mandatory evacuation periods.

On average 19.4 % of all households failed to evacuate. 20.9% of households with pets, and 16.3% of households without pets failed to evacuate. The likelihood of household evacuation failure increased approximately 30% for every additional dog or cat owned, and household evacuation failure was significantly lower in households with children. Stratification of pet-owning households on whether they also had children or not indicated that the risk of household evacuation failure doubled for every additional dog or cat owned in households without children, and that households with children were consistently most likely to evacuate independent of the number of pets owned.

In both evacuations >90% pet-owning households stayed with friends or family, and some stayed at motels. Most evacuated pets (>82%) stayed at the same location as their owners, whereas only few pets stayed with friends or family, but at a different location (7 - 18%), or were boarded at a kennel (3 – 10%).

Pet (dog or cat) evacuation

In Weyauwega 50.6% of households did not initially evacuate their pets, and 10.0% neither evacuated nor rescued then. In Yuba County 22.2% pet-owning households did not initially evacuate their pets and 16.7% neither evacuated nor rescued them. The most common reasons given for failing to evacuate a pet were the owners did not think they would be gone for long (70 – 97%), the owners thought the pet would be safe (~90%). Fewer than 20% of households did not evacuate their pets because they did not know where to take the pet. In both disasters the risk of pet evacuation failure increased significantly with lower combined attachment and commitment score quartiles, i.e., households with a weak human-animal bond were more likely not to evacuate their pets.
In both studies dogs that lived outdoors were less likely to be evacuated. However, households with multiple dogs were more likely to evacuate their dogs.

Cats were 2 – 4 times less likely to be evacuated than dogs. In both studies owners who did not feel prepared and did have carriers for their cats were less likely to evacuate their cats. However, in cat-owing households that also owned dogs the risk for cat evacuation failure was significantly decreased.

Pet rescue

More than 80% of persons who re-entered the evacuated areas in either disaster did so to rescue their pet. In Weyauwega and Yuba County approximately 80% and 40% of pet-owning households, respectively, that evacuated without their pets returned later to rescue them. Over 60% of households that attempted to rescue pets thought it was appropriate to risk human lives in the process. Pet attachment and commitment scores were not indicative of whether an owner would attempt to rescue their pet.

Discussion

Household evacuation failure

Owning pets appeared to be the most significant reason why households without children failed to evacuate. For every additional dog or cat owned, such households were nearly twice as likely to fail to evacuate compared with pet-owning households with children. In these childless households, pet owners were apparently willing to jeopardize their lives to stay with their pet(s).

Based on the high prevalence of dog and cat ownership in the US, if all pets could be evacuated from disasters, the evacuation rate of pet owning households could be increased by up to 20%. Therefore, programs intended to improve public and animal safety in disasters should encourage and facilitate pet evacuation at the time of evacuation. In this study there was an increased risk of evacuation failure in households with seniors, but this association was not statistically significant.

Pet evacuation failure

In this study pet evacuation failure was shown to be the most important potential threat to the safety of pets in disasters, although only a few pets died in these evacuations. Apparently, households that act responsibly towards pets in general also act responsibly in disasters, as reflected by the positive association between a higher level of pet care and household evacuation. For example, a lower risk of evacuation failure was associated with the following indicators of a higher level of pet care: dogs that lived indoors or were licensed, cats that had carriers or had visited a veterinarian, and dogs and cats that required special feed or medication.

In Weyauwega and Yuba County 50.6% and 22.2% of pets, respectively, were not evacuated, thereby threatening the safety of a large number of pets. Differences in the rates of pet evacuation likely reflect differences in the time owners had to prepare for the evacuation and the time of day at which the evacuation took place. Hence, early notice of the need to evacuate may facilitate pet evacuation.

Pet rescue

Attempting to rescue a pet was the most common reason why people attempted to re-enter the evacuated areas. Although in neither of these evacuations were persons who re-entered the area killed or injured, the potential for these adverse outcomes is great. Pet rescue attempts are best prevented by evacuating pets.

Households that attempted to rescue pets were best characterized by having children and owning a larger number of dogs or cats than households that did not attempt to rescue a pet. Households that rescued their pet(s) were also more likely to perceive the threat of the disaster to be low and to have been given no instructions on evacuating pets.

The human-animal bond in disasters

Low pet attachment and commitment scores were predictive of pet evacuation failure. A weak human-animal bond was also associated with pet management practices prior to the disasters, including dogs being kept outdoors or owners having no carriers for cats, are predictors of pet evacuation failure. Therefore, pet owners who have a strong bond to their pets provide high standards of care for their pets at all times, not just in disasters.

Pet abandonment

The high frequency of pet evacuation failure in this study is consistent with other disasters. Therefore, pet evacuation failure appears to be a common problem in disasters and in most cases is probably not related just to owner absenteeism or the amount of warning time.

The proportion of dogs and cats that were neither evacuated nor rescued was similar to the annual turnover rate of dogs (14%) and cats (18%) in another community in the US, and the proportion of abandoned pets admitted to humane shelters where there had been extensive damage to homes in a disaster. This similarity suggests that owners, who neither evacuated nor rescued their pets in the two disasters studied, were the same population of owners who are likely to abandon or relinquish their pets in non-disaster times. Disasters may simply accelerate the process of pet abandonment in this group.

Logistical challenges to animal evacuation

Dogs kept outdoors were at higher risk of evacuation failure. Outdoor dogs that were not evacuated were kept outdoors most of the time, and not just during the evacuation. This finding may help dispel the myth that owners deliberately tie their dogs outside before the owners evacuate.

The likelihood of cat evacuation failure increased in households having no evacuation plans that included pets and for households without cat carriers. Evacuation failure was 2 - 4 times as likely for cats as for dogs. The higher incidence of evacuation failure of cats than dogs may reflect greater difficulties in catching cats than dogs and the belief of some owners that cats are able to fend for themselves if left behind. Often dog evacuation involves simply calling the dog into the car, whereas a cat has to be caught and physically restrained.

Owner understanding of the need to evacuate animals

The most common reason given for not evacuating dogs and cats was that owners thought they would not be gone long. However, if the environment is dangerous for humans as indicated by the mandatory evacuation, then it must also be dangerous for animals. Therefore, owners who did not evacuate their pets often based their decision on the relative length of time they thought the evacuation would last, rather than the absolute need to protect public and animal safety. This indicates a poor understanding of why evacuations are ordered or recommended, which could be overcome by providing a consistent and positive message, such as "If it is not safe for people, it is not safe for animals".

Accommodation for pets and their owners

The major obstacles to evacuating pets appear to be logistical resulting from an inability to transport pets. Only few pet owners were concerned that they could not find accommodation for themselves and their pets. Most households that evacuated with their pets stayed with friends and family, similar to the situation in other disasters. In both evacuations relatively few pet owners chose to house their pets at boarding kennels. The relatively long advance warning time in Yuba County may have also encouraged self-reliance among pet owners and allowed them to make arrangements with friends and family at no charge. Therefore, self-reliance appears to be increased by providing as much advance notice of the need to evacuate as possible.

Conclusions

Household evacuation failure, pet evacuation failure and attempts to rescue a pet appear to be common concerns arising in disasters, and all are related to pet evacuation failure. Significant impediments to pet evacuation included owning multiple pets, owning outdoor dogs, or not having a cat carrier. Pre-disaster planning should, therefore, place a high priority on facilitating pet evacuation.

Improving pet evacuation is best addressed in non-disaster times. Animal care providers should think of responsible pet ownership as the foundation upon which to improve pet owner and animal safety in disasters. Mitigation of pet evacuation failure should focus on activities that encourage responsible pet ownership and strengthen the human-animal bond. Specific activities that would nurture these values include seeking regular preventive veterinary care,

socializing dogs, attending dog behavior training classes, and transporting cats in non-disaster times. Veterinary practices, humane shelters, and boarding and grooming facilities, should promote pet evacuation as part of their educational programs to encourage responsible pet ownership. Recommendations to improve disaster preparedness should include having carriers for cats, and leashes or in some cases cages for dogs. Many animal health professional can provide these supplies and have the necessary expertise to ensure the safe evacuation of both animals and people.

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LIGHTNING SAFETY AND THE PLANNING PROCESS

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ABSTRACT

Franklin's 1752 lightning protection invention consisted of a rod in the air, one in the ground and a connecting conductor. This "conventional wisdom" today is helpful for fire protection in cases of direct flashes to ordinary structures. For more complex facilities, where electrical systems/electronics or explosives or volatile substances are present, the 248 year old design is questionable. This paper suggests adoption of a modern lightning safety planning process which can be applied to contemporary environments.

BACKGROUND

The USA electric power industry reports 30% of all outages to be lightning-related (Electric Power Research Institute, 1999). Insurance companies here categorize some 5% of all paid claims as resulting from lightning (Insurance Information Institute, 1999).The US Department of Energy has recorded 346 known lightning events to its facilities during the 1990-2000 period (US Dept. Energy - Occurrence Reporting & Processing System, 2000). In total, lightning is responsible for about $4-5 billion annual losses in the USA (National Lightning Safety Institute, 1999). It is a prudent organizational policy to analyze facilities and operations so as to identify lightning vulnerability. Designs and operational means to deflect potential accidents should be developed. For the lightning hazard, safety should be a prevailing directive.

LIGHTNING CHARACTERISTICS

Physics of Lightning.

Lightning's characteristics include current levels approaching 400 kA with the 50% average being about 25kA, temperatures to 15,000 C, and voltages in the hundreds of millions. There are some ten cloud-to-cloud lightnings for each cloud-to-ground lightning flash. Globally, some 2000 on-going thunderstorms generate about 50-100 lightning strikes to earth each second. Lightning is the agency which maintains the earth's electrical balance. The phenomenology of lightning flashes to earth, as presently understood, follows an approximate behavior: the downward Leader (gas plasma channel) from a thundercloud pulses toward earth. Ground-based air terminators such as fences, trees, blades of grass, corners of buildings, people, lightning rods, power poles etc., etc. emit varying degrees of induced electric activity. They may respond at breakdown voltage by forming upward Streamers. In this intensified local field some

Leader(s) likely will connect with some Streamer(s). Then, the "switch" is closed and the current flows. Lightning flashes to ground are the result. A series of return strokes follow.

Lightning effects.

Thermal stress of materials around the attachment point is determined by: a) heat conduction from arc root; b) heat radiation from arc channel; and, c) Joule heating. The radial acoustic shock wave can cause mechanical damage. Magnetic pressures – up to 6000 atmospheres for a 200 kA flash - are proportional to the square of the current and inversely proportional to the square of the diameter of struck objects (G. A. Odam, GAO Consultancy, 1996). Voltage sparking is a result of dielectric breakdown. Thermal sparking is caused is caused when melted materials are thrown out from hot spots. Exploding high current arcs, due to the rapid heating of air in enclosed spaces, have been observed to fracture massive objects (i.e. concrete and rocks). Voltage transfers from an intended lightning conductor into electrical circuits can occur due to capacitive coupling, inductive coupling, and/or resistance (i.e. insulation breakdown) coupling. Transfer impedance, due to loss of skin effect attenuation or shielding, can radiate interference and noise into power and signal lines. Transfer inductance (mutual coupling) can induce voltages into a loop which can cause current flows in other coupled circuits.

Behavior of Lightning.

Absolute protection from lightning may exist in a thick-walled and fully enclosed Faraday Cage, however this is impractical in most cases. Lightning "prevention" exists only as a vendor-inspired marketing tool. Important new information about lightning may affect sensitive facilities. First, the average distance between successive cloud-to-ground flashes is greater than previously thought. The old recommended safe distance from the previous flash was 1-3 miles. New information suggests that a safe distance should be 6-8 miles (Lopez & Holle, National Severe Storm Center, 1998). Second, some 40% of cloud-to-ground lightings are forked, with two or more attachment points to the earth. This means there is more lightning to earth than previously measured (Krider, Intl. Conf. Atmospheric Electricity,1998). Third, radial horizontal arcing in excess of 20 m from the base of the lightning flash extends the hazardous environment. Lightning is a capricious, random, stochastic and unpredictable event.

LIGHTNING PROTECTION DESIGNS

Mitigation of lightning consequences can be achieved by the use of a detailed systems approach, described below in general terms.

Air Terminals.

Since Franklin's day lightning rods have been installed upon ordinary structures as sacrificial attachment points, intending to conduct direct flashes to earth. In 1876 JC Maxwell suggested that Franklin rods on buildings attracted a greater number of flashes than their absence. Such rods should not be located on explosives storage structures. This *integral air terminal design* does not provide protection for electronics, explosives, or people inside modern structures. Inductive and capacitive coupling from lightning-energized conductors can result in significant voltages and currents on interior power and signal conductors. Overhead shield wires and mast systems located above or next to the structure are suggested alternatives in many circumstances. These are termed *indirect air terminal designs*. Such methods presume to collect lightning above or away from the sensitive structure, thus avoiding or reducing flashover attachment of unwanted currents and voltages to the facility and equipments. Investigation into applicability of dielectric shielding may provide additional protection where upward leader suppression may manipulate breakdown voltages (Schnetzer et al, Sandia Laboratories, 1997). Unconventional air terminal designs which claim the elimination or redirecting of lightning (charge dissipators) or lightning preferential capture (early streamer emitters) deserve a very skeptical reception (NASA/Navy Tall Tower Study; 1975, R.H. Golde "Lightning" 1977; FAA Airport Study 1989; T. Horvath "Computation of Lightning Protection" 1991; D. MacKerras et al, IEE Proc-Sci Meas. Technol, V. 144, No. 1 1997; National Lightning Safety Institute "Royal Thai Air Force Study" 1997; A. Mousa "IEEE Trans. Power Delivery, V. 13, No. 4 1998; International Conference on Lightning Protection - Technical Committee personal correspondence 2000). Merits of radioactive air terminals have been investigated and dismissed by reputable scientists (R.H. Golde op cit and C.B. Moore personal correspondence, 2000).

Downconductors.

Downconductor pathways should be installed outside of the structure. Rigid strap is preferred to flexible cable due to inductance advantages. Conductors should not be painted, since this will increase impedance. Gradual bends always should be employed to avoid flashover problems. Building structural steel also may be used in place of down conductors where practical as a beneficial subsystem emulating the Faraday Cage concept.

Bonding assures that unrelated conductive objects are at the same electrical potential. All metallic conductors entering structures (ex. AC power lines, gas and water pipes, data and signal lines, HVAC ducting, conduits and piping, railroad tracks, overhead bridge cranes, roll up doors, personnel metal door frames, hand railings, etc.) should be electrically referenced to the same ground. Connector bonding should be exothermal and not mechanical wherever possible, especially in below-grade locations. Mechanical bonds are subject to corrosion and physical damage. HVAC vents that penetrate one structure from another should not be

ignored as they may become troublesome electrical pathways. Frequent inspection and resistance measuring (maximum 1 ohm) of connectors to assure continuity is recommended.

Grounding.

The grounding system must address low earth impedance as well as low resistance. A spectral study of lightning's typical impulse reveals both a high and a low frequency content. The grounding system appears to the lightning impulse as a transmission line where wave propagation theory applies. A considerable part of lightning's current responds horizontally when striking the ground: it is estimated that less than 15% of it penetrates the earth. As a result, low resistance values (25 ohms per NEC) are less important that volumetric efficiencies. Equipotential grounding is achieved when all equipment within the structure(s) are referenced to a master bus bar which in turn is bonded to the external grounding system. Earth loops and consequential differential rise times must be avoided. The grounding system should be designed to reduce AC impedance and DC resistance. The use of counterpoise or "crow's foot" radial techniques can lower impedance as they allow lightning energy to diverge as each buried conductor shares voltage gradients. Ground rings connected around structures are useful. Use of concrete footing and foundations (Ufer grounds) increase volume. Where high resistance soils or poor moisture content or absence of salts or freezing temperatures are present, treatment of soils with carbon, Coke Breeze, concrete, natural salts or other low resistance additives may be useful. These should be deployed on a case-by-case basis where lowering grounding impedances are difficult an/or expensive by traditional means.

Corrosion and cathodic reactance issues should be considered during the site analysis phase. Where incompatible materials are joined, suitable bi-metallic connectors should be adopted. Joining of aluminum down conductors together with copper ground wires is a typical situation.

Transients and Surges.

Ordinary fuses and circuit breakers are not capable of dealing with lightning-induced transients. Surge protection devices (SPD) may shunt current, block energy from traveling down the wire, filter certain frequencies, clamp voltage levels, or perform a combination of these tasks. Voltage clamping devices capable of handling extremely high amperages of the surge, as well as reducing the extremely fast rising edge (dv/dt and di/dt) of the transient are recommended. Protecting the AC power main panel; protecting all relevant secondary distribution panels; and protecting all valuable plug-in devices such as process control instrumentation, computers, printers, fire alarms, data recording & SCADA equipment, etc. is suggested. Protecting incoming and outgoing data and signal lines (modem, LAN, etc.) is essential. All electrical devices which

serve the primary asset such as well heads, remote security alarms, CCTV cameras, high mast lighting, etc. should be included. Transient limiters should be installed with short lead lengths to their respective panels. Under fast rise time conditions, cable inductance becomes important and high transient voltages can be developed across long leads. In all instances the use high quality, high speed, self-diagnosing SPD components is suggested. Transient limiting devices may use spack gap, diverters, metal oxide varistors, gas tube arrestors, silicon avalanche diodes, or other technologies. Hybrid devices, using a combination of these techniques, are preferred. SPDs conforming to the European CE mark are tested to a 10 X 350 us waveform, while those tested to IEEE and UL standards only meet a 8 X 20 us waveform. It is suggested that user SPD requirements and specifications conform to the CE mark, as well as ISO 9000-9001 series quality control standards. Uninterupted Power Supplies (UPSs) provide battery backup in cases of power quality anomalies...brownouts, capacitor bank switching, outages, lightning, etc. UPSs are employed as back-up or temporary power supplies. They should not be used in place of dedicated SPD devices. Correct installation configuration is: AC wall outlet to SPD to UPS.

Detection.

Lightning detectors, available at differing costs and technologies, are useful to provide early warning. Users should beware of over-confidence in detection equipment. It is not perfect and it does not always acquire all lightning data. Detectors cannot "predict" lightning. An interesting application is their use to disconnect from AC line power and to engage standby power, before the arrival of lightning. A notification system of radios, sirens, loudspeakers or other means should be coupled with the detector.

Testing & Maintenance.

Modern diagnostic testing is available to "predict" the performance of lightning conducting devices as well as to indicate the general route of lightning through structures. With such techniques, lightning paths can be forecast reliably. Sensors which register lightning current attachments can be fastened to downconductors. Regular physical inspections and testing should be a part of an established preventive maintenance program. Failure to maintain any lightning protection system may render it ineffective.

PERSONNEL SAFETY ISSUES

Lightning safety should be practiced by all people during thunderstorms. Measuring lightning's distance is useful. Using the "Flash/Bang" (F/B) technique, for every five seconds - from the time of seeing the lightning flash to hearing the associated thunder - lightning is one mile away. A F/B of 10 = 2 miles; a F/B of 20 = 4 miles, etc. The distance from Strike A to Strike B to Strike C can be as much as 5-8 miles. The National Lightning Safety Institute recommends the

30/30 Rule: suspend activities at a F/B of 30 (6 miles), or when first hearing thunder. Outdoor activities should not be resumed until 30 minutes has expired from the last observable thunder or lightning. This is a conservative approach: perhaps it is not practical in all circumstances. If one is suddenly exposed to nearby lightning, adopting the so-called Lightning Safety Position (LSP) is suggested. LSP means staying away from other people, taking off all metal objects, crouching with feet together, head bowed, and placing hands on ears to reduce acoustic shock from nearby thunder. When lightning threatens, standard safety measures should include: avoid water and all metal objects; get off the high ground including rooftops; avoid solitary trees; stay off the telephone. A fully enclosed metal vehicle – van, car or truck – is a safe place because of the (partial) Faraday Cage effect. A large permanent building can be considered a safe place. In all situations, people should avoid becoming a part of the electrical circuit. Benjamin Franklin's advice was to lie in a silk hammock, supported by two wooden posts, located inside a house. Every organization should consider adopting and promulgating a Lightning Safety Plan specific to their operations.

CODES AND STANDARDS

In the USA there is no single lightning safety code or standard providing comprehensive assistance. The most commonly referenced USA commercial lightning protection installation standard is incomplete, out-dated, and largely pre-empted by commercial interests. US Government lightning protection documents should be consulted. The Federal Aviation Administration FAA-STD-019c is valuable. Other recommended federal codes include military documents MIL HDBK 419A, NAV OPSEA 5, KSC STD 012B/013D, MIL STD 188-124B, MIL STD 1542B, MIL B 5087B and AFI 32-1065. The British Code BS 6551 is helpful. The new German lightning protection standard for nuclear power plants KTA 2206 places special emphasis on the coupling of overvoltages at instrument and control cables. The European International Electrotechnical Commission IEC 1024 series for lightning protection is the single best reference document for the lightning protection engineer. Adopted by many countries, IEC 1024 is a science-based document applicable to many design situations.

CONCLUSION

Lightning has its own agenda and may cause damage despite application of best efforts. Any comprehensive approach for protection should be site-specific to attain maximum efficiencies. In order to mitigate the hazard, systematic attention to details of grounding, bonding, shielding, air terminals, surge protection devices, detection & notification, personnel education, maintenance, and employment of risk management principles is recommended.

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Criminal Disasters:
Conducting Successful Research Inside a Secured Areas

Findings from observation activities
inside Ground Zero, World Trade Center, NYC

Norman Reid

In the wake of the large-scale World Trade Center disaster caused by a crime, not war or Mother Nature, we are forced to look at some new approaches to disaster research. The approaches will require more inter-agency collaboration that enables researchers immediate post-impact access to secured areas of criminal disaster sites. Large-scale criminal disaster sites have limited access because police and military personnel prevent entrance to anyone without approved credentials. Credentials that even for recognized research organizations are not always easy to acquire. This criminal scenario adds a new twist making it more difficult for much needed on-site human studies to be conducted effectively.

If a team is granted access to the secured area, it faces another challenge - obtaining information that must be collected through interviews of busy workers and volunteers. Considering many of these workers are putting in 14-hour days, seven days a week, the last thing they want is to come into a respite shelter and be plucked out of their winding-down process to answer a few questions by an unknown researcher.

However, with proper planning, research of this kind easily can be carried out at and around respite shelters where hundreds of workers congregate to eat, sleep, rest and receive care.

The questions here are twofold:

1) How does a research team gain immediate and prolonged access to secured areas and how does it do so without clogging up the already overwhelmed administrative pipeline?

Access inside the secured area in the case of the World Trade Center (WTC) is coordinated by the local OEM and New York City Police Headquarters. Agencies that have been given access by these authorities have control over which individuals they allow into the site. Gaining access through these local authorities is a long, drawn-out process and in many cases is impossible. The authorities are clearly inundated with more critical and acute priorities.

Think about this possibility: Research organizations could come to agreements with organizations such as the American Red Cross, FEMA (Federal Emergency Management Agency) and other disaster agencies that regularly receive special post-disaster assignments. These agreements could allow

researchers to establish research areas as part of the respite shelters. These agreements – arrived at before a disaster strikes - could also allow researchers access to secured sites through these agencies, thereby avoiding the need to apply for access through the local government's approving clearance office.

These agreements between disaster organizations and relief agencies could be formulated beforehand - without the distraction of a current crisis. This possible scenario allows for access to be granted to specified researchers before disasters even occur. It also alleviates the administrative burden on local authorities charged with making judgments about whom to let into a secured area immediately following the disaster.

2) How can research teams gather information in such a way that it is not tainted by

-Quick and possibly incomplete responses given because of tight time schedules.
-An individual's level of fatigue at the time of questioning.
-And/or a lack of full cooperation because workers were not informed of research activities?

In the case of the World Trade Center, the American Red Cross (ARC) operates mass on-site relief and berthing shelters for site workers and volunteers. Individuals from various agencies, contract workers, police, fire, military and other personnel who are working in the secured area have access to all services provided at any of these shelters. Many of these workers are living in the berthing shelters located inside the secured area. These on-site shelters provide an excellent setting for carrying out human studies of site workers from a host of various agencies and private sector contract workers.

A combined solution: Research teams should be allowed to conduct human studies at respite shelters as a result of pre-arranged agreements with shelter operating agencies.

The possibility of research organizations establishing relationships with leading relief agencies is not inconceivable. Research of this nature has the potential to significantly improve disaster relief administration and efficiency for future disasters.

If research stations were made an integral part of the relief effort, there would be many benefits. Research stations could be set up immediately along with other facilities. Research stations would then seem integral to the relief work, and workers might be more likely to stop by and submit to survey questioning. Workers could be informed from the outset that research designed to improve relief effectiveness would be ongoing, thereby predisposing them to help with the research. Workers could be asked to participate at their convenience, especially

during hours when they are relaxing. By allowing workers to give information on their own time, without feeling rushed or fatigued, the information presumably would be more complete and useable.

In conclusion, advanced planning and secured arrangements between research and relief organizations could set the stage for appreciable gains in disaster relief efficiency and effectiveness. By capturing real-time information, as the relief effort is unfolding, researchers would have a much clearer picture of what is taking place and how to use this information to benefit future efforts.

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An Emergency Management Profession: Will We Make It?

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There is a current process of emergency management professionalization in the United States. Emergency management today is not yet a profession, but emergency management as a trade has reached the necessary institutional maturity to advance toward a profession. In other words, it is possible for emergency management to embark on the professionalization process by pursuing the principal characteristics of a profession. Two of the five characteristics of a profession are **autonomy** or the capacity to self-regulate and **monopoly** or the exclusive right to perform the activity. We have examined emergency management professionalization through the processes of accreditation and certification. It is through these two mechanisms that emergency management is currently attempting to accomplish professional status. In essence, professional status relates directly to the institutional and individual acquisition of autonomy and monopoly to exercise the trade.

Nevertheless, it is quite possible that emergency management will never reach professional status. The necessary conditions for emergency management to completely professionalize may never manifest. Rather, there exist a number of impediments to the field becoming a true profession in the current certification and accreditation processes.

Certification

Among the elements that may jeopardize professionalization are the unregulated certification processes. Thus far certification is based upon a continuing education type of instruction and experience in the field. In order to become a Certified Emergency Manager (CEM) requires that an individual be already in the field practicing emergency management. This mechanism is contrary to other professions such as law and medicine. As a comparative analysis, no individual can practice medicine or law without first completing a number of years of graduate level schooling at the higher education level. This education allows him/her to attempt the medical board exams or bar exam. Only upon successfully passing these exams can a physician or lawyer legally perform the work. Emergency management must revise this credentialing procedure and revert it so that graduate education or at least an undergraduate degree is

required to enter the field. Furthermore, at least a master's degree is necessary to attempt a state regulated examination for practice.

Furthermore, emergency management certification can be compared with the credentialing system of the leading professional fields based upon passing a state-regulated examination such as the medical board exams or the bar exam. As opposed to the current practices of medicine and law, the International Association of Emergency Managers (IAEM) conducts recertification every five years, which may negatively impact already certified emergency managers who have to recertify repeatedly throughout their careers. This is contrary to the rationale of professional credentialing. It is akin to requiring lawyers as they progress in their careers becoming senior attorneys to retake the bar examination every five years. It is a fallacy of rationale and management that a professional advancing his/her career actually reduces his/her ability to perform to standards thus requiring retesting. For the certification granting institution this is also a drawback because practitioners as advance in their careers would resist the process of recertification as they perceive that this undermines and possibly jeopardizes their current status. In fact, IAEM has had difficulty maintaining recertification levels as well as recruiting new members to certify since the initial few years of the program (Neal 2000). The rationale of recertification is that already certified emergency managers are not keeping up with the current developments in the field. In this sense they may be considered inadequate for the tasks they perform. So, the granting institution is asking the certified emergency manager to prove again and again that they are worthy of the credential. In short, IAEM should emulate the credentialing process of the leading professions that grant credentials for a lifetime.

Emergency management professionalization efforts are performing certification inversely and thus inadequately in comparison with the certification processes of the leading professions. Instead of focusing on certification for actual practitioners with the intent of raising their status, concentration should be placed upon higher education. The IAEM should focus their attention on propelling training and education of future emergency managers from the ground up. This would reduce conflicts among practitioners of the benefit of higher education as opposed to training. Furthermore, this focus would reduce the responsibility of the agencies to conduct basic training programs and yield this duty to the institutions established for this purpose, namely universities. The university should provide for the education and expertise leading t an entry-level position in the field where specifically tailored on-the-job training takes place. Thus, IAEM should help promote the accreditation of higher education programs such as the national social work association, the Council on Social Work Education, accredits university social work programs across the nation.

From this perspective, the Federal Emergency Management Agency, Emergency Management Institute's Higher Education Project should intensify its effort for universities to form accredited programs at the undergraduate and graduate

levels conforming with standards analogous to the other professional schools. This initiative should focus upon recruiting top 100 universities and flagship state universities to establish emergency management degree programs (Neal 2000). At present degree programs are forming in opportunistic ways primarily at small regional universities that lack the legitimacy and credibility of top-ranked universities. In fact, even among the smaller and lower ranked universities only three full-fledged bachelor's and two master's degree programs currently exist.

There is inconsistency in the methods of training and education between the current efforts to form an emergency management profession and other governmentally linked professions that involve security to the populace such as police, fire, and the military. Emergency management is becoming increasingly related to high state security since the passage the Nunn-Lugar-Dominici law stressing the importance of addressing terrorist incidents involving nuclear-biological-chemical weapons within the continental U. S. This law mandates a coordinated effort between all appropriate branches of the federal, state, and local governments and places responsibility of response on the current structure of emergency management. Furthermore, in the wake of the September 11 attacks similar types of directives and responsibilities are likely to increase. This issue brings a new dimension to the traditional natural disaster-related emergency response function. It requires highly sensitive, top-security type of information such as the location of ammunition depots, of high-risk banks, commerce centers, airports, etc., and of other highly vulnerable locations to terrorist attack. Classified intelligence information will enable emergency management to preempt, reduce and respond to these threats. This increased tendency of emergency management to incorporate tasks involving national security is evident in the hiring practices of the Office of Foreign Disaster Assistance, which requires security clearance for virtually all jobs. This tendency is also evident with less intensity for positions within the Federal Emergency Management Agency (FEMA). Yet again, as a result of September 11, this trend is likely to increase.

This argument leads us to believe that in the long term emergency management is moving back to a civil defense type of orientation. Therefore, emergency management agencies will resemble other paramilitary agencies such as the police. Professionalization under this type of organization should take a different path than the current Higher Education Project. Emergency management can reach professional status as the police, fire, and military. The police, fire, and the military are professions because they have a high degree of autonomy and monopoly even though they are fundamentally linked to the state. For example, only police officers are legally able to arrest or use violence against individual citizens for the protection of the larger society. In other words, the police have exclusive rights to perform this type of work and they have complete control over this function (Baker 1995, Deakin 1988). Sanctions and other types of regulation of police practice involving this function come from within the profession.

These professions have unique internal educational institutions or academies in which individuals entering these fields receive their specialized training, education, and certification. The academy within the institutionalized profession is based on the unique and sensitive nature of the course of study. Neophyte police officers go to the police academy, fire fighters go to the fire academy, and the military go to their branch military academies. In contrast, individuals entering civilian professions such as medicine or law that are not linked with governmentally designated tasks or security issues obtain their training and education externally—in universities. Individuals do not go the university to become a police officer or a military officer, but they do to become a physician or a lawyer.

Following this argument FEMA's Emergency Management Institute (EMI) should revert its current Higher Education Project aimed at fostering emergency management programs in institutions of higher education. Rather, EMI itself should become the Emergency Management Academy. This institution should bring expert faculty from all the areas related to emergency management such as structural engineering, geography, sociology, environmental law, public policy, etc. In short, the Emergency Management Academy would be an institution of higher education on its own granting credentials pertinent to the field.

The process of emergency management certification as it is today is positive because it obliges current practitioners to improve themselves through continued training thus raising the overall performance of emergency management agencies. Emergency management continuing education for certification is conducted in a generalist approach so that practitioners are familiar with all aspects of emergency management as opposed to concentrating their abilities in their current job specialization. This gives them an overall appreciation of the field and it might help them to relate better to other emergency management functions. But as compared with the current leading professions these efforts may never yield professional status because this status is only attained through higher professional education and state regulated examination. On the negative side, certification compels practitioners to attain training that may not benefit them by improving their actual skills in their current position if it is not directly related to the duties of their current job or if they do not aspire to a higher skilled position. In opposition, university education in emergency management would disengage the emergency management agency from training allowing self-motivated individuals who would like to attain emergency manager status to do so. Once the individual reaches this level he/she may be hired for an emergency manager position.

It is important to clarify here that ideally a professional emergency manager is an individual who has attained a graduate degree in emergency management, has passed a state regulated emergency management association exam, and occupies a position as an emergency manager. The latter implies different statutory job-related positions within the field. In other words, emergency

managers are those who *manage* emergencies and disasters and have under their command all the other personnel who support emergency management functions. In this sense planners, legal advisors, social workers, and law enforcement, among others are not emergency managers—they only support emergency management functions. I make a distinction between professional emergency managers and the emergency management field. The latter is composed of all the mechanisms that contribute to the emergency management functions. This argument frames and defines the field of emergency management.

This statement conveys that there are current structural limitations in the emergency management agencies because there are no official jobs with such titles as "Assistant Emergency Manager," "Associate Emergency Managers," or "Junior/Senior Emergency Manager," etc. For example, an "Assistant Emergency Manager" would be an entry-level position requiring no experience but with prerequisites of an emergency management degree and passage of state regulated examination. An "Associate Emergency Manager" would be the next level up and would require the same prerequisites adding some experience in the field at the "Assistant Emergency Manager" level. This process would continue to reach the highest position attainable. In order to become a true profession, a standardized bureaucratic emergency management structure with delineated rank and order must be created. But, no experience, on-the-job training or continuing education could equal lack of an emergency management degree and state regulated professional association examination.

Accreditation

In addition to emergency management certification processes as a means to attain professional status, emergency managers must gain control over the performance of their work. In other words, they must become autonomous and secure a monopoly over their work. In order to be granted legitimate control of the field, emergency managers need recognition as the sole experts and thus they need to have expertise. Autonomy is condition without which emergency management does not professionalize. As it is today the field of emergency management is very politicized and increasingly becoming more prone to political manipulations as more resources are poured into disaster declarations and mitigation strategies. Ideally emergency management should behave and have the same type of jurisdictional control as the military or medical fields.

Emergency managers also need control over the work because of the responsibilities associated with it. In other words, professional emergency managers as defined here would be responsible for making decisions in disaster situations affecting the lives and property and happiness of the American people. In the long term and in view of the exponential increment of disaster losses in this nation, emergency managers as professionals would need to have autonomy and monopoly in order to carry out these duties. Lack of autonomy resulting in

interference may divert them from performing their tasks and thus diminish their performance impacting the mitigation against, preparedness for, response to, and recovery from a disaster. Lack of monopoly may disperse the resources and expertise away from channeling them into one profession that is dedicated to managing hazards and disasters.

Autonomy as observed in the medical profession can be exemplified in the relationship of hospital administrators and physicians and also between physicians and family members. For example, in an emergency situation when a patient is admitted to a hospital, the family members loose control over the health condition of the patient. Physicians thereafter have leeway to treat the individual although there is a degree of consultation with the immediate family. The same is true with hospital administrators who are precluded to interfere with physician diagnosis or care of patients. They conduct policy and hospital operation but do not claim jurisdiction over patients' treatment. In other words, physicians have full control of this function. In comparison, for emergency management to be a profession with autonomy it would have to perform in this manner. Here politicians are analogous to hospital administrators, in which they create policy and provide the administrative needs for the nation. But in cases of disaster, professional emergency managers should and must perform independently with total control and without political pressures. Like the physicians who are not overpowered by administrators in their performance, emergency managers should be similarly autonomous. This autonomy does not preclude consultation with the political structure but the decision making process relative to the management of the emergency and the management of the disaster itself should be solely in the hands of the expert professional emergency managers.

The military is also a good example of this type of autonomy. There is a direct relationship of coordination between the political powers and the military high command in issues related to war and national defense. But once a political decision has been made regarding conducting operations the professional military takes control. Military personnel develop strategy and tactics and perform the operations without political intervention. Politicians do not state whether or not troops should attack, where they should attack, how many troops would be deployed, and what kind of equipment they need, etc. When political interference is present an ill relationship occurs undermining the intended results. These situations can be exemplified with what characterized the Vietnam War where apparently the military "won the battles but lost the war." However, the military reverted this situation affirming its jurisdiction and reestablishing its autonomy, which was clearly demonstrated during the Gulf War. These changes were based on the realization that it could not operate effectively with outside interference. Emergency managers should conduct their operations in this same manner and with the same spirit.

Due to the nature of integrated work of emergency management combining various fields, it is difficult to compare it with any other case of

professionalization. Particularly, the field of emergency management is an assortment of professions converging into a multi-faceted type of work. In contrast, professionalization of leading professions has occurred within a single trade, i.e., lawyers constitute the law profession; physicians constitute the profession of medicine, etc. For some, the complexity of emergency management is a problem of boundaries. Waugh (2000) states that a major problem in defining emergency management today is finding the boundaries of the field in order to accommodate professional interests in everything from structural engineering to psychological counseling for disaster workers and victims. The field is becoming increasingly complex and more than ever, needs a myriad of disciplines to accomplish its mission. Professionalization of emergency management means that emergency managers should become the integrators of the theoretical and practical knowledge of the field. Thus, the emergency management profession requires creation of emergency managers through higher education and examination as described above. It is the expert handling of all aspects of the field that will grant them the exclusive right to perform the work. In order to acquire complete autonomy emergency management programs should be accredited.

To be autonomous emergency managers will need a dedicated labor structure in the government in order to accommodate the professional emergency managers. Institutional monopoly is required to perform professional emergency management. However, because emergency management is part of the governmental system, there are some jurisdictional conflicts that will never be solved in order for an emergency management profession to achieve full autonomy and monopoly. An emergency management profession will only be able to attain a higher degree of autonomy contained within higher structures. For example, FEMA's director has always reported directly to the President. But now the director has a higher degree of autonomy and power with his cabinet position. Ideally, the national, state, and local emergency management directors would hold a cabinet status type of position within their governmental structure in order to be in a direct relationship with the chief executive as FEMA's director now has with the President as a cabinet member. Thus, the lead state emergency manager would hold the position of State Secretary of Emergency Management to be in direct consultation with the state Governor. Similarly, the county emergency management director would be in a position to have direct consultation with the county manager or county commissioners. This arrangement would give professional emergency managers with their expertise much more control or autonomy over the decision-making processes, i.e., disaster declarations. But, while in theory full autonomy would be reached if the emergency manager could make disaster declarations, this will never happen because this would infringe upon the jurisdiction of a Governor or the President. Only the chief executive can make these decisions within our political system. The next best arrangement then would be the one described here where the professional emergency manager would be second in command second only to the highest authority (President, Governor, county commissioners) decision-making authority in disaster situations.

Conclusion

This paper illustrates that emergency management still has a long road ahead before becoming a true profession. We have stated that some of the procedures that are in place to professionalize the field are contrary to those of leading professions. We have also established that depending upon whether emergency management situates itself in line with paramilitary-type professions or align with civilian-type professions; the path to becoming a profession is different.

The obstacles that the field may encounter and must overcome primarily depend upon whether or not practitioners can identify where emergency management should be positioned and the role it should play in society. It is thus imperative that coordinated efforts institute direct guidance for professionalization processes. The policies to define emergency management and give direction to emergency management ought to be established by an emergency management professionalization council or similar type of body. Such an entity should yield a strategic plan and goal-oriented management to accomplish the professionalization goals.

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How Emergency Management Programs Support Local Economic Development

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Proactive emergency management programs support local economic development initiatives by providing a safer environment for the business community as well as the general public. Acts of terrorism are on the forefront of everyone's thoughts, but our communities are vulnerable to many hazards that could cause a catastrophic impact on our economy, not just terrorism. Strong emergency management programs help to prepare a community for any event, from tornadoes to terrorism and hurricanes to hazardous material releases. Emergency Management programs help to coordinate the response to an event, enhances the recovery from the event, and mitigates the loss of life and property from future or potential events.

Many look at economic development as ways to increase the "bottom line" for the business that then enhances the community. Many business recovery or continuity plans address getting people and systems back up after an event that takes place on site, but do not take into account what might happen off site. How many staff will be at their work site if their residential neighborhood is affected? How many staff will be at their work site if something happens at their child's school? How will the staff get to work if there is an event at a neighboring business or along a transportation route, which causes an evacuation of several blocks around the facility to include yours? How easy will it be to attract business and employees to this location if, after a disaster, the news media tells the world that the local community compounded the tragedy because of a lack of leadership, lack of resources, or lack of preparation?

Is it not a good marketing tool to let perspective businesses and employees known that our community is safer than other potential candidate communities? It is not a good point to stress the quality of the community alert warning and response program? Is it not a strong point that not only do we maintain quality school education programs, but also our students learn in a safe and protective environment? Is it not a good selling point that the community addresses ways to help the business protect its property and that we also can help protect the people at work and at home? Is it also a good point to note that if there was a disaster, the community has plans and programs that will speed up the recovery process that will get the businesses back on line sooner? Instead of complaining about taxes, show that because the community has good equipment and adequate staff, winter snow and debris from severe weather is removed quickly, thereby allowing schools and businesses to get back to work while in other communities, schools and businesses are closed for days, losing business revenue, because they can not remove the snow or get power lines back in

operation. Sometimes it seems we forget that unscheduled school closings due to any emergency, has a negative affect on the business, because the employees are thinking of their children at home, alone, or have actually gone home to care for their children. Either case results in a loss of productivity.

The Emergency Management program must be shown to the community leadership that it helps to enhance local economic development. The Chamber of Commerce and similar organizations that attract businesses and workers must integrate emergency management programs into their community literature along with the general information on schools, taxes, and cultural or recreation programs. Does the community have a comprehensive public warning system or flood control program? If so, show how these systems and programs protect businesses and their employees. Does your school system have good emergency plans for each school building? If so add this to the standard literature on the quality of the schools, test scores, and graduation rates. Marketing safe schools for learning should be presented along with education facilities and sports programs. Does your community have emergency management programs that support special populations such as elderly? Show that the community cares enough for their safety that it encourages older residents to stay in their homes and in their community as long as possible. If your community supports congregate care facilities, show how they are included in the overall community disaster response program. Does your community entice tourist from outside your local area? Show the travel and convention groups that not only does your community provide lodging, restaurants, and entertainment for the visitors, but that your community also has developed programs to help alert the visitors if local emergencies occur and that in case of an emergency, they will not be forgotten. Can the community support putting local Emergency Management information in the telephone book and in public information brochures in hotels and motels? This is an excellent way to give the visitor some piece of mind, that in the event of an emergency, they will know what to do in this specific community to protect themselves.

Emergency Management programs should be blended with community development programs in the early planning stages. If a large industrial complex is being considered, show how coordinated mitigation projects designed into the development plans will save businesses money in the long term by preventing storm water run-off or rising water from affecting the businesses. Also show how the community emergency response system, to include fire and hazardous material response can quickly mobilize on site to protect workers and property as well as the surrounding neighborhood. Address Emergency Management programs in traffic development as a way to route hazardous material away from residential and business areas and how good traffic management and highway design methodology is used along with traffic and access control plans to enhance potential evacuation if the community faces this type of risk. Businesses should be shown that strong building and zoning policies are

designed to enhance public safety of the community by protecting those using these facilities and not to impede development.

The community must develop a procedure that links the Emergency Management staff with representatives from potential businesses to show them how the community will protect them if and when they relocate. Coordinate with the Emergency Management staff to show these business representatives how the employee's public safety will be supported in their homes, schools and recreation areas. Address the community hazard and risk analysis and then show how each hazard is addressed in the local Emergency Management Multi-Hazard Emergency Operations Plan.

A strong, proactive emergency management is good for the community's economic development and the economic health of the community. A safer community attracts business and the workforce that supports it by addressing and reducing the risk from local hazards. A safer community encourages worker confidence in the well being of their families, which increases productivity. A well prepared community saves the community money by mitigating loss of life and property and enhances quicker community and business recovery from an emergency. Emergency management is an integral partner in the economic development and stability of the community.

CITIZENS' ABUSE AND MISUSE OF THE CITY OF AKRON'S EMERGENCY AND NON-EMERGENCY PHONE LINES

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ABSTRACT

Emergency communication systems across the nation are experiencing congestion problems on their 9-1-1 emergency phone line with non-emergency calls for service that are affecting rapid response to emergency calls for service. This is one of the first studies to systematically examine the calls for service received by the City of Akron's Safety Communications Division and determines the extent of abuse of the 9-1-1 emergency phone line and misuse of the non-emergency phone lines.[ii] The purpose of this study is fourfold: 1) to assess the extent of abuse of the 9-1-1 phone line, 2) to assess the extent of misuse of the non-emergency phone lines, 3) to make recommendations for reducing citizens' abuse of the 9-1-1 phone line and misuse of the non-emergency phone lines, and 4) to improve coordination between the police, fire, emergency medical service (EMS), and dispatch personnel. Focus group sessions were conducted and surveys were administered to identify the extent of abuse and misuse. Using a sample of 32,549 telephone calls received by the Communications Division during the month of May 2001, this paper will provide evidence that the 9-1-1 emergency phone line is abused and the non-emergency phone lines are misused, thereby affecting response time for emergency calls. Based on the results of this study, we recommend that some of the most optimal and efficient ways for the Safety Communication Division to reduce the extent of abuse and misuse, as well as improve response time are: 1) to educate the public about the proper use of the communication systems, 2) to issue fines to citizens who repeatedly abuse the 9-1-1 emergency phone line, 3) to allocate its current staff between the 9-1-1 emergency phone line and the non-emergency phone lines based on emergency and non-emergency demand for services, and 4) to improve communication and coordination between its emergency system staff by requiring police officers to wear their radios at all times while on duty.

INTRODUCTION

The Federal Communications Commission (FCC) established a national 9-1-1 emergency system in the late sixties. Since the introduction of the 9-1-1 emergency

system, many communities have rapidly responded to citizen calls for emergency assistance. Through citizen education and public service announcements, citizens have come to depend on the immediate response that 9-1-1 emergency systems offer. Emergency response often includes the coordination of police, fire, EMS, and dispatch personnel and the outcome of such response depends on an effective communication system. O'Looney (1997) identifies three levels of 9-1-1 service offered by local governments: basic, enhanced, and enhanced with geolocation and routing capability. The basic service enables citizens to report emergencies to 9-1-1 operators; however, call takers are not able to determine the origin of the call. Enhanced 9-1-1 systems automatically identify the caller's telephone number and address and can readily link the caller with emergency service providers. The more enhanced system utilizes a geolocation service, which provides the caller's phone number and address as well as provides a mapping system that can be used to guide emergency providers to the caller's location.

Throughout the nation, many 9-1-1 emergency communications systems are being abused and overwhelmed by non-emergency calls. In Washington, D.C., the Office of the Inspector General (OIG) initiated an investigation of the 9-1-1 system due to numerous citizen complaints that indicated that 9-1-1 calls were either not answered at all or were answered only after significant delays (DC Watch, 1998). The Metropolitan Police Department's (MPD) Operation's Branch within the Communications Division manages the 9-1-1 emergency and 1010 non-emergency telephone systems. Since August 1979, the Communications Division has utilized a Computer Assisted Dispatch system to enable them to provide a rapid response to 9-1-1 emergency calls and 1010 non-emergency calls for service. Since its inception, the Communication Division's goal has been to answer emergency calls within 5 seconds and non-emergency calls within 12 seconds. During the 5-month investigation period, the OIG reviewed 249,373 calls made to the 9-1-1 emergency system and 308,528 calls made to the 1010 non-emergency system. Of the calls received on the 9-1-1 emergency phone line, 167,908 (67%) were answered within 8 seconds, 49,249 (20%) were answered within 16 to 80 seconds, and 32,216 (13%) were not answered at all. Of the calls received on the 1010 non-emergency phone line, 164,406 (53%) were answered within 8 seconds, 98,549 (32%) were answered within 16 to 80 seconds, and 45,571 (15%) were not answered at all. While these findings may seem alarming, other cities across the nation also experience extensive abuse of the 9-1-1 system. For example, one woman in Augusta Georgia used the 9-1-1 system to report that her husband would not let her turn on the heat in their home (Thomas, 1996). The abuse of the 9-1-1 phone line overburdens the system and contributes to the abuse and congestion problems occurring across the nation.

In Akron, Ohio, the 9-1-1 system is housed in the Safety Communications Division. Since 1995, Akron's Safety Communications Division's dispatchers have coordinated fire, police, and emergency medical service (EMS) calls using an enhanced geolocation emergency system. The City of Akron has both a 9-1-1 emergency phone line and several non-emergency phone lines. Annually, the

Division receives more than 400,000 calls for the fire department, the police department, EMS assistance, as well as numerous calls for a variety of city services. Since the City introduced the 9-1-1 emergency communications system, rapid response to emergency calls for help has improved considerably. Similar to the national trend, however, a significant number of calls received on the 9-1-1 phone line were for non-emergencies (Strum, 2000). In the City of Akron, citizens have been known to call 9-1-1 to report that their telephone service has been disconnected or to request medical advice for minor injuries. Citizens also often use the 9-1-1 emergency line to request telephone numbers for local government agencies. This frequent abuse of the 9-1-1 emergency line for information and referral purposes prevents emergency calls from being answered rapidly and creates congestion problems. Abuse of the 9-1-1 emergency phone line and the misuse of the non-emergency phone lines affect response time for "real emergencies."

Despite a coordinated attempt to provide quality service to citizens, several factors may significantly influence police, fire, EMS, and dispatch personnel's rapid response to citizens' request for emergency services. Just recently, the delay in responding to an emergency call for help led to the untimely death of an Akron resident. In May 2002, neighbors called 9-1-1 three times to report that a woman was being attacked by her former husband. Call dispatchers in the Communications Division attempted to notify police officers about the emergency nature of the call. Despite several attempts to dispatch a patrol officer to the woman's residence, the dispatchers were unable to relay the information to a patrol officer until 30 minutes after the first call was received on the 9-1-1 emergency phone line. In total, 40 minutes had passed before police arrived at the woman's residence. Based on a preliminary review by the City of Akron's Safety Communication Division, several officers were available and located in the vicinity of the woman's home. Due to a breakdown in communication between the dispatchers and the patrol officers, critical requests for emergency assistance went unheard. One patrol officer, who was in the neighborhood, did not hear the request for emergency service because he was outside of his squad car pumping gas (Akron Beacon Journal, 2002). Unfortunately, a breakdown in the communication system can also significantly affect the rapid response of emergency calls for service. The purpose of this study are fourfold: 1) to assess the extent of abuse of the 9-1-1 phone line, 2) to assess the extent of misuse of the non-emergency phone lines, 3) to make recommendations for reducing citizens' abuse of the 9-1-1 phone line and misuse of the non-emergency phone lines, and 4) to improve coordination between the police, fire, EMS, and dispatch personnel.

IMPLEMENTATION OF N-1-1 NON-EMERGENCY SYSTEMS

In an effort to effectively minimize the abuse and misuse of the 9-1-1 emergency system and decrease the response times for emergency calls, many cities have implemented a N-1-1 non-emergency communication system and/or have hired additional staff to help solve the problem of an overburdened 9-1-1 system (Aberg,

1997). In Baltimore, for example, there has been a significant improvement in the City's response to life-threatening emergency calls. After the implementation of a N-1-1 non-emergency system, the Baltimore police reported the following improvements: "a 67 percent reduction in the operators' average time to answer 9-1-1 calls; a 78.5 percent reduction in callers hearing busy signals; an 82.2 percent reduction in callers receiving a recorded message; and a 6.6 percent reduction in the number of calls dispatched to officers on patrol" (ATT, 1997). Similarly, Detroit, Michigan; San Jose, California; Dallas, Texas; Chicago, Illinois; Los Angeles, California; Atlanta, Georgia; and the state of Ohio have also adopted or are planning to adopt 3-1-1 non-emergency numbers that offer options for emergency and non-emergency services (Dispatch Monthly, 1998; Alliance of Information Referral Systems, 1998; Channel 2000, 1999; Newsnet5.com, 2000, Schabath, 1997). Suffolk County, New York has hired additional staff to alleviate their congested 9-1-1 system (Dispatch Services, Inc., 1996).

Role of INTEREST GROUPS in Addressing the 9-1-1 Emergency System Problems

Two national interest groups, the Association of Public Safety Communications Officials International (APCO) and the National Emergency Number Association (NENA), have been very active in addressing the problems of 9-1-1 emergency systems. NENA has over 6,000 members and APCO has over 12,000 members (Allen, 1998). Both APCO and NENA oppose the FCC's creation of a national non-emergency number. Using their political muscle, APCO met outside Washington, D.C. to announce the findings of a nationwide study they conducted to assess the congestion problems of 9-1-1 emergency communication systems and the implementation of N-1-1 non- emergency systems (Dispatch Monthly, 1997). The findings from their study indicated that: 1) Non-emergency numbers already exist for public safety agencies; 2) Additional staff required to create, maintain, and fund new non-emergency systems might take considerable resources; and 3) The issues behind overburdened 9-1-1 systems are not congestion problems; they are the lack of personnel support necessary for adequately handling the incoming call volume and/or lack of public education regarding the proper use of 9-1-1 (Dispatch Monthly, 1997). NENA held a national conference in June 2001 in order to discuss current issues in 9-1-1 operations and management. The major topics that were addressed included staffing/scheduling, public education, human resources, accessibility issues, contingency planning, wireless implementation, and standard operating procedures. In the areas of public education, NENA plans include compiling a clearinghouse listing of known public education materials and resources for disseminating information to interested individuals, groups, and organizations.

METHODOLOGY

To assess the extent of abuse and misuse of the City of Akron's 9-1-1 phone line and non-emergency phone lines, respectively, a process evaluation was

conducted using the participatory action research methodology. In practice, process evaluation monitors current activities to identify problems in implementation and uses the information to improve service delivery, thereby linking program delivery to impact analyses. In the initial stages of the evaluation process, focus groups were used to discuss the problems experienced by those who answered calls received through Akron's Communications Division and were asked to define the appropriate remedies for each problem identified. During these focus group sessions, call takers, dispatchers, and supervisors assisted with the development of the survey instrument that served to document the abuse and misuse of the 9-1-1 emergency and non-emergency phone lines, respectively (Babbie, 2001; Wholey et al., 1994).

National studies suggest that non-emergency calls, such as requests for information concerning social services, traffic conditions, school closings, and police information, frequently affect the call emergency response time and waiting time (Thomas, 1996). In Akron, participants of the focus group sessions revealed that non-emergency calls for service included calls for police and fire information; calls for police, fire, and EMS records; calls for the detective, identification, and traffic bureaus; calls for the jail, juvenile division/auto theft, tow desk, clerk, dog warden, judges, and police business; and calls for the prosecutor's office, sheriff's office, and city services. In addition, given the nature of the call and past history of abuse, calls received from known citizens with mental disorders were also considered non-emergency. Emergency calls were identified as those that require quick action, i.e., calls that are time sensitive and/or life threatening. Specifically, citizens are instructed to dial 9-1-1 only when "reporting an accident, fire, serious illness, injury, or crime in progress that requires immediate response" (Ameritech, 2002). Among the participants of the focus group sessions, there was a great deal of discretion used when determining the level of emergency for an incoming call. For example, one call taker may consider a call received for a child that has run away as an emergency request for assistance only if that child has not been determined to be a habitual runaway; whereas, another call taker might consider the child's age the most significant factor when determining whether the request for service requires immediate service.

During the month of May 2001–a month that represents the typical call volume for the Akron Safety Communications Division–call takers, dispatchers, and supervisors collected data to assess the extent of misuse and abuse of the 9-1-1 phone line and the extent of misuse of the non-emergency phone lines. Using the survey designed in the focus group sessions, staff recorded the nature of each incoming call received on emergency and non-emergency phone lines (see Appendix 1: Survey of 9-1-1 Emergency Calls). Frequency distributions and cross-tabulations were used to describe citizen usage of 9-1-1 emergency and the non-emergency phone lines (see Tables 1 and 2). Chi-square analyses were used to determine the significance of the findings (see Table 1).

RESULTS

Table 1 illustrates that more than 32,000 surveys were administered during the survey collection period. Of the 32,549 calls received in the Safety Communications Division, 8,204 (25.2%) were emergency requests for assistance and 24,345 (74.8%) were for non-emergency requests for service (see Table 1). One in four calls taken through the Division were for emergency assistance. On the 9-1-1 telephone line, 8,444 calls were received during May 2001 (see Table 1). Of those calls received on the emergency 9-1-1 phone line, 52% were emergency requests for assistance and an overwhelming 48% were non-emergency requests for service (abuse of the 9-1-1 emergency phone line, see Table 1). Interestingly, 16% of the calls received on the dedicated non-emergency phone lines for police, fire, EMS, and other government offices were citizen calls for emergency assistance (misuse of the non-emergency phone lines, see Table 1). These results indicate that the City of Akron's citizens are misusing the non-emergency phone lines and abusing the 9-1-1 emergency phone lines.

Table 1: Cross-Tabulations of Call Type and Telephone Number

	Type of Call					
	Non-Emergency		Emergency		Total	
Telephone Number	#	%	#	%	#	%
9-1-1 Emergency Phone Line	4085	(48.4)	4359	(51.6)	8444	(100.0)
Non-Emergency Phone Lines	20260	(84.0)	3845	(16.0)	24105	(100.0)
Total	24345	(74.8)	8204	(25.2)	32549	(100.0)
$X^2 = 4220.83$; $p < .001$						

Table 2 illustrates an analysis of emergency calls for service and reveals even more alarming results. In emergencies where the coordinated response of fire, police, EMS, and dispatch personnel greatly affect the outcome (O'Looney, 1997), only 83.7% of emergency EMS calls are made using the emergency 9-1-1 service (see Table 2). More alarming is the finding that 41.6% of the calls for emergency fire assistance and 55.1% of the calls for emergency police assistance were made on non-emergency phone lines (see Table 2). These significant findings suggest that citizens misuse the non-emergency phone lines when real emergencies require a quick and immediate response. The non-emergency phone lines were not established for quickly responding to citizens' requests for police, fire, and EMS assistance. Further evidence indicates that citizens abuse the 9-1-1 emergency phone lines by requesting non-emergency services provided by the fire, police, and EMS as well as the local government (see Table 2). For example, 17.9% of callers used 9-1-1 to request EMS records, 13.3% of callers wanted to make a police report, and 11.4% of callers requested police information (see Table 2). In more

frivolous abuses, 10.5% of the callers dialed 9-1-1 for the sheriff's office and 9.4% dialed 9-1-1 for the juvenile division/auto theft (see Table 2). Citizens with mental disorders have been known to abuse 9-1-1 emergency services as well (see Table 2). Our study revealed that 8.8% of the callers who dialed 9-1-1 were known to have a mental disorder (see Table 2). Additionally, 8.1% of the callers who dialed 9-1-1 requested services from the dog warden and 7.2% of callers requested city services (see Table 2).

Table 2: Telephone Line Origin and Type of Call

	9-1-1 Emergency Phone Line		Non-Emergency Phone Lines		Total	
Type of Call	#	%	#	%	#	%
Emergency EMS	1637	(83.7)	319	(16.3)	1956	(100.0)
Emergency Fire	299	(58.4)	213	(41.6)	512	(100.0)
Emergency Police	2789	(44.9)	3429	(55.1)	6218	(100.0)
Incomplete 911	1511	(97.9)	33	(2.1)	1544	(100.0)
Police Business[a]	317	(7.0)	4211	(93.0)	4528	(100.0)
Police Information	698	(11.4)	5427	(88.6)	6125	(100.0)
Police Report	515	(13.3)	3365	(86.7)	3880	(100.0)
Police Record Room	11	(5.3)	197	(94.7)	208	(100.0)
Fire Information	30	(5.8)	483	(94.2)	513	(100.0)
Fire Records	0	(0.0)	9	(100.0)	9	(100.0)
EMS Records	5	(17.9)	23	(82.1)	28	(100.0)
Mental Case	36	(8.8)	374	(91.2)	410	(100.0)
Jail	3	(2.0)	148	(98.0)	151	(100.0)
Clerk	9	(1.4)	642	(98.6)	651	(100.0)
Dog Warden	29	(8.1)	329	(91.9)	358	(100.0)
Judges	0	(0.0)	30	(100.0)	30	(100.0)
Prosecutor's Office	0	(0.0)	89	(100.0)	89	(100.0)
Sheriff's Office	6	(10.5)	51	(89.5)	57	(100.0)
City Services	9	(7.2)	116	(92.8)	125	(100.0)

[a]**Police Business** calls have been combined with calls received for the Detective Bureau, Identification Bureau, Traffic Bureau, Juvenile Division/Auto Theft, and Tow Desk.

CONCLUSION AND RECOMMENDATION

Our evaluation of the City of Akron's 9-1-1 emergency system reveals that a significant number of calls received by the Safety Communications Division are requests for non-emergency services. These non-emergency calls significantly impact the response time of the Safety Communications Division's staff and increase the waiting time of 9-1-1 emergency calls for service. Several options are available for addressing the emergency and non-emergency needs of the

City of Akron's citizens. On the one hand, the implementation of an N-1-1 information and referral system, such as 2-1-1 for social service information, 3-1-1 for non-emergency police and other government services, 5-1-1 for traffic conditions, 7-1-1 for access to Telecom Relay Services for the hard-of-hearing, could significantly improve the effectiveness of the 9-1-1 emergency response system (Libaw, 2000). However, as noted by a nationwide study conducted by APCO, the implementation of an N-1-1 non-emergency system usually requires substantial resources for hiring additional staff as well as funding, creating, and maintaining the new system. Furthermore, the results of the MPD's Communications Division implementation of an emergency and non-emergency system in Washington, D.C. indicated that the effectiveness of these systems did not improve (see "Introduction" section). In order to resolve the current problems experienced with the 9-1-1 emergency system, the City of Akron's Safety Communications Division could consider the following options: 1) allocate the current staff according to the incoming call volume for emergency and non-emergency requests for service, 2) educate the public about the proper use of the 9-1-1 emergency system for police, fire, and EMS assistance, and 3) improve communication and coordination between police, fire, EMS, and dispatchers in an effort to decrease response time for calls requiring emergency service.

We recommend that some of the most optimal and efficient ways for the Safety Communication Division to reduce the extent of abuse and misuse are: 1) to educate the public about the proper use of the communication systems, 2) to issue fines to citizens who repeatedly abuse the 9-1-1 emergency phone line, 3) to allocate its current staff between the 9-1-1 emergency phone line and the non-emergency phone lines based on emergency and non-emergency demand for services, and 4) to improve communication and coordination between its emergency system staff by requiring police officers to wear their radios at all times while on duty, thereby improving response time in order to help to prevent future occurrences such as the untimely death of the Akron woman who was killed by her former husband (see "Introduction"). Future studies should be conducted to systematically examine the impact that Communications Centers with a 9-1-1 emergency phone line and non-emergency phone line(s) have on response time. More importantly, studies should be conducted to develop effective communication and coordination systems between emergency personnel that improve response time to emergency calls for services.

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[1] In this study, "misuse" refers to emergency calls made by citizens on non-emergency phone lines and "abuse" refers to non-emergency calls made by citizens on the 9-1-1 emergency phone line.

APPENDIX 1

SURVEY OF 9-1-1 EMERGENCY CALLS - CITY OF AKRON

CALL TAKER: _____ SHIFT TIME: _____

Instructions: For each call: 1) Place a [X] in the box to the left of the column to indicate the TELEPHONE NUMBER that the call was received on; and 2) Place a [X] in the box to the left of the column to indicate the TYPE OF CALL received.

Record # _____

TELEPHONE NUMBER							
	2181		9-1-1		2454		555
	2101		580		Ohio State Police		

TYPE OF CALL							
	EMERGENCY		NON-EMERGENCY				
	EMS		Police Informatio		Detective Bureau		Clerk
	Fire		Police Report		Identification Bureau		Dog Warden
	Police		Police Record Rc		Traffic Bureau		Judges
			Fire Information		Jail		Prosecutor's Offi
	Incomplete 91		Fire Records		Juvenile Division/AutoTheft		Sheriff's Office
	Police Busines		EMS Records		Tow Desk		City Services
			'43' Mental Case		Other (Specify)		

NURSING HOME EVACUATION PLANS: MYTH OR REALITY THE GREATER CLEVELAND AREA AS A CASE STUDY

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ABSTRACT

Urban environments are rife with chemical hazards. The frequency of extreme events stemming from the storage or transportation of chemicals makes such incidents almost commonplace in most urban locations. Incapacitated elderly populations in nursing homes face one of the most serious threats. Evacuation is the chief tool for protecting these particularly vulnerable populations. The nursing homes in Cuyahoga County, Ohio, were surveyed to determine their degree of preparation for a sudden evacuation, to analyze how "choke-points" in the traffic patterns around them might affect their evacuation plans, and to learn how many of the nursing home managers and staff were aware of nearby chemical facilities. Sixty percent of the nursing homes surveyed were within one mile of a hazardous facility. Survey results indicate that the ongoing process needed to update evacuation planning for each individual nursing home is lacking in the overwhelming number of cases.

INTRODUCTION

Within the last few decades, the transportation and storage of hazardous material has increased rapidly. Toxic spills, fires mushrooming into firestorms, and explosions may occur during the transport or storage of chemicals creating a potential evacuation risk in certain urban neighborhoods. There are many types of hazards that are associated with the transportation and storage risk of chemicals including explosions, toxic clouds, bleves (where liquid boils resulting in vapor explosions), and fumes (Marchall 1987; Vilain 1989). As a consequence of the increased risk, evacuations are increasingly used as precautionary measures to remove or reduce the exposure to chemical hazards. The literature reveals historic examples of such evacuations including Melbourne, Australia in 1982, Bhopal, India in 1984, and Chernobyl, USSR in 1986 (Cutter 1991). As the number of events resulting in evacuations has risen steadily, studies to promote efficient evacuations have been conducted (Perry and Lindell 1978; Quarantelli 1980; Perry 1994, Chavez et al 1996). These studies have added to the knowledge base about mass evacuations and have provided emergency managers with the tools to conduct these in a more efficient manner. Yet, the

literature reveals that very few evacuation plans include institutions, such as schools, universities, shopping centers, or populations that live in institutions such as nursing homes, hospitals, or populations that are incarcerated. Furthermore, the decision-making processes of persons making decisions regarding organizational evacuations have not been studied with the exception of those responsible for the nuclear industry (Richardson et al 1987; Sorensen and Mileti 1987).

Working for many years at a university, I became aware of this lack of concern about evacuation procedures and the enforcement of them at institutions. One day during midmorning, the sirens at our university went off indicating tornado warnings. None of the faculty members on my floor sent their students into the dedicated tornado shelter located in the cellar of the building. Fortunately, the tornado never touched down, and nobody got hurt. Other institutions were not so fortunate. Over the last few years, tornadoes have touched down at campuses in Tennessee and Oklahoma; and recently at the Maryland University campus, a tornado killed two people (*The Baltimore Sun* 2002). During a sudden severe storm in Northeast Ohio, my husband and I were caught in a power outage at a shopping center and experienced an ordered evacuation. Sirens and loudspeakers ordered us to evacuate immediately, but there was no explanation as to why. Most patrons were not aware of the severe weather until they arrived at the exit door. The shopping center was located on top of a hill with no other shelter in sight. With hundreds of other people, we ran to our cars and tried to leave the area, exposing ourselves to the storm and perhaps to more danger from flying debris. The literature suggests that personnel trained in evacuation procedures will know how to respond when an emergency arises. In our case, there were no personnel at hand providing any assistance whatsoever.

Considering the problems inherent in mass evacuation, it can be even more problematic if some of the victims are not able to walk or if they are depending on specialized transportation such as ambulances, buses, or vans. Nursing home and hospital populations are in this category. In addition, some neighborhoods are more difficult to evacuate because of the physical layout of the community. The literature reveals historic examples of such evacuation difficulties (OFD 1992, San Francisco Chronicle 1991, and Dunn 1992). This raises the following questions about nursing homes in particular:

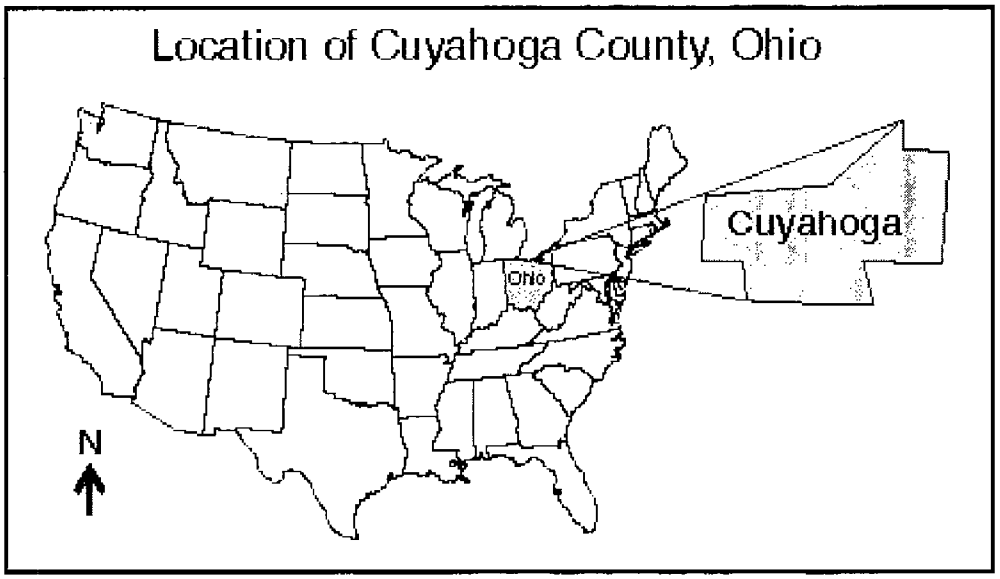
a) What do nursing homes do in case of an evacuation?
b) Do nursing homes have evacuation plans in place?
c) Where are residents evacuated to in case of an emergency?
d) What is the mode of transportation used for evacuation?
e) Are the personnel of the nursing home aware of any chemical or hazardous storage facility around the home?
f) Who is in charge in case an emergency arises?

To ascertain answers to these essential questions, a survey questionnaire was designed and sent to nursing homes in the greater Cleveland area. Given the increase in the elderly population in the US and the need for more nursing homes in the future, the aim of this research was to assess what kind of evacuation procedures were in place. Attention was also given to whether or not an evacuation would be hampered by urban choke-points that would delay a speedy and safe evacuation.

STUDY AREA

Cuyahoga County in Ohio (within the greater Cleveland area) was chosen as a case study (see Map 1). The area has nearly 200 nursing homes and, in addition, 24 hospitals. Cuyahoga County is within the Great Lakes Industrial Belt which is recognized as one of the great industrial domains of the world. Steel, iron, automotive, and plastic industries can be found in the area. A network of major highways provides transportation from Lake Erie to the south and carries a major portion of the through traffic from the east coast to the west coast. In addition, an old but active rail system transports raw material and goods in all directions. A significant part of the material transported is massive amounts of chemicals.

LOCATION MAP MAP 1



THE SURVEY PROJECT

Cuyahoga County requires that nursing homes have evacuation plans or procedures in place. The Cuyahoga County Emergency Manager provided a list of all nursing homes and hospitals in the county. The listing came from the *Cuyahoga County Guide to Services for Older Persons* (1999) and contained about 200 nursing homes and 24 hospitals located in nine emergency districts. A random sample of nursing homes was selected from each of the nine districts.

The manager or person in charge of each home was contacted and asked if they were willing to participate in this study. Managers of a total of 25 nursing homes participated in the study. Participants were asked to fill out a questionnaire and return it with any plans or maps to be used in case of an emergency or an evacuation. Follow-up phone calls were made to managers who did not respond to the survey questionnaire and to solicit more information where questionnaire responses were not clear.

RESULTS FROM THE SURVEY

The first part of the study asked how many spaces for residents each facility had available and how many residents were at each facility at the time of the survey. The questionnaire revealed that most nursing homes were completely filled and only isolated beds were available for relatively short periods of time. The total for all facilities was 2,871 residents. Each home had between 30-259 residents with an average of 115 residents per facility.

When asked how many of the residents were able to evacuate by either walking or boarding a bus, managers responded that 55% of the residents would be able to walk to a bus or an emergency vehicle while about 45% would need assistance during the process. That means that in each facility about 20 residents would need assistance while evacuating. The number of bedridden residents totaled 466 or 16.5% of the total population in the nursing homes or an average of 19 bedridden residents per home. This means that, in case of an evacuation away from the site, about 19 people in each nursing home would have to be moved by ambulance. In an average facility, the ratio of residents versus nursing personnel, including aids, was one person to 10.5 residents during the day and about 1 to12 at night. These numbers can be misleading, however, since during shift changes the numbers can be much higher or much lower. Still, in case of an evacuation, each person working in the nursing home would have to assist a minimum of six residents who are not bedridden to leave the building.

Planning, Education and Training

According to LaValla and Stoffel (1991) the planning process is key to emergency preparedness. They also point out that the written plan is merely a byproduct of the planning effort and that, without ongoing maintenance and commitment to the process, the plan is quickly outdated. When asked whether or not their facility had a current evacuation plan, all answered positively (100%) but, when asked if we could have access to a copy, only six (24%) provided us with one. The rest did not know where their plan was or did not have the authority to give us a copy. When asked if they routinely have evacuation drills, six (24%) said yes they had fire drills while the rest could not remember if there were ever drills conducted. One commented, "We are training our staff on a regular basis.

We have fire and tornado drills. The staff is familiar with evacuation procedures in different parts of the building". Another pointed out, "We train for fire and tornadoes. We have a great staff. Our resources are limited". "We prepare and have drills, but we don't take the residents off the premises. How do you evacuate handicaps by bus?" Another respondent replied, "You never know what you will do until it happens. The staff anticipates problems and will do the right thing". In terms of commitment to maintaining updated plans, an alarmingly low percentage of the respondents indicated that any in-depth planning process took place.

Outside Assistance

Many times the role of outside assistance is overlooked when planning for a major emergency event, especially for nursing homes. When asked if there is currently a contract with a transportation provider, the majority of homes (68%) said "yes" while 24% said "no" and 8% of the responders did not know. All responders who answered 'yes' also knew with whom the nursing home had their contract for transportation needs. When asked whether or not plans included relatives to pick up residents, only one responded in the positive. Others pointed out that relatives are generally too far away to depend on them.

Nearly 70 % of the homes have solid evacuation transportation plans on hand mostly with one or more ambulance companies. Some homes also contracted with bus or van services. One home included the staff's private cars as possible emergency transportation. Of critical concern, however, are the 30% which have no plans whatsoever including no plans at all for transportation during an evacuation. All past research emphasizes that preparedness, knowledge, and training are essential ingredients for a successful evacuation process (Proulx 1999, Shields et al 1990, and Chavez et al 1996).

Where to Go?

Many emergency plans focus on evacuating a facility. When it comes to nursing homes, however, a critical choice must be made during any extreme event involving chemicals. In the case of toxic fumes from the outside, should the nursing home keep residents in the building and close doors and windows or should the residents be moved to the nearest hospital? (Vogt 1990). In this Cuyahoga county study, where residents were going to be taken in case of an evacuation was another critical factor to be ascertained. All of the participating facilities had identified places where residents would be taken. 80% listed hospitals, 16 % had agreements with other nursing homes, and 4% listed schools or churches. When asked if the hospitals or other facilities had any specific area reserved for the nursing home residents, 65% believed that there was a special area reserved while 35% did not believe that this was the case. All, however, felt that the planned evacuation facilities could provide special services if needed for

residents with special needs. Obviously, follow-through is needed to verify these expectations.

Perceived Problems during an Evacuation?

Not only is it important to identify urban areas with potential evacuation difficulties, but the identification becomes even more critical when sensitive populations (such as residents of nursing homes, rest facilities, hospitals, day care centers, and such institutions) are located within such a congested neighborhood. Evacuation of these urban "choke" areas requires more detailed pre-planning, and their identification gives a strategic advantage to emergency departments and organizations - fire, police, the American Red Cross, etc - should their emergency evacuation become necessary (Church and Cova 2000, Cova 1995, and Dunn 1992). One-way streets can be a hindrance as well, especially if they lead the wrong direction. When asked if there are any one-way streets on this planned evacuation route, 80% said "yes", 16 % said "no", and one person did not know. When asked if the nursing home had planned for more that one exit route, none had. One respondent pointed out, "That depends on the situation; we can improvise" while another commented, "The ambulance drivers know where to go". When asked if the time of the day would be of concern when evacuating, all agreed that rush-hour traffic may add time to an evacuation. One respondent commented that "getting the vehicles in a timely manner to the home may be difficult". 52% of the respondents were concerned about the time of the day while the rest of the respondents did not feel it mattered a great deal. These responses reveal only a vague appreciation on the part of some nursing homes that their particular urban location may make evacuation planning much more difficult.

Familiarity with Evacuation

Previous experience with an actual evacuation is another critical variable. Nearly half of the respondents (48%) were familiar with a previous evacuation of a nursing home within the area while 52% were not. None of the respondents knew of any evacuation of the nursing home for which they worked.

LACK OF MAPS IN EVACUATION PLANNING

Six nursing homes provided us with evacuation plans. Out of the six evacuation plans, only one had a route specific map which led to the receiving facility included. Others had general descriptions of procedures in case of an evacuation but did not include route or facility specific maps.

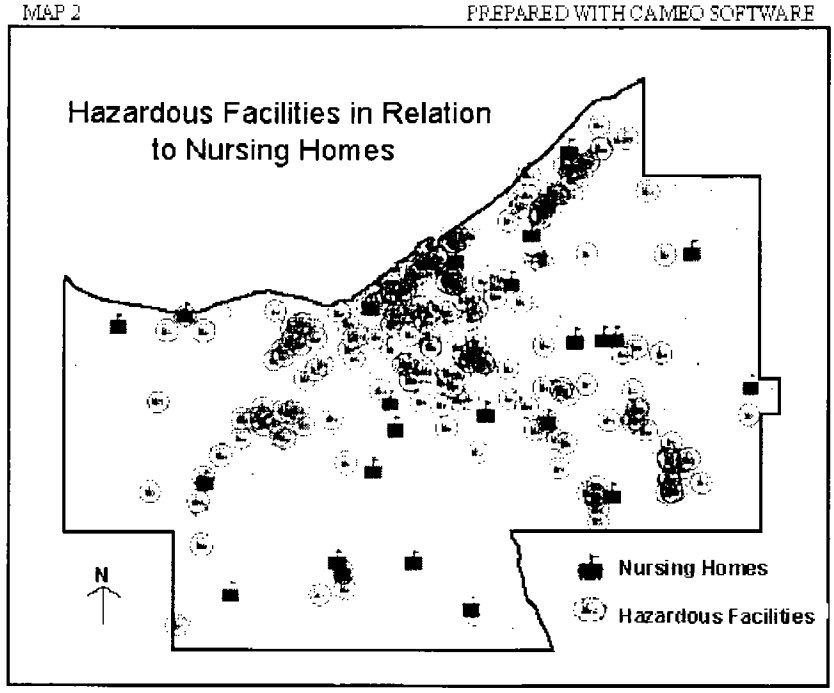
ARE CHEMICALS USED, STORED AND TRANSPORTED NEAR THE NURSING HOME?

The storage of chemicals in the urban environment is ubiquitous. Nursing homes are especially vulnerable to the possibility of unpredictable incidents that are

hazardous to urban residents. Under the commonly known "Right to Know" Law, (or Superfund Amendments and Reauthorization Act, SARA III, 1986), communities are responsible for their own safety in the event of explosions or chemical spills. Much of the required data detailing the location and kinds and amounts of chemicals being used, stored, and transported, however, must be obtained from local industries.

In Cuyahoga County, Ohio, the Local Emergency Planning Committee (LEPC) archives this data in **CAMEO** (Computer Aided Management of Emergency Operations), a GIS developed by the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA). With a built-in database of 6,000 chemicals, **CAMEO** is linked to two mapping programs: **MARPLOT** (Mapping Application for Response and Planning of Local Operational Tasks) and **ALOHA** (Areal Locations of Hazardous Atmospheres), a program that plots toxic plumes by using meteorological and chemical data. This database was used to identify the location of any storage facilities within a one mile radius of the nursing homes studied. Map 2 shows the location of hazardous facilities and nursing homes within the study area.

MAP 2 PREPARED WITH CAMEO SOFTWARE



Results indicate that 60% of the nursing homes studied were within a one mile radius of a hazardous facility. Respondents were asked whether or not they knew if the nursing home was near a hazardous facility. 8% knew that this was the case and these respondents pointed out that they are including this information in their emergency response training. A surprising 92%, however, were not aware of such facilities. This is of great concern because chemical spills and explosions

are the main reason for the majority of unexpected evacuations. In addition, more detailed studies in recent years have expanded knowledge of the range of hazardous events possible. It is now recognized that we have stationary and moving hazardous events, and often, several types of hazards overlap (Newsom, Madore, and Jaske 1992; Sinuany-Stern and E Stern 1993).

SUMMARY AND CONCLUSIONS

The results of this survey project are sobering. The Cuyahoga County survey yielded only one copy of an evacuation map and the goal of identifying traffic choke-points near the nursing homes contacted had to be abandoned. To access the maps which might reveal evacuation routes and choke-points, it might be profitable to conduct a survey of ambulance drivers and services employed by each nursing home. It would be interesting to discover how many paper maps exist. What may be revealed by such a survey are the mental maps of ambulance drivers and dispatchers.

It was clear that most nursing home personnel were not aware of the implications of hazardous facilities within one mile of their nursing homes. In addition, there was a lack of commitment to an in-depth and ongoing process to update the evacuation planning for each nursing home site. The Local Emergency Planning Committees of Cuyahoga County might mandate and schedule periodic reviews of nursing home evacuation plans to promote more emphasis on an ongoing evacuation "process".

Other issues affect the serious matter of evacuation planning for nursing homes. Residents of these homes, because of their special needs, are compromised in some way and are totally dependent on outside support. Many of the elderly residents have underlying medical problems and many are frail. A key question is: "when to evacuate?" According to Chavez et al (1996), who studied the evacuation of the Sepulveda VA Medical Center after the Northridge Earthquake, there is no easy answer for when to evacuate such facility. A guideline is that patients, staff, and visitors should be evacuated when their present location is more dangerous than the evacuation process and the relocation site.

Management must empower staff, through training and education, to make practical decisions during an emergency. Training is especially important at nursing homes since there is generally a great turn-over in staff. While nursing homes and hospitals have pre-existing evacuation arrangements, it is important to review these arrangements periodically. Disaster preparedness-planning is an ongoing and dynamic process. It is crucial that the plans be reviewed and updated.

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CRISIS MANAGEMENT FOR BUSINESS CONTINUITY

John Laye FBCI

"It's not going to happen here - and anyway, we can deal with it on the fly."
Yeah, right.

Over 40% of medium-sized businesses that suffer a disaster never reopen.
Of those that do, another 40% are gone within three years.

BACKGROUND

Before the World Trade Center crisis, business continuity professionals struggled to deliver this message: Unless adequate preparations are in place, disruptive events can become crises, severely impacting the bottom line. Worse than that, when an ad hoc, unrehearsed Crisis Management Team tries to meet the challenges, a crisis can become a catastrophe, making a brand forever unprofitable - even threatening corporate survival.

One business sector that heard the message is the financial world. Almost all large financial corporations have a high-level manager with a title like Director of Business Continuity. After September 11th, 2001, business continuity planning has also become recognized as a necessity beyond the financial sector.

SEPTEMBER 11th: SHOCK, THEN A SENSE OF RESPONSIBILITY

While the World Trade Center's images were so vividly and forcefully thrust before us, who could avoid thinking, "What would I do, if that were my company? What should be done immediately? Who should our Crisis Management Team be? What if some key managers are not available? What additional expertise will we need? What messages must we send, and to whom? Are our communications robust enough?. . ."A myriad of other issues flashed through our minds even as we struggled to comprehend the enormity of what we were watching.

Fortunately, disruptive events and the issues they raise follow foreseeable patterns. Admittedly, there are variations between industries - and even among companies in the same industry - but the standards that have been established in recent years have proven effective in the real world. They have literally been tested in combat.

PATERNS IN A CRISIS

? Crises often go unrecognized at first.

Initial reports often sound routine, and callers struggle to convey the scale of the event. In addition, the full consequences are not usually clear in the early stages (virtually all fires start small).

In today's business environment, distant events can have large impacts on a company's critical lifelines. Engineers refer to "tightly-coupled systems".

? Crises develop very rapidly.

We rely on linked, inter-dependent systems which are electronically controlled at the speed of light. Often, breakdowns spread too fast for human intervention.

Human factors cannot be ignored. Reporters, employees, investors, regulators, and other stakeholders all learn about our situation at about the same time we do. The feedback loop may be active before we have even a rudimentary understanding of what is going on.

? Crises require executive involvement.

Good management practices avoid micro-management. Most senior executives would rather wait for direct reports to develop, and other subordinates can develop situation reports and recommendations. There are decision criteria to help senior management determine when, and when not to intervene.

Policy-level involvement will be required at some point. At what point? What are the criteria to tell you "Now!"?

? Information flow is critical in any crisis.

Initial information is most often fragmentary. Some issues involve: quickly filling in critical data, alerting, assessing information in hand, picking a reaction level, and getting out valid information.

Two-way information flow is critical but worrisome in the early phase, when not much is known.

? Crises can threaten perceptions of a company's stability.

Critical perceptions are those of: employees, uninvolved business units, investors, regulators, employees' families, suppliers, and customers.

When negative perceptions accrue, more tasks are added to the crisis managers' functions.

? Viewed strategically, crises bring potential impacts in seven categories:

Human issues
Impaired business functions
Confidence
Financial
Material losses
Regulatory
Political

? Decision points arrive before the available information reaches anyone's comfort level - much as in real life.

In a crisis, the stakes are higher.

TO MANAGE A CRISIS, ADDRESS THE REALITIES BEFOREHAND

? Crises often go unrecognized at first.

Put an alerting system in place with instructions to notify your Crisis Management Team when a problem first arises.

A call center can alert your team.
The senior Site Security Officer can alert your team.

or . . .

Plan your crisis management system to operate in several modes.
Situation monitoring is the least intensive. You can escalate - or shut down from there.

? Crises develop very rapidly.

At least the rudiments of a crisis management system must be in place before the event, and it must be capable of rapid expansion.

A dedicated crisis management center is seldom necessary. Conference rooms convert quickly and very satisfactorily *when the requred communications, hardware, and supplies are in place* (and stored out of sight).

The ability to get the Crisis Management Team in place quickly should be included in system design.

Alternates are also required for both the Center and for Team members.

? Crises require executive involvement:

When the existing policy is inadequate for new circumstances,
When a very high-risk issue arises,
When subordinates are unlikely to understand the ramifications, or
When the level of public awareness calls for an executive-level spokesperson.

? Information flow is critical in any crisis.

First information is usually fragmentary. The earliest issues will be: quickly filling in critical data, alerting the Crisis Management Team and Emergency Response Teams, and picking a reaction level.

The system must very rapidly:

Collect information,
Assess the information,
Integrate the information,
Evaluate the information,
Decide on actions, and
Disseminate decisions.

Two-way information flow is critical but worrisome in the early phase, when not much is known.

? Crises can threaten perceptions of a company's stability.

Early communications must be crafted to:

Fill the information void very quickly,
Convey competence, and
Maintain believability.

Information releasers and spokespersons must be aware that their statements will be absorbed by:

Employees,
Uninvolved business units,
Investors,
Regulators,
Employees' families
Suppliers, and
Customers.

When negative perceptions accrue, more tasks will be added to the Crisis Management Team's functions.

? Viewed strategically, crises bring potential impacts in seven categories.

Because of the potential for unintended consequences, assessments, evaluations, and de

Human issues,
Business functions,
Confidence,
Finances,
Physical plant and inventories,
Regulators, and
Political consequences.

? Decision points arrive before the available information reaches anyone's comfort level.

This can be countered by good judgment - which comes from experience - and by utilizing a Crisis Management Team that

has well thought-out processes,
has a tested plan,
has rehearsed, and
has used the lessons learned from rehearsals and from studying others' after-action reports to improve their own processes and plans.

WHEN MANAGING A CRISIS - PRIORITIZE!

Establish reliable communications.

- Without good information, good decisions could rely on luck.
- Commercial television shots are not chosen to give decision-makers representative or comprehensive information.
- Get someone you know and trust at the scene.

Determine what you do not know.

- Have a template for essential information.
- Use two-way information flows to request missing information.
- Get managerial help, and clerical help supporting the managers.
- Assign and train a person to monitor media statements.

Limit the impacts.

- Deal with human impacts first.

  Get people out of harm's way.
  Get medical attention for casualties.
  When the threat is, or can appear to be, yours --initiate warnings.

Determine and meet the media's needs.

- They must report what they see and what they can discover - or be fired.
- Do not tempt them to "fill in the blanks" by going to less accurate sources such as:

  - unhappy ex-employees
  - single-interest groups with their own agendas
  - unknowledgeable individuals seeking attention

- Use them to channel your messages to:

  - employees
  - their families
  - investors
  - regulators
  - customers
  - suppliers
  - general public

Make communications easy.

- o Collect and disseminate valid information.
- o An employee 800 number can take the load off your call center.
- o Your website can have a password to an employees' area -interactive.
- o Keep the information current.

Identify recovery issues

- o Support your on-scene manager's restoration efforts.
- o Think strategically and be proactive at the Crisis Management Team level - the on-scene manager will be very busy with immediate problems.

ADVICE TO POLICY-LEVEL / SENIOR EXECUTIVES

Where a tested crisis management system is in place with trained people, a senior executive usually needs only to monitor progress.

Where the system is untested (read: doubtful), "take charge" intervention is warranted.

Intervention is also recommended:

- ? Where policy is inadequate for new circumstances
- ? When a very high-risk issue arises

A CRISIS BRINGS BOTH DANGER AND OPPORTUNITY

- ? Don't stay in the defensive mode.
- ? Use your competitor's viewpoint.
- ? Senior executives especially, should consider the event in a strategic light.
  - o Comprehensively
  - o Extended time frame
  - o Review your strategic plans to see opportunities.

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