

Emergency Response to Schools

“Preparing for Disaster”

Executive Planning Course

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An applied research project submitted to the National Fire Academy
as part of the Executive Fire Officer Program
October 1999

ABSTRACT

As we begin the 21st century it is unfortunate that our schools continue to be plagued with violence and disaster which has resulted in the death of our children. It seems all too often the evening news shows emergency responders facing incidents where students and faculty have been shot or crushed from some type of mass-casualty incident in our schools. The problem has been the ability of our emergency responders to handle large incidents requiring multiple agencies to respond and assist.

Anderson Township has the same exposure as many other communities in that it has many schools. The Anderson Township Fire and Rescue Department may also be called to deal with an incident that causes it to perform unlike ever before. No longer can we sit and wait, using the mindset that it won't happen here. A serious evaluation of the possibilities that may occur is imperative.

The purpose of this research project was to review previous violent and mass-casualty incidents in schools, determine what actions were taken by emergency responders in managing the incident and develop recommendations for improvement.

This research project was developed using a combination of historical and evaluative research to address the following questions:

1. What type of violent and mass-casualty incidents have occurred in our schools?
2. What type of problems have the emergency responders encountered?
3. What measures can be taken to reduce the problems encountered by emergency responders?

This project looked at several fatal incidents ranging from a boiler explosion, a tornado strike to a series of violent incidents. The procedures used involved a search of fire and EMS publications for incidents that have occurred and the emergency response to them. Additional information was gathered through educational resources such as the National School Safety Center and the Forest Hills School District that produced statistical information. The results that were achieved represent minimal deaths due to non-violent incidents and a large number of shootings. The incidents reviewed provided a list of problems that were encountered by responders such as communication, command structure, personnel stress, triage and student accountability. The recommendations were formulated from the problems encountered during previous incidents and from the research information discovered.

Although the statistics did show that the number of incidents that have occurred in the United States since 1992 are a minority compared to the number of schools, it did not show a pattern as to where it may occur next.

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INTRODUCTION

A problem is occurring for emergency responders as violence continues to occur in schools throughout the country. Fire, EMS, police and other emergency services are being stretched to their limits during incidents where students have lashed out against their teachers and other students. Some of these incidents have been large-scale and involve multiple agencies beyond the fire service responders. Not only can incidents involving violence be a strain on an operation, but large-scale natural disasters or mechanical failures may threaten our schools as well. Agencies across the nation have faced difficulty in managing large-scale incidents while working with multiple agencies. In many incidents involving violence and mass-casualty, communication, procedures, terminology and many other logistical problems are occurring causing problems during the initial phase of the incident.

Anderson Township is no different than any other community that has schools. No longer can we close our eyes to the possibility of natural and man-made disasters that threaten our children at school. These incidents may range from a single person being injured to large numbers of victims. Many of these incidents may involve weapons, which could still be a threat for the responders when they arrive at the scene. The Anderson Township Fire and Rescue Department is also like many other organizations in that the possibility exists to thrust the organization into a large-scale incident that will stress its capabilities.

The purpose of this research project is to review previous violent and mass-casualty incidents in schools, determine what actions were taken by emergency responders in managing the incident and identify recommendations for the future.

This research project will contain a combination of historical and evaluative research to address the following questions:

1. What type of violent and mass-casualty incidents have occurred in our schools?
2. What type of problems have the emergency responders encountered?
3. What measures can be taken to reduce the problems encountered by emergency responders?

This research project reviewed several incidents that occurred in schools resulting in deaths. The procedures used were to review information available on the incidents and evaluate the actions taken, problems encountered and recommendations by emergency responders. Information was also gathered from educational resources such as The National School Safety Center, that provided survey results nationwide as to the actual incidents and the number of deaths. The Forest Hills School District was also a valuable resource in providing contacts for the school based results and a report on Columbine from the school district perspective. The results show a larger number of violent deaths than accidental deaths from weather or mechanical failure. They also help to identify the types of incidents that have occurred and their locations. The locations were not just limited to where in the school, but also in what states the incidents occurred. The reviews of the incidents also provided a list of problems that led to the recommendations based on previous incident problems and the probability of reoccurrence.

This project will provide a view of the types of incidents that have occurred, their problems and recommendations for the future. The end result will be the ability of each

organization to utilize this information to help prepare for the possibility of an event of great magnitude in their own community.

BACKGROUND AND SIGNIFICANCE

As we begin the 21st century, violence in our schools seems to have become much too common for an advanced society. It is no longer unusual to turn on the evening news only to hear of students lashing out against their fellow students and teachers in an effort to cause injury. Several years ago, our country was shocked as the first incident occurred and appeared on the evening news. Unfortunately, those type incidents are becoming more and more visual as they happen again and again. Several articles available on the Internet at the CNN web site (cnn.com) display the tragedy currently at hand in our schools. As early as May 1992, a former student walked into a high school in Olivehurst, California and shot 4 people to death and wounded 10 more. In October 1997, in Pearl Mississippi, 6 teenagers were charged with conspiracy to commit murder in connection with a shooting rampage that left 2 students dead and 7 others wounded. In August 1998, 2 Arkansas boys went on trial for shooting 4 other students and a teacher resulting in their deaths. There were 9 other students injured in that incident as the boys had pulled a fire alarm evacuating the building and then opening fire on the unsuspecting victims. In October 1998, in Paducah Kentucky, a 15-year-old boy was charged in the shooting death of 3 schoolmates and the injury of 5 others. In January 1999, in Carrollton, Georgia, a student was killed and her boyfriend wounded in a shooting that may have been an attempted murder-suicide or double suicide. The incident that has received some of the largest amount of press was in Littleton, Colorado where 2 heavily armed young men

opened fire and tossed explosives in a Denver area high school where 15 people were killed and many more injured. As seen in Appendix A, these are just some of the high-profile incidents that have struck our schools and have been brought out in the public eye by the media. It is clear that any one of these incidents would require a response from police, fire, EMS and possibly many other support agencies as well.

The tragedies that have struck our schools have not been limited to those of a violent nature. Several schools have been hit with severe weather and mechanical failures that have caused death and injury. Cooksey (1982) writes about Star Elementary School in Spencer Oklahoma which suffered an explosion in the cafeteria from a 75-gallon water heater that malfunctioned. The explosion killed 5 students, 1 teacher and injured 34 more. More recently, Reeder (1990), Davie (1990), and Conboy (1990) detail events that occurred on November 16, 1989 in Newburgh, New York. East Coldenham Elementary School was struck by a tornado collapsing a brick wall in the cafeteria leaving approximately 15 students trapped. By the end of the incident, 2 students were never treated as their injuries were too severe for survival, 6 more died from cardiac arrest secondary to their injuries and 20 more were transported and treated at local hospitals.

Are these incidents isolated and inflated by the media or is there a real threat of re-occurrence? Although the incidents that have been broadcast by the media seem overwhelming in number, are they an issue for all communities or are they such a small percentage of the total number of schools that the threat is really minor. What kind of pre-incident planning can be done to prepare emergency responders for 15 dead students and a continuing threat of violence when they arrive? Even for large, well-prepared emergency response agencies, an event of this magnitude can be crippling to the

organization. It is clear from an organizational perspective, this is an issue that needs to be addressed. Just as these communities may have been struck blindly by these incidents, this could occur in any town in our country. Unfortunately, it does not appear that these type incidents are going to stop. Any community with schools may be susceptible. As violence continues to rise in our schools, we must prepare ourselves for any event that could occur from a mass-casualty perspective. Continuing injury prevention, school safety education and the development of a plan to address these type occurrences are also important not from just an individual, but a multi-agency point of view.

This research project will address the types of incidents that may occur in our schools and what emergency responders may do to help during the mitigation process. This project relates directly to the Executive Planning Course, as the process will be to evaluate the needs, develop a plan, evaluate the plan and make necessary changes for success when dealing with anything from a single injury to a large-scale incident in our schools.

LITERATURE REVIEW

In reviewing the literature available regarding violence in schools, the amount of information available is endless. The majority of literature available clearly shows that school violence is occurring more frequently than natural disasters. The number of non-violent disasters that were found was very limited. The first incident was the explosion at Star Elementary School in Spencer Oklahoma. According to Cooksey (1982), pre-planning for disasters paid off. The Spencer Fire Department was dispatched at 12:17 p.m. on January 19, 1981 to the report of an explosion in the cafeteria with numerous casualties. EMS and fire personnel faced two major medical emergencies when they

began arriving and triaging the patients. The first was since many students were in the cafeteria and eating, the responders had to deal with airway blockages. Second, they also had to deal with a large number of life threatening bleeding emergencies. They were fortunate in that it was a warm day and some students were outside prior to the explosion. Weather also assisted when removing the injured students outside. Operations went very smoothly due to the fact that the firefighters and EMS personnel had trained together prior to the incident. The 2 fatalities were said to have occurred prior to emergency personnel arriving. The familiarity of the 2 agencies was a contributing factor to the efficient treatment given to the injured. Hospital officials also credited the EMS personnel for their efficient treatment and packaging resulting in the prevention of further loss of life. Although the prior training and planning paid off, the incident was not without its problems. Communication on the scene was a problem. The first arriving units had no portable radios, which could have been used to alert other units to the details of the incident. They also had problems with identifying students that were injured. Elementary students seldom carry identification, and to worsen the situation, the teacher who was killed complicated identification of the students from that class. The number of resources that arrived on the scene proved difficult to manage, especially as the lack of communication among the agencies complicated the issue. They also dealt with the emotional issues their personnel encountered when dealing with injured children. Overall, the problems were quoted as being minor and the fact that an emergency plan was in place and prior training had occurred proved highly valuable.

In the incident in New York, East Coldenham Elementary School was struck by a tornado leaving 9 students dead and at least 18 others injured. The incident occurred

when a tornado producing winds of 90 to 100 miles an hour struck the school cafeteria at 12:31 p.m. collapsing the front wall of the cafeteria. As emergency responders arrived, they were faced not only with a structure that had collapsed on many students but winds of 30 to 40 miles an hour and driving rains pouring into the opening left by the storm. According to Conboy (1990), the Fire Chief made the initial size up of the structure. As he entered the cafeteria he was faced with dangling debris overhead and was approached by the principal requesting that he start CPR on a critically injured child. The teachers and custodians who had already evacuated the uninjured students and were digging frantically to lift the wall off the buried children amazed him. He would later find other students in cardiac arrest with some resuscitation efforts in progress by teachers. Again communication became a problem. Communication systems were damaged by the storm when a tower went down on the nearby Beacon Mountain. Davie (1990) goes into much more detail as to the incident at the school. He also states the largest problem that faced fire control was the communication. In addition to the storm damage, there was also a transmitter that was out of service and had been for over a week, which hindered county communication between agencies. They also tried to contact their dispatch by cellular phone and encountered the dispatch phone busy. It was later determined that the dispatcher had the lines tied up trying to call for additional resources. They were also dealing with antiquated equipment that basically failed completely when the television truck microwaves went up. The initial scene was described as bedlam. The responders encountered teachers attempting to uncover trapped students from heavy debris in a room that was unsafe to occupy. Responders were called to assist the teachers in moving tables and heavy debris that resulted in the successful rescue of several students. They also

encountered numerous students receiving CPR and a girl crying hysterically. When asked why she was crying she responded “It popped her head like an egg”, an answer that would shock any emergency responder. Some of the other problems encountered were accountability of the students. During the initial triage, no identification tags were used which resulted in EMS personnel on scene not informed of triage that may have been done prior to their arrival. The lack of tags also resulted in patients being transported and no one aware of who they were or where they went. They also had students that left the scene and parents who recovered their children making accountability very difficult. There was a definite need for a better command structure and especially a communication officer. The lack of coordination resulted in one hospital receiving the majority of the patients, 19 of 26, with the other patients spread over 2 other hospitals. They also had a student that was the daughter of one of the firemen. This was again the case in Spencer, Oklahoma. In his article, Reeder (1990) mentions the need for stress related counseling, clearly a priority for personnel during and after the incident. As many departments have residency requirements and their personnel live in the community, this is an issue that may face our responders. Not only may they be responding to a high stress situation, they may have family involved in the incident.

The next issue will center on the death or injury of students by violence in the schools. The media has been filled with incidents dating back to 1992 that involved shooting deaths at school. These incidents range from a single injury to multiple injuries involving students and faculty. A visit to the World Wide Web produced several articles involving violent deaths in our schools. The CNN web site (cnn.com) has 12 articles, see Appendix A, that have been broadcast nationwide since 1992. These have been the high

profile cases that the media has brought to the world via, radio, newspaper, television and any other means of reaching the public. Further research has found that the incidents are much more widespread than what has been seen on the news. In a report by The National School Safety Center in Westlake Village, California, there have been 219 incidents that resulted in 257 students killed in school related incidents since September of 1992. Of the deaths, 48 were in incidents near the school with the remainder of the deaths occurring on school property. The majority of the deaths involved males at the high school level and were the result of a shooting. According to the National Center for Educational Statistics, in the 1997-1998 school year, there were over 87,000 public schools in the United States. Using the number of incidents from the 1997-1998 school year, 31, the percentage of schools that had no deaths were clearly the majority. A report titled Crime and Safety also states that most murders and suicides of young people occurred while away from school. Finally, a report from the Children's Defense Fund states that the percentage of 12th graders who have been injured (with or without a weapon) at school has not changed over the last 20 years. However, it does state that the percentage of those who have been threatened with injury shows a slight overall upward trend.

Somewhat contrary to the previous statements, in research by Gagliardi, Neighbors, Spears, Byrd and Snarr (1994), the school environment is described as “a daily reservoir for a significant number of the world's pediatric population, and occasionally is a site for both natural disasters and mass-casualty incidents”. They also report that pediatric morbidity and mortality is increasing in the United States with trauma being the most common cause of death. Their report addresses the ability to prevent 40 to 50 percent of those deaths in the schools. They report that the faculty is the

first line of defense by treatment of the injured and that most teachers are unprepared to handle initial treatment prior to the arrival of emergency responders.

Due to the number of schools that were involved in violent deaths, this research paper will limit the majority of review to the Columbine High School incident. Of all the incidents that have occurred, it was the most publicized and also involved the largest number of students killed and injured during one incident at school.

On April 20, 1999, Littleton Colorado was struck with the one of the worst school shootings of all time. According to the staff of School Security Report (1999), at approximately 11:20 am two explosions occurred away from Columbine High School. A bomb exploded near the entrance to the Highland Ranch High School, about 20 minutes from Columbine, and a second device exploded at a supermarket about a mile-and-a-half from the school. It is believed that Harris and Klebold, the Columbine shooters, had set both these devices to divert attention away from Columbine High School. It was about 10 minutes later that the call was received for “shots fired” at Columbine. From there, Nordberg (1999) describes in detail the story that was to unfold for the emergency responders that arrived at the high school. The initial responders thought they would be faced with fireworks or some type of prank, little did they realize that would not be the case. When they arrived at the scene they were advised by dispatch that gunmen in black trench coats were at large in the school. During their approach, they saw kids running from the building and were faced with one police officer waving them off and another waving them in, they proceeded in. After arriving, they had kids that had been shot running out of the building and the sounds of gunfire in the background. The ambulance became a shield for the fire and EMS personnel. Police returned fire as they retreated to

the ambulance, stepping into the back of the unit for cover. Fire apparatus was also used as a shield for SWAT personnel to approach the building. The SWAT teams also brought injured kids out and turned them over to EMS for treatment. It would be important to note that due to fires in the school the sprinkler system had been activated. Wallace and Brightmire (1999) described this as a double-edged sword in that it did control the fires, but caused visibility problems for the SWAT teams as the smoke was pushed to the floor. Parents who had heard of the situation were arriving at the scene attempting to retrieve their children, therefore access to the streets near the school had to be limited to keep parents away. As for accountability of the students, that would not happen for awhile as some were hiding in the school, some had escaped and left school grounds and some were dead or injured inside the school. Heightman (1999) also describes how injured students were moved away from the school to a quiet neighborhood nearby the school. It was not long before 911 calls were coming in reporting wounded children at the nearby intersection. Students that were running out of the school had to be detained by police, as there was word that the shooters might have changed clothes to disguise themselves. The police had no way to determine if the shooters could have been one of the students running out. It was 3 or 4 hours before the SWAT personnel deemed the school safe and even later there were bombs found in the parking lot. Wallace and Brightmire (1999) go into even more detail of the incident. They detail the travels of the gunmen into the school, to the cafeteria, to the library and then back to the cafeteria. The 2 boys fired guns and threw bombs during their travels throughout the school. One interesting point, it was later determined that the boys had made threats via websites and miscellaneous writings and had targeted one student, Brooks Brown, in particular. They faced that boy first as

they entered the school. Harris looked at the boy and said, “Brooks, I like you. Get out of here. Go home.” It was stated that Brooks “didn’t think twice” as he left the school.

(School Security Report, 1999, p.5)

According to Wallace and Brightmire (1999), nearly 500 law enforcement officers and 166 fire and EMS personnel responded to the scene. The fire and EMS personnel assisted bomb technicians with their search, a detail that was voluntary, and no one wanted to be left out. Bomb experts stated the poorly crafted devices reduced the devastation by not activating. Included in the failed devices was a 20-pound propane tank with a bomb attached that never activated. Again, communication was a problem for the multiple-agencies on scene at Columbine. Communication problems included radio incompatibility, terminology differences, radio battery failure, and the positive and negative side of the media. A TV at the command post would have provided an overview of the scene from local news helicopters. Fire and EMS responders were also placed under unfamiliar circumstances in working with police and SWAT agencies, in and around gunfire, situations not in the normal training curriculum for the fire service. They also realized they had to provide for the needs of the rest of the community for response while dealing with a large-scale disaster. The normal daily emergency responses did not go away while having to deal with a large disaster. Support is needed for the responders and their families, the community and the students during and after the incident. Notifying parents and families of the responders status became an issue as the media broadcast the incident live, sending fear through the families of all involved. A number of recommendations were made after the incident ranging from training with SWAT teams, protective clothing for firefighters to procedural changes. Finally, the author of the report

states, there is no way to prepare for an incident of this magnitude, but daily incident command usage and mass-casualty training are hugely beneficial.

Although Columbine High School was used as the primary focus of violent incidents, another incident involving the shooting of students at school had a similar profile. On May 21, 1998, Thurston High School in Springfield, Oregon was struck by tragedy not unlike Columbine. Kelley (1998) details how a single student in a trench coat entered the cafeteria and began shooting a .22 caliber semi-automatic rifle at more than 400 students. In only 8 minutes, 1 student was dead and 22 others were injured. As emergency responders approached the scene they were faced with students running away from the building. It was unique though, once in the cafeteria, the responders were amazed by the calm, surreal atmosphere that surrounded the staff and students that were attending to the injured. As in other incidents, communication was a problem as the 911 center was overwhelmed. The center normally handles 1000 call a month, but took 7300 that day. As in the other incidents, the stress was overwhelming for responders and especially those who had children at the school. One paramedic had to deal with each injury, not knowing if his daughter would be the next. Once he was able to speak to his daughter, who was ok, he fell apart, emotions were more than he could control. There were two issues that were noted as part of the success of the incident. The first was that the response was dispatched at shift change for the 2 departments involved and both had full staffing. The other issue was that their system was a full ALS, both fire and EMS, which contributed to the successful treatment of multiple shooting victims.

As we look at all of these incidents, and even those not reviewed in this project, we see a pattern of mass-casualty, terrorist incidents that the fire service has not typically

had to deal with. Martin (1995) defines some of the common characteristics of these type acts as groups of individuals that were emotionally and psychologically prepared to inflict damage and injury. They also use readily available weapons and explosives and cause significant damage and suffering to death forcing emergency agencies to devote time and resources to deal with their destruction. He states the reality is that no community is immune from terrorism. We can no longer afford to consider it “the other guys” problem. He recommends pre-incident planning with law enforcement agencies. Evaluate your community’s target hazards for terrorism and integrate that with inspection and pre-fire planning. Organizations should update their operational procedures for mass-casualty incidents, haz-mat situations, search and rescue and hostile encounter situations. Develop resource lists, plans and policies beyond the normal needs to meet those demands of a large-scale incident. He also talks about operational considerations for this type incident. As terrorist acts are violent in nature, fire and EMS personnel will have to work in a volatile atmosphere, side by side with law enforcement. Personnel may be exposed to gunfire, explosives, booby-traps and multiple injuries. They may also be working in a crime scene and the preservation of evidence must be considered. Post incident stress may be common and will need to be dealt with quickly for the emergency responders. As for recommendations, his are much like reviewed from other incidents. The constant training and use of incident command will be critical. The incident will most likely progress into a multi-agency response with numerous responders from those agencies. These resources will only be valuable if they are managed efficiently. Special techniques include hazardous device recognition, handling mass-casualty treatment,

evacuation, extended logistical support and the interaction with local, state, federal or even military agencies.

Fagel (1994) reinforces the position on mass-casualty planning. His article states the need for a common incident commander and the use of the incident command system to best utilize resources. He feels there is a need for the identification of agencies that will be involved and for those agencies to meet and develop a master plan. The issues that should be considered will include fire, personnel rescue, evacuation, emergency medical treatment, triage, transportation, crowd control, communications and mobile command posts. He also states the need for a disaster exercise to prepare responders for the real thing.

As we look at the incidents that were reviewed, many we have seen are the result of the publication and visualization provided to the public by the media. But what is the reality of the actual deaths that are occurring in the schools. According to the National School Safety Center Report, from 1992 to 2000, 257 deaths occurred in our schools and the largest number was due to interpersonal dispute. Appendix B shows the number of deaths by category and you can see that accidental deaths, such as natural disasters, were minimal at 10. The categories that were large, after interpersonal dispute, were gang-related suicide and the second largest was unknown. The second chart, in Appendix C, also shows that the majority of the deaths, 68%, were in high schools. The incidents were also spread fairly evenly across the nation. As Appendix D shows, the incidents were spread over 40 different states.

The findings of the research did affect the project in determining the types of incidents that have occurred and their problems. The results found similar problems

occurring in all the incidents, even of different type. The problems identified were used, along with others recommendations, to identify the organizational needs.

PROCEDURES

The procedures used for this project were modeled around the need for analysis, planning, implementation and evaluation as discussed in the Executive Planning Course. The first step in the project was to look at the deaths that have occurred in our schools and determine if there was a problem. A search was completed of fire and EMS literature that was available through the library at The National Fire Academy and the articles were reviewed. There was clearly much more information available for violent deaths than there was of natural disasters or mechanical failures. The articles that were found were reviewed and the pertinent information used in this project. The next search was through resources available in the school system. Contact with the local school district, local center for safe schools and searches on the World Wide Web for statistical information relating to deaths that had occurred in schools for any reason was done. The school-based information gathered came from the Forest Hills School District, the National School Safety Center, National Center for Educational Statistics, The Children's Defense Fund and the Ohio Prevention and Education Resource Center. I was able to gather information, including a school-based review of Columbine, which gave a different approach and view of what occurred in the incident. Again the search turned up information that upheld the earlier findings that violence was a larger contributor than non-violent acts resulting in death. Once all the literature was reviewed a brief description of each type incident was used for comparison in the research. Due to the

large number of violent deaths, one large incident was chosen, Columbine High School, to focus the majority of review for that type of incident. Once the types of incidents that had occurred were determined, a review of the incidents for the problems that had faced the emergency responders was performed. A review of the problems did indicate similarities among all the incidents that had occurred. Then a review of literature on mass-casualty was done as the incidents clearly posed as such. The literature on mass-casualty reinforces the need for preparation, planning and practice, which would help to solve problems that had been found to plague emergency responders. Finally, taking all the information gathered, the types of incidents were identified, the problems that occurred were identified and recommendations will be made to assist organizations to prepare for these type incidents. The recommendations are based on research results and the findings of others as they were compared to each other for similarity.

There were limitations to this project. The lack of information available on non-violent deaths in our schools limited the review to only 2 incidents. Neither incident was recent as they were in 1989 and 1992. Especially at the school district level, very little emphasis or study has been directed towards a mass-casualty incident from a mechanical or natural disaster. As for the violent incidents, the limitations would be that for the purpose of this type project, it would be impossible to review all of the incidents that have occurred in the last few years. As for those incidents, the statistics provided from them will serve to represent them in this project. As to Columbine High School, the school reviewed in this project, there is a technical report pending from the U.S. Fire Administration that had not been released at the time of this project.

RESULTS

The review found that the types of incidents that have occurred varied from a tornado to a boiler explosion and multiple gunshot incidents. There were very few published works that related to natural disasters or accidental occurrences that resulted in deaths at school. The incidents that were found included a boiler explosion in Spencer Oklahoma and a tornado that struck a school in New York. The explosion was the result of a mechanical failure and it would appear that any school would be susceptible to this type of incident. The explosion was large enough to cause structural damage to the school resulting in death and injury from falling walls and ceilings. The second incident reviewed involved a tornado that struck a school in New York. This type of incident would be more prevalent in certain areas of the country. As for weather related incidents, different areas of the country will be susceptible to different weather related problems at different times of the year. Again, any school may be susceptible to a weather related disaster, but the disasters will differ from state to state and for varying times of the year due to weather patterns. The most difficult to assess are the incidents that have occurred as a result of student violence. As our schools have been plagued with incidents involving violence, there has been a larger amount of attention given by the media. The first question to be answered by this project was to determine what was occurring in schools overall, not just what is visualized on the evening news. As we look at the overall statistics, the number of incidents that have resulted in deaths is only a fraction of the number of overall schools. The chart in Appendix A shows the high profile incidents that were publicized in the media, but does not represent the total number of deaths that have occurred. As reported by the National School Safety Center (see Appendix B and C), the

number of incidents is much higher than first thought if relying on the media information. In all, 257 students and teachers have been killed in 219 school-related incidents since 1992. They also show that the incidents are primarily due to interpersonal dispute and have occurred in high schools. Their reports also indicate that the incidents that occurred were spread over 40 different states, see Appendix D, and had little or no pattern as to their occurrence.

The next question was what types of problems did the emergency responders encounter. In reviewing the different incidents there were some problems that occurred frequently and some unique problems also. The first problem that was prevalent in every incident was communication problems. Some problems with communication were existing prior to the incident, such as lack of equipment. In the Oklahoma school explosion, the first arriving units did not have portable radios. This eliminated their ability to transmit information or request assistance once they left their vehicle. They also experienced problems when telephone lines jammed due to the number of calls. This hampered police and fire communication with headquarters and also with area hospitals. In the tornado incident in New York, several problems with communication occurred. The low-band transmitter had been out of service for at least a week, hampering radio communication. They also had a radio tower damaged by the storm causing communication problems. Their radio system was also very old and when the TV microwave trucks set up their operations the old radio system became virtually useless. There was also a breakdown in communication from the initial triage person to incoming responders. The lack of use of triage tags kept incoming personnel from the initial triage information and later led to most of the patients going to one hospital and only a few

spread out over 2 other hospitals. At Columbine, several other problems were identified. Due to the length of the incident, they experienced radio batteries that began to die and new batteries had to be brought in. They also experienced the lack of a common channel for police and fire. Working in different areas of the building, they had no radio communication with the police. They also found that the media had some of the best views of the operation from helicopters. This may be helpful at the command post if a TV is present, but be aware that the responder's families and citizens have that access as well.

Accountability of students was also a problem, especially in the violent incidents where students that were able to get out of the school fled. As the media broadcasts the incidents, parents may flock to the scene, removing their children and fleeing when possible. The incident in Spencer, Oklahoma also posed problems since students at the elementary level seldom carry identification. This was further complicated by the death of a teacher, making identification of the students in that class difficult.

In all the incidents, interagency training was mentioned. As these incidents may involve multiple agencies, possibly beyond what normally is utilized, interagency training for terminology, procedures and communication should be completed. At Columbine, fire and EMS personnel had to work side by side with law enforcement, under fire, while trying to reach potential patients. They also allowed law enforcement to use fire apparatus as a shield against gunfire. Policies and procedures may need to be modified in this scenario where fire and EMS personnel are subject to gunfire in the line of duty. Training may also need to occur for other agencies as to fire department capabilities and procedures. At Columbine, law enforcement personnel faced problems

with smoke lying close to the floor, affecting visibility as they crawled in. The ability for the fire department to shut down sprinklers and ventilate the smoke would have been valuable. Planning for incoming resources is necessary, but also planning with outside resources such as hospitals must be done. What facilities will be available for what type patients and how many patients can they handle. In addition, while establishing a resource list, all agencies that may be involved should be considered, which may include law enforcement, utility companies, heavy equipment operators, water and sewer companies, cellular service companies, medical facilities and other agencies that could be called to assist in the event of a disaster. Planning for the incident may also include food, shelter, clothing and needed items for responders including relief personnel. There also should be consideration given to the event of self-initiated response. This could be from local agencies or individuals, responding to the scene. There may be valuable assets in that response if managed well. As the resources are developed, staging areas and sectors should also be considered.

Finally, and most important, the effects of the incident on our personnel needs to be addressed. At all the incidents, stress debriefing was defined as a critical task. Dealing with kids that have been shot or crushed has a tendency to stress even the strongest of emergency responders. Emergency responders have a great will to deal with most emergencies, but when it comes to kids, they may need emotional assistance after the incident. In Columbine, responders were ordered to go home. It was later discussed that sending them home may not be the best answer. Many of the responders had no one at home to talk to. Stress debriefing teams may need to be brought in and offered to personnel. It was also discussed that responders should be allowed to remain at the

station after the incident, not to make runs, but to talk with others from the incident, allowing healing to occur. It was also mentioned that responders might be faced with the safety of their own children. In several of the incidents there was a responder at the scene who had a child at that school. In New York, a firefighter worked diligently, all the while hoping the next victim was not his own child. It is possible that a fire department may have more than one employee who has kids at a local school. This should be considered when developing a plan for emergency responses.

In closing, the results show the types of incidents and the problems that have occurred. The hard part is to prepare for the event before it happens. With that in mind, Wallace and Brightmire (1999) state that there is simply no adequate training for an event such as the Columbine High School tragedy. They go further to say that mass-casualty training was beneficial. From the research it is clear that a large amount of training and planning is needed to prepare, if possible, for this type of incident. As we look at the communication problems that occurred it is possible to cure the mechanical problems that were faced in many incidents. As for the personnel aspect, stress debriefing was recommended from the incidents reviewed. Although the incidents were different the result was the same. Responders need to have the ability to de-stress after an incident such as those reviewed. And although the research shows the number of events is only a fraction of the number of schools, there is no pattern or way to determine where the next incident will be.

DISCUSSION

As we look at the incidents that have occurred, they vary from mechanical, to weather related to finally, those involving guns, usually held by students. The incidents have distinct characteristics in that they occur for different reasons. The boiler explosion occurred without warning, although maintenance records and previous problems were not discussed by Cooksey (1982). In Newburgh, New York, a tornado struck an elementary school. Although this was also sudden, Davie (1990) reports that some students saw the tornado coming and moved to the opposite side of the cafeteria, possibly saving their lives. And most recently, 2 high school students walked into Columbine High School shooting guns and throwing bombs at students and faculty, possibly without warning. In the School Security Report, it was stated that many warnings occurred from the 2 boys from being involved in the Trench Coat Mafia, to their hate messages spread around school and on their web-site. As we look at the 3 types of incidents, they all struck without warning, but each incident may have had some type of warning that was not seen or addressed.

As to the problems that occurred for the responders, they were uniquely similar. All the incidents dealt with problems that occur for similar mass-casualty incidents. In his article, Fagel (1994) discusses planning for mass-casualty before it occurs. He speaks of the different types of agencies to be involved such as police, fire, public works, hospitals, emergency services and disaster agencies, local EMA, EPA, governmental agencies and even industrial and trade associations. The issues he discussed involve fire, rescue, evacuation, triage, transportation, crowd control, communications and the command structure. Ironically all of these issues and agencies played major roles in the incidents

reviewed. In the Oklahoma disaster, previous planning paid off according to Cooksey (1982). He speaks of the different agencies that responded and worked well together due to previous training and relationships. The working relationship also had an effect on patient care and transport as it all went well, and according to hospital officials, reduced further loss of life. As well as it went, Cooksey (1982) also speaks of the problems that occurred, such as communication, a problem found in all the incidents. In this incident, the initial responders had no portable radios, reducing the information they could relay once they left their vehicles. They also experienced accountability problems due to the lack of identification since students were elementary age and carried no ID card. They also had to deal with the stress placed on responders when dealing with such young victims.

The incident in New York, which involved a tornado that struck a school, was not reported to go as smoothly. Conboy (1990) and Davie (1990) both relate to similar problems in their articles. Ironically, the tornado struck the cafeteria, the same area involving the boiler explosion. Again it was at lunchtime, which increased the number of students involved. Conboy (1990) describes the conditions upon arrival to include an opening in the building with 30 to 40 mile an hour winds blowing rain in upon victims and rescuers. Davie (1990) goes into much more detail in his article. He covers the radio failures, triage problems, command structure problems and again the unbelievable stress placed on responders due to the injuries to the students.

And for the incident at Columbine, Nordberg (1999), Wallace and Brightmire (1999) detail events that stress the reader as the scene comes to life in your mind. The events that led up to the incident and the events of the day seem far too bizarre for an

advanced society such as we live in. As you read both articles, a scene is portrayed of violence and hate that should never have occurred. The School Security Report gives background information on the 2 shooters and their preparation for the day. It details some of their activities and the web-site where they lashed out with hate. The boys had threatened other students, wrote hate messages on walls and participated in a video that showed the school burning to the ground.

As I look at all the incidents I see the ability to predict to some degree any of the above. For the mechanical failure, would not a good maintenance program have found the problem before it occurred? Cooksey (1982) reports that both the thermostat and the pressure-temperature valve failed. It is possible that both items were acute failure and would not have been found, but the article gives little information on the final findings on the cause. As for the tornado, early warning devices such as weather alert radios have been found to be highly effective. As was reported, some of the students saw the tornado coming and moved to the other side of the cafeteria, a move that was said to have saved them from harm. Again, none of the reports that were reviewed for this incident stated whether any type of weather alert device was present. And as for Columbine, it appears that a large number of signs appeared and should have been addressed as to the activities of these boys. The biggest question of all is where were the parents? When you look at the incident, these boys were preparing for a long time and used a large amount of material. When the incident was over, police found evidence of the bomb construction in the boy's homes. How is it possible that they were able to manufacture all those bombs, and accumulate the guns and ammunition undetected by their families?

As for the problems encountered by the responders, they had similar problems in each incident. The most common problem was communication. The problems included lack of portable radios, radio failure due to damage, radio failure due to age, radio failure due to lack of compatibility and communication barriers due to terminology and procedural differences. It appears that many of these problems go back to financial at heart. The lack of equipment, age and compatibility could be cured by the purchase of current technology that is compatible with local agencies. This could range from programmable type systems to a county or district wide system. The cure for a system that is damaged by the storm may be that a backup exists that could be placed into service when needed. As for other problems, the incidents all involved stress for responders. When our personnel have to deal with injured or dead children, stress is going to be a factor. It will be critical to monitor our personnel throughout the incident and provide them with support after the incident is closed.

As for training issues, there are many. These incidents clearly fall into the category of mass-casualty and possible terrorist incidents at their worst. As Martin (1995) stated, we can no longer afford to consider terrorism “the other guy’s” problem. As he defines terrorism, he speaks of schools and universities and of bombings, clearly similar activities are what have occurred. His article references working with law enforcement, booby traps and EMS responding to deal with injuries, all these have occurred in the incidents reviewed. In the incidents reviewed, all the authors mention mass-casualty training. This would include triage, multi-agency response, staging, incident management, command structure, resource management and mock training to bring all those involved together to practice procedures and create relationships. Heightman

(1999) goes into detail about the lessons learned and talks a great deal about the command structure. Scene management, unified command post, staging officers, command vests, sector managers and other logistical concerns that incident management should help control are a few of the issues that will need attention. I believe as the authors have reported that training and preparation are critical to success. If we are to take the position that we are not at risk, we may be the next disaster. The statistics show that these incidents have occurred regularly for that last 8 years and have no real pattern as to where they have occurred. Therefore it would appear that any school is at risk for the next incident. Although it is ironic that the incidents reviewed, even though different in nature, have occurred in the cafeteria at lunchtime.

With all this information at hand it is clear that the impact on Anderson Township as a community and the Anderson Township Fire and Rescue Department is second to no other community or fire department. We, as many others, have schools that although have had no incidents to this date, have no guarantee that one is not coming. We too like many others, may not be prepared to handle a large-scale disaster without the assistance of many other agencies. The time is now to begin to develop relationships with other agencies that will be involved in this type incident and develop procedures for the control of such an event. Communication systems should be evaluated for compatibility and functional ability for a large-scale disaster such as Columbine. And the final step is to practice the plan for effectiveness and review it for changes that may need to occur.

RECOMMENDATIONS

The recommendations that have resulted from this project begin with an evaluation of the local community that is served by the organization. A review of the schools by size, level (i.e.: elementary etc.), location and number of schools. This will develop the base of what type of response may be needed in the event of a disaster. Each organization should also contact their local school district and discuss policies and procedures and develop a working relationship prior to an incident. It would also be important to develop procedures together to assure the incident will flow smoothly. It is important that all involved understand each others roles, terminology and responsibilities.

Next, each organization should look again at the events that have occurred previously and learn from the problems that others have faced. In the events reviewed in this project, many problems occurred over and over. This places the likelihood that if the event was to occur in your jurisdiction, you may be faced with the same problems that others have faced. Although this project reviewed the important issues that were reported by others, the articles and information available is far more in depth than possible to place in this report.

Specifically, there are several things that should occur. First, identify the agencies that could respond to this type incident and review their communication abilities. It is critical that with an incident of this magnitude, radio or phone communications must be established to allow multiple agencies to communicate at a large scene. Communication should also include terminology and a backup system in case of failure. It is also important that a common command center coordinate the operation and all agencies function under that command using similar terminology and procedures. The pre-incident

training and development of common procedures for responding agencies should help operations to work more smoothly. Remember to include local hospitals in the planning stage for their abilities to handle multiple injuries.

The development of on scene monitoring of personnel for stress and post incident stress evaluation is necessary. Personnel may need assistance after the incident, which may range from professional assistance through stress debriefing teams to just allowing personnel to remain at the station after the incident and talk to fellow employees.

Overall there is a critical need for disaster training. The training should include triage procedures, command procedures and other operational considerations. Any incident that utilizes multiple agencies working at a single incident, agencies that may have never worked together before, needs to have prior training and exposure to each other. Especially when fire and EMS are plunged into situations where they are encountering gunfire, explosives or possible terrorist actions, they need to be familiar with law enforcement and vice versa. Columbine High School was an example of fire and EMS having to function in an environment similar to a war zone, with their own lives at risk. They also assisted police by letting them use fire apparatus as a shield. It would have been much more efficient to have training with them on the operation of the vehicle while not under gunfire. They also were exposed to situations not familiar to them. Paramedics may not be used to dragging injured children out of harms way while bullets are whizzing overhead. And finally, after developing those inter-department relationships and training together, a mock disaster would be effective to “work the bugs out” and determine what works and what doesn’t.

It is clear that the Anderson Township Fire and Rescue Department meets all the criteria for a potential school disaster. As we are no different than any other organization, we too must look at developing the procedures, working relationships and develop training programs including mock disasters to help prepare us for the possibility of this type incident. An evaluation should occur of communication systems for our agency and the agencies that could respond to assist. The system should allow for multiple agencies to communicate and provide long operation ability and some type of backup in case of failures. Radio procedures and terminology should also be standardized. Along with radio procedures, operational guidelines should be established with multiple agencies in mind. It should also be considered to include as many agencies that might respond in the planning stages of preparation. Additional consideration should be given to inter-agency training with law enforcement. Clearly they will be the largest influence to fire and EMS responders at an incident involving violence. Preparations should be made for on scene and post incident stress evaluation for responders. And to finish, we should plan full scale training to include mock disasters with multiple agencies. Putting it all to the test before the incident will help to work out problems before they are real. After all this planning, we can only hope that all our work and preparation will be in vain and goes unused.

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APPENDIX A

High Profile Incidents

Non-Violent Incidents

Spencer, Oklahoma	January 19, 1992	6 Dead	34 Wounded
Newburgh, New York	November 16, 1989	9 Dead	18 Wounded

Incidents Involving Violence

Olivehurst, California	May 1, 1992	4 Dead	10 Wounded
Grayson, Kentucky	January 18, 1993		4 Wounded
Moses Lake, Washington	February 2, 1996	3 Dead	
Bethel, Alaska	February 19, 1997	2 Dead	2 Wounded
Pearl, Mississippi	October 1, 1997	2 Dead	7 Wounded
Paducah, Kentucky	December 1, 1997	3 Dead	5 Wounded
Jonesboro, Arkansas	March 24, 1998	5 Dead	9 Wounded
Edinboro, Pennsylvania	April 24, 1998	1 Dead	2 Wounded
Fayetteville, Tennessee	May 19, 1998	1 Dead	
Springfield, Oregon	May 21, 1998	1 Dead	7 Wounded
Carrollton, Georgia	January 8, 1999	1 Dead	
Littleton, Colorado	April 20, 1999	15 Dead	Multiple Wounded

APPENDIX B

Reasons for Deaths

School Year	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	Total
Accidental	3	4	0	1	1	0	1	0	10
Bully Related	1	1	0	3	2	4	1	0	12
Drug Related	0	0	0	0	0	0	0	0	0
Gang Related	13	7	4	1	2	6	1	0	34
Hate Crime	1	0	0	0	0	0	15	0	16
Interpersonal Dispute	18	10	6	10	10	15	3	0	72
Robbery	2	1	0	2	0	0	0	0	5
Sexually Motivated	0	1	0	0	1	1	0	0	3
Suicide	9	6	3	5	1	8	3	2	37
Unknown	7	21	7	13	8	9	2	1	68

APPENDIX C**Deaths by School Type**

<u>School Year</u>	<u>92-93</u>	<u>93-94</u>	<u>94-95</u>	<u>95-96</u>	<u>96-97</u>	<u>97-98</u>	<u>98-99</u>	<u>99-00</u>	<u>Total</u>
Elementary	3	12	1	1	4	5	0	0	26
Jr. High	7	7	3	8	3	10	4	0	42
High	42	30	16	21	17	27	20	3	176
Alternative	2	2	0	4	1	1	2	0	12
Other 0	0	0	0	1	0	0	0	0	1

APPENDIX D

Deaths by State

1. California	57	21. Alabama	3
2. Colorado	15	22. Maryland	3
3. Georgia	15	23. Ohio	3
4. Florida	14	24. Alaska	2
5. Texas	13	25. Connecticut	2
6. Washington	11	26. Kansas	2
7. New York	10	27. Oregon	2
8. Pennsylvania	10	28. Virginia	2
9. Illinois	9	29. Arizona	1
10. Missouri	9	30. Delaware	1
11. Massachusetts	8	31. Iowa	1
12. Tennessee	8	32. Louisiana	1
13. Michigan	8	33. Minnesota	1
14. D.C.	7	34. Montana	1
15. Arkansas	6	35. New Hampshire	1
16. Kentucky	6	36. Nevada	1
17. New Jersey	6	37. Oklahoma	1
18. North Carolina	5	38. Utah	1
19. Mississippi	4	39. Wisconsin	1
20. South Carolina	4	40. Wyoming	1