

# Local Shortfalls in Emergency Planning and Preparedness: A Social Problem

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## Abstract

A social problem can be defined in many different ways and take on many forms. When members of a community identify something undesirable this becomes the basis of a social problem. Every community is concerned about the health and safety of its citizens. Local governments have always provided services to ensure the well being of the citizens which it serves. Fire departments, police, and emergency medical personnel are the first line of defense that helps ensure the health and safety of citizens during emergencies. The lack of these vital services would create an enormous social problem of the utmost concern. Most communities do an excellent job in preparing for potential emergencies such as hurricanes, tornados, and wild fires. However, emergencies involving hazardous materials are frequently overlooked. To overlook this type of potential emergency creates a social problem by not fully insuring the safety of citizens. Most local governments do not realize the health and safety issues they have due to the presence of hazardous materials. They also do not realize that the federal government mandates that every local community plan and prepare for hazardous material emergencies. When local communities do plan for this type of emergency they discover that hazardous materials are present and in most cases they are not adequately prepared to deal with them. Planning for hazardous material emergencies is an important step in reducing a dangerous and potential life threatening social problem.

## Introduction

Greene County Tennessee is located at the foothills of the Great Smoky Mountains in the northeastern region of the state bordering North Carolina. The Town of Greeneville serves as the county seat of Greene County (A Brief History of Greeneville, Tennessee, n.d.). Greene County is the sixth largest county in the state and covers approximately 624 square miles and has a population of approximately 63,000 residents (U.S. Census Bureau, 2000). Greeneville covers 15 square miles of the county and is home to approximately 15,000 residents (U.S. Census Bureau, 2000). The county has approximately 150 miles of state road, 32 miles of interstate, and approximately 35 miles of mainline railroad that transects the county (Heather Shipe, 2009). The city and county serves as a major transportation corridor for the eastern part of the state and the southeastern United States which results in a constant hazardous materials presence and potential threat (Bill Brown, 2009).

Greeneville and Greene County have multiple emergency service agencies that help protect the citizens. Greeneville has a full time paid fire department made up of 42 personnel (Jack Tilson, 2009). The county also relies on 17 volunteer departments that are located throughout the county (Ryan Holt, 2009). The county does run a paid full time emergency medical service that staff five ambulances located throughout the county (Craig Wilkerson, personal communication, October 29, 2009). The Greeneville Police Department is a paid department that serves and protects the city (Shane Mathews, personal communication, October 30, 2009). The Greene County Sheriff's Department provides law enforcement for the county as a whole (Craig

Bowlby, 2009). One component of emergency response the city and county does not currently have is a functional hazardous materials response team that would mitigate any potential hazardous materials emergencies identified by proper planning and preparedness efforts (Bill Brown, 2009). This is a vital component that would help insure the safety of citizens and thus reduce or eliminate a social problem.

### Literature Review

Chemicals and chemical processes have been around for a long time (Hildebrand, Noll, & Yvorra, 2005). Society has always sought to improve the quality of life and as a result have developed new ways to make various products and improve existing ones. A hazardous material commonly referred to as hazmat, can be any substance that has the potential to harm people, property, or the environment (Hildebrand, Noll, & Yvorra, 2005). Ludwig Benner, Jr., a former hazardous materials specialist with the National Transportation Safety Board defined hazardous materials as “any substance that jumps out of its container when something goes wrong and hurts or harms the things it touches” (Hildebrand, Noll, & Yvorra, 2005). While this is a very basic definition it proves to be very practical when dealing with an emergency situation that involves a hazardous material. Hazardous materials are transported daily on highways, railroads, and waterways. They are located virtually everywhere, not just industrial locations, but they can be found in the home and at the workplace (Hildebrand, Noll, & Yvorra, 2005). Every household has some form of hazardous material for instance, cleaning supplies, drain cleaners, pesticides, herbicide, stored gasoline for lawnmowers, and even certain types of paint (Federal Emergency

Management Agency [FEMA], 1998). Additionally, every city and town has various amounts of hazardous materials. Examples include: bulk storage facilities for propane and gasoline, dry cleaners, local Co-ops, retail stores, and pool chemical stores (FEMA, 1998). In fact, most people work around hazardous materials every day in their workplace without realizing its presence. The degree of risk from the presence of hazardous materials is dependent on the type and quantity of the material (Hildebrand, Noll, & Yvorra, 2005). Identifying the types and quantities will help a community prepare for potential problems that may result (FEMA, 1998). For this reason the Town of Greeneville and Greene County must identify local risks in an effort to reduce, or deal with, potential problems that may result from the presence of hazardous materials.

A hazardous materials incident can be minor such as a small spill or catastrophic like a major chemical explosion (FEMA, 1998). Smaller more insignificant incidents happen frequently and depending on the material and its characteristics may or may not cause any harm, however the potential still exists. The larger more infrequent incidents are of greatest concern and pose the largest threat (FEMA, 1998). Hazardous materials incidents have occurred in the past and will continue to occur as products are transported and used on a daily basis. Hazardous materials incidents fall into the category of low frequency and high risk, meaning that they don't happen often but when they do it usually results in big problems (FEMA, 1998).

As a result of past incidents, the federal government has recognized the problems regarding hazardous materials (Hildebrand, Noll, & Yvorra, 2005). Consequently, there have been laws, regulations, and standards enacted and adopted to deal with those issues.

The Code of Federal Regulations [CFR] has the weight of law, mandatory requirements, and is based on federal legislation (FEMA, 1998). The entire collection of federal regulations is contained in the 50 titles of the CFR. Title 40 CFR parts 300 through 399, under SARA Title III, mandates the establishment of both state and local planning groups to review or develop hazardous materials response plans (Hildebrand, Noll, & Yvorra, 2005). State planning groups are referred to as State Emergency Response Commission [SERC]. The SERC is responsible for developing and maintaining the state emergency plan, which includes ensuring that planning and training are taking place throughout the state and providing assistance to local governments as appropriate. The coordinating point for both planning and training activities at the local level is the Local Emergency Planning Committee [LEPC] (Hildebrand, Noll, & Yvorra, 2005).

Typically the LEPC membership is made up of representatives from the following groups: elected state and local officials, fire department, law enforcement, emergency management, public health officials, hospital personnel, industry personnel, media, and community organizations. The LEPC is specifically responsible for developing and coordinating the local emergency response system and capabilities. A primary concern is the identification, coordination, and effective management of local resources (Hildebrand, Noll, & Yvorra, 2005). The primary responsibilities of the LEPC are the following: develop, test, and exercise the

hazardous materials emergency operations plan, conduct a hazard analysis of hazmat facilities and transportation corridors within the community, receive and manage hazmat facility reporting information which includes Tier II reports under SARA Title III, MSDS sheets, and points of contact, and finally coordinating the Community Right-to-Know aspects of SARA Title III (Hildebrand, Noll, & Yvorra, 2005).

The Superfund Amendments and Reauthorization Act of 1986 [SARA], referred to as the Emergency Planning Community Right-to-Know Act [EPCRA], is the federal law that significantly impacts hazardous material emergency planning and response operations (National Response Team [NRT], 2001). Title III of SARA requires every community to establish a Local Emergency Planning Committee or LEPC. Also under SARA Title III, every state is required to establish a State Emergency Response Commission [SERC], the SERC is responsible for making sure every local government establishes a Local Emergency Planning Committee [LEPC] and supervises local planning efforts and reviews those plans (NRT, 2001). The LEPC also has the duty of handling requests from local citizens that request information concerning what types of hazardous materials are present in the community. Local planning committees gather information from industry, trucking companies and railroads about the types and quantities of hazardous materials in use or transported. This is very important information that the committee should use in the planning process. Local planning committees establish plans to mitigate potential emergencies by helping establish local hazardous materials response teams (NRT, 2001).

Organization of a planning team requires involvement from the community throughout the entire process (Hildebrand, Noll, & Yvorra, 2005). Experience has demonstrated that plans developed by only one agency are not functional plans. Planning requires cooperation, coordination, and trust in order to be effective. Planning for hazardous materials emergencies should follow a formal strategic planning process (Fire, 1997). Major tasks of a planning team include reviewing any existing plans, identifying current and potential hazards, and assessing current prevention and response capabilities (Hildebrand, Noll, & Yvorra, 2005). Planning teams should produce plans that reflect a consensus of the entire community (NRT, 2001). Therefore, the planning team should be made up of representatives from throughout the community. In forming a planning team, there are four main considerations (NRT, 2001). First, the team members must have the commitment, authority, and the resources to get the job done. Second, the team must have a broad range of expertise about the community, transportation systems, industrial facilities, and the understanding of emergency response and planning (NRT, 2001). Third, members should agree on purpose and be cooperative. Lastly, the team members should represent all elements of the community (NRT, 2001). Planning team members should include elected state and local officials, fire department, law enforcement, emergency management, public health officials, hospital personnel, industry personnel, media, and representatives from community organizations.

After team members have been selected and are willing to participate, a planning team leader should be selected (NRT, 2001). The person selected as team leader should have the respect



from all participants of the planning team, and should evoke confidence in the team members and the community. The team leader is responsible for assigning staff, task forces or committees, and planning management (NRT, 2001). Another key role in the planning team is that of the facilitator (Fire, 1996). In most cases the facilitator would be considered an expert in planning from outside the planning team. The facilitator supports the planning group and ensures the group stays focused and on track and that everyone is contributing on an equal basis (Fire, 1996).

Heather Shipe is the coordinator for the Greeneville and Greene County local emergency planning committee. According to Mrs. Shipe the committee is made up of representatives from each of the following emergency services; Greeneville Fire Department, Greeneville Police, Greene County Emergency Medical Services, Greene County Sheriff's Department, Greene County 911, Greene County Emergency Management Agency, and Greene County Volunteer Fire Department Association. The committee has many members from other businesses and organizations that participate; Takoma Hospital, Laughlin Hospital, Greene County Health Department, Greene County Chapter of the American Red Cross, local media, Greeneville Light and Power, Greeneville Water Department, Greeneville Public Works, Greene County Department of Transportation, and multiple local business members (Heather Shipe, 2009). Each member plays a vital role in the planning team. The planning team meets monthly on a regular basis and more often when the need should arise. The team functions as a very cohesive

group and the results that have been produced demonstrate their hard work and cooperation (Heather Shipe, 2009).

The planning team is responsible for the following major tasks: reviewing existing plans, reviewing risk management plans, hazard analysis, assessment of preparedness, prevention, and response capabilities, completion of hazardous materials planning, and development of an ongoing program (NRT, 2001). There are over 3,900 LEPCs located across the country, some of which have joined other bordering communities and organized partnerships (FEMA, 2003). Each LEPC shares several characteristics with each other, but are also very unique based on its resources and the community where it's located (FEMA, 2003).

Currently Greeneville and Greene County has established a Local Emergency Planning Committee, however, the committee has not considered hazardous materials as part of the planning process (Heather Shipe, 2009). The committee has focused the entire emergency planning process on a general all hazards plan that includes fire, flooding, tornados, and severe storms (Heather Shipe, 2009). Failure on the committee's part to include hazardous materials in the plan is a violation of Superfund Amendments and Reauthorization Act of 1986 (NRT, 2001). To address a vital social problem and to ensure compliance, hazardous materials must be included as a part of local emergency planning. For this reason, I would strongly recommend that the Greeneville/Greene County Local Emergency Planning Committee plan accordingly and address this social issue. The federal regulation provides a baseline in which all local

governments are required to comply (NRT, 2001). The following should be the focus of planning.

There are four main elements in a hazardous materials management system: planning and preparedness, prevention, response, and recovery (Hildebrand, Noll, & Yvorra, 2005). Planning is the first and most important step of the process. The ability to develop and implement an effective plan depends on two elements: hazard analysis, and the development of an emergency operations plan that includes response and recovery (Hildebrand, Noll, & Yvorra, 2005).

Planning for hazardous materials emergencies at fixed facilities that use chemicals is vital (McEntire & Myers, 2004). These facilities are required under SARA to provide planning committees with reports that detail what hazardous materials are present at their locations by submitting tier II reports (Bachman, 1998). The information gathered through the planning effort will help prevent an emergency and lessen the impact when a release occurs. Additionally, the information will also detail who might be at risk if a release should occur so that plans can be made to decrease the potential harm to life and property (FEMA, 1998). Planning for emergencies that result from transportation accidents is also important (McEntire & Myers, 2004). Information about quantities of hazardous materials shipped by rail and road, referred to as commodity flow data, is important information in the planning process (U.S. Department of Transportation [USDOT], 2002). Determining what types of hazardous material and the quantities which are transported through Greeneville and Greene County by rail and road, and the frequency at which this occurs is vital. This information will also help determine who may

be affected from a release in the event of an accident (USDOT, 2002). Information gathered during the planning process will allow planning committee members to take steps to minimize the impact of transport incidents and develop a means of mitigating an emergency (NRT, 2001).

A proper hazard analysis determines what hazards are present, where they are located, and who might be affected in an emergency situation (NRT, 2001). Under SARA Title III local emergency planning committees are required to identify what hazardous substances are present in their area (NRT, 2001). This requires a hazard analysis to be conducted on a local level.

SARA Title III requires people who use hazardous chemicals to report what and how much they use and store at their facility (Bachman, 1998). This information, called tier reports, is submitted to local emergency officials and planning committees (Bachman, 1998). Commodity flow information is available from trucking companies and the railroad industry concerning what types of hazardous substances they transport (NRT, 2001). Determining what different types of chemicals are present and who will be affected by an accidental release of a hazardous material are the two main objectives of a hazard analysis (U.S Environmental Protection Agency [EPA], 1990).

A risk assessment is conducted after hazards have been identified (EPA, 1990). The risk assessment determines the likelihood of an accidental release and the consequences that might occur. For instance, if an industrial site were to be located near a residential district then the residents would possibly be at risk if there were an accidental hazardous material release at the industrial site (EPA, 1990). A risk assessment will determine the chances of an accidental

release and the outcome of a release in order to determine what measures need to be taken to decrease the risk for those individuals and their property. Hazard analysis and risk assessment also play a very important role in determining what resources will be need to mitigate potential emergencies (EPA, 1990).

### Discussion

Federal law mandates compliance in planning and response. This is shown from the research above. Hazardous materials accidents have increased in the past several years and will not likely decrease in the future (Peterson, 2001). When more and more chemicals are invented and produced the likelihood of an emergency will also increase. Recent studies have shown that this type of emergency is on the rise (Peterson, 2001). The Department of Transportation reports that there has been 14,000 transportation related hazardous materials spills each year for the past several years. There are 800,000 hazardous materials shipments daily by road alone. Road transport accounts for the majority of transportation related spills (Peterson, 2001). This mode also accounts for more death and injury related to the release of hazardous materials than all other modes of transportation combined. Transportation spills as a whole do not account for a majority of the spills that occur. According to a study conducted by the Environmental Protection Agency in 1987, 75% of all hazardous materials spills occur at fixed facilities versus 25% in a transportation mode (Peterson, 2001). A study by the U.S. Fire Administration in 1998 reported that fire departments responded to a fire every 18 seconds and that there was a hazardous materials spill every 65 seconds. The National Fire Protection Association reported

301,000 hazardous materials releases in 1998, which was a 10.9% increase over 1997 (Peterson, 2001). The research indicates the obvious, hazardous materials releases are real; they pose a significant danger to life and property, and a significant social problem.

There are numerous steps that must be taken in order to establish an effective means of mitigating hazardous materials emergencies (McEntire & Myers, 2004). Those steps include establishing local emergency planning committees, adopting local emergency management ordinances, assessing hazards, identifying vulnerability, creating plans, identifying resources, and training responders to mitigate emergencies (McEntire & Myers, 2004). All of these steps must be accomplished to effectively achieve the required level set forth by the laws and standards that govern emergency planning and response.

#### Conclusion/Recommendations

All hazards emergency contingency planning is a vital part of community preparedness and planning should include hazardous materials emergencies. Based on this research I would recommend the local emergency planning committee include hazardous materials emergency plans in the city and county local plan. Furthermore, the planning committee should include members from both the public and private sector who are able to influence jurisdictional and organizational planning priorities and resources in an effort to reduce or eliminate this social problem. The Federal Emergency Management Agencies State and Local Guide [SLG] 101 is an excellent resource to help and assist in the development and maintenance of a viable hazardous materials emergency operations plan (FEMA, 1996). Another very beneficial guide is the

National Response Teams *Hazardous materials emergency planning guide*, referred to as NRT-1 (NRT, 2001). The U.S. Environmental Protection Agency, Federal Emergency Management Agency, and U.S. Department of Transportation *Technical Guidance for Hazards Analysis, Emergency Planning for Extremely Hazardous Substances*, which supplements the NRT-1 guide, is also an excellent resource (U.S. Environmental Protection Agency, Federal Emergency Management Agency, & U.S. Department of Transportation, 1987). All of these can serve as guides throughout the entire process.

When the committee has completed a thorough hazard analysis the results will show a significant hazardous material presence in the Town of Greeneville and Greene County. The largest contributing factors to the hazardous materials presence are the number of industrial and manufacturing facilities, the amount of rail road, and the miles of interstate and state highway. As a result, I would recommend a plan of development and implementation for a response team to mitigate any potential emergencies. The plan should include the projected level of operation, recruitment and selection of team members, training, equipment acquisition needs, costs and funding, and a projected timetable for implementation. When fully implemented the team will be able to function on a technical level and would have the ability to respond, asses, and perform work to handle and control actual or potential leaks and spills of hazardous substances requiring close approach to the substance.

There are several organizations that could head the hazardous material response team and conflict could arise as a result of selection. Members of the various city and county emergency

organizations might feel as though their agency is best suited for the role. In the best interest of the city and county, my approach would be to identify a lead agency and include all remaining agencies to ensure cohesiveness. I would recommend that the logical choice for Greeneville and Greene County would be the Greeneville Fire Department because the city fire department is a full time paid department with employees on duty 24 hours a day. This is a cost effective way for most cities to start a response team because of existing manpower and equipment. I would recommend that 30 members, ten per shift, from the Greeneville Fire Department serve as members of the Greeneville and Greene County Hazardous Materials Team. These firefighters will make up the majority of the team and ensure adequate manpower when a response is required. Also, members from the Greeneville Police Department, the Greene County Sheriff's Department, Greene County EMS, Greeneville Light and Power, and the Greeneville Water Commission will be selected on a voluntary basis. Any full time employee with any of these departments would be encouraged to become a member. The goal would be to have at least three to five members from each department. Additionally, anyone with specialized training from any city or county agency would be encouraged to join the team.

Based on National Fire Protection Association recommendations, all potential members should be trained to a minimum of operations level in order to be eligible as a team member (National Fire Protection Association [NFPA], 2002). The largest majority of the members should be trained to a technician level, and I would recommend that a minimum of ten team members be trained to a specialist level (NFPA, 2007). All levels of training shall meet 29 CFR 1910.120 as



outline by SARA Title I, NFPA 471, 472, and 473, and the Tennessee Emergency Management Agency requirements for certification (i.e. operations 60 hrs, technician 120 hrs, and specialist 240 hrs). Furthermore, I would recommend team members that wish to obtain a specialist level should select a “specialty” area of interest for additional training. These specialty areas should include: chemical, biological, radiological, nuclear, and explosives. The idea is to have several team members trained in each specialty area, which will increase the knowledge and functional ability of the team. Continued team training should occur on a monthly basis with a minimum of two team drills per year, in order to maintain skills (NFPA, 2002). Sixteen hours of in-service training will be required of all team members annually, which will adhere to 29 CFR 1910.120 requirements (Hildebrand, Noll, & Yvorra, 2005). The end result will produce a Hazardous Materials Response Team that meets all Federal Regulations and is fully Title 29 CFR 1910.120 compliant, thus eliminate the social problem of not being prepared for this type of emergency.

Local emergency planning and preparedness is a vital aspect of community safety and wellbeing. The lack of an all encompassing approach can leave a community at risk which can raise an inordinate amount of public concern, the result of which is a social problem. The research has shown that the inclusion of hazardous materials in the planning and preparedness process is mandated by law, laws that were established as the result of major hazardous materials incidents.

While the focus of this research has been on a very specific aspect at the local level, emergency planning and preparedness has national implications. As a nation we never know when the next Hurricane Katrina will come or when the next terrorist attack may be, we hope that day never

happens but hope should never take the place of proper planning and preparedness efforts. Our nations' first responders are our first line of defense during emergencies and they must be up to the task, planning and preparedness efforts are what insure their readiness. Social problems have solutions; aggressively pursuing them should be a primary concern at a local, state, and federal level especially when the problem concerns the safety of everyone in our nation from the smallest town to the largest city.

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