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## EMS Disaster Preparedness for Natural Gas Explosions



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Gailynne M. Ferguson

Gas explosions are occurring throughout the U.S. with alarming regularity according to a report on [www.naturalgaswatch.org](http://www.naturalgaswatch.org). (1) When Allentown, Pa. (60 miles north of Philadelphia) was rocked with a natural gas explosion on Feb. 9, everything providers had learned about natural gas emergencies was put to the test. Still, with all responders working together systematically, in the end, five people had died, six others were injured and nearly 500 evacuated. (2) Allentown Fire Department Chief Robert C. Scheirer says it was "the worst of the seven explosions he had ever responded to within the city." Ten homes were destroyed and 47 more were damaged in the incident, which affected six city blocks.

An incident of this magnitude isn't without its challenges. Between the snow,

ice, high winds and lack of immediate shut-off valves, a real threat existed for secondary explosions. Director of Allentown EMS, David Van Allen, said his EMS command staff activated additional EMS staff and units from the city almost immediately. Once confirmed as a gas explosion, mutual aid of 14 additional ambulances were dispatched, as well as Eastern PA EMS Council's MCI command and support unit "EMS 10" for communications command. Besides EMS, the response teams included 14 fire departments; Lehigh County Special Operations for HAZMAT; technical rescue and environmental monitoring; resources with direct access to the Pennsylvania Department of Health Bureau of EMS director and staff, as well as Northeast Search and Rescue.

When the first duty paramedics arrived, they sized up the scene, established medical command, and started triaging victims and setting up staging areas. Van Allen said other tasks coordinated by medical command included:

- Setting up EMS rehab for on-scene responders;
- Executing mass evacuation plans;
- Updating the regional incident plan from a health perspective;
- Assisting with locating missing persons, saving pets and returning to those pets to their owners;
- Retrieving such critical personal assets as medications from secondary evacuation points;
- Coordinating all hospital expectations;
- Worked with Lehigh Valley Hospital Network's disaster management team and their local emergency department physicians to obtain emergency prescriptions, such as insulin not carried by EMS, when needed for displaced citizens;
- Staffing shelter facility with medical personnel; and
- Documenting events for later review.

### **Scope of the Issue**

Natural gas explosions are nothing new to Allentown. Since 1958, at least 16 people have died in Allentown natural gas explosions, including two firefighters. Cast iron pipelines lie underneath the city. Some, like the 12" main involved in February's explosion, are well over 80 years old. Cast iron pipes were the standard throughout the U.S. at the turn of the century—along with bare steel. Unfortunately, shut-off valves weren't yet a standard, and this contributed greatly to the loss of life and property. It took UGI Utilities Inc. nearly four hours to locate a main shut-off in the street after breaking through ice and asphalt to reach it. Within 30 minutes of shutting off the gas, the situation was under control. However, because at least 25 victims had been identified, it had already risen to a Level 3 mass casualty incident.

This situation isn't unique to Allentown. Like many cities and towns across the U.S. today, they're struggling to maintain their infrastructure. The nation's natural gas pipeline system is about 2.3 million miles long. Pennsylvania PUC figures show 47,000 miles of that lie within the state with 3,600 miles being cast iron and 9,000 of unprotected bare steel. This accounts for 5% of Pennsylvania's distribution line but also accounts for 95% of the gas leaks, which should be a major concern for first responders. Age and material are definitely factors in failing pipelines, as are soil stabilization, gas pressure and maintenance history. (3)

Allentown Mayor Ed Pawlowski refers to the gas pipeline situation in the U.S. as "a game of Russian Roulette with people's lives." (4) He couldn't be more right. Possibly the most well-known of these recent explosions occurred on Sept. 10, 2010, in San Bruno, Calif. Eight people were killed and 20 more were injured. California utility PG&E had, in 2007, stated about the pipeline involved, "it ranks in the top 100 highest risk lines...the risk of failure was unacceptably high." San Bruno's mayor was unaware of the report until after the explosion and resulting investigation concluded. (5)

There were several explosions, deaths and property damage due to natural gas pipelines in the U.S. in September 2011 alone. They include the following:

- **Encinitas (Calif.):** McDonald's destroyed, no reported injuries;
- **Bakersfield (Calif.):** One home damaged, one severely injured;
- **Norfolk (Va.):** One home destroyed, no injuries reported;
- **Blacksburg (Va.):** Gas leak, evacuations, no injuries;
- **Long Island (N.Y.):** One home leveled, three firefighters injured
- **Plainfield (N.J.):** One home destroyed, one severely burned
- **Murphysboro (Ill.):** Three homes destroyed, no injuries;
- **Girard (Ill.):** One home destroyed, one killed;
- **Kenedy (Texas):** Well head explosion, one killed, three injured;
- **Mont Belvieu (Texas):** Natural gas plant fire, one killed;
- **Leavenworth (Kansas):** Faulty regulator caused gas leak and evacuation of a school, no injuries reported;
- **Philadelphia:** One killed, six injured; and
- **Fairport (Ohio):** Nine buildings destroyed, safe evacuations, no injuries reported; and
- **Hanoverton (Ohio):** Two homes damaged, one injured. (1,6,8)

As for Allentown, officials continue to experience natural gas problems. Since the February explosion, they have responded to more than 330 gas leaks, more than 230 odor investigations, 61 small leaks and 37 significant leaks. Evacuations have taken place in every one of the significant leak reports.

Pawlowski refers to the pipeline issue simply as a "ticking time bomb that needs to be addressed." He advises, "Do something to regulate this industry before another tragedy happens." (4) The Pipeline Safety Trust, an advocacy group from Washington, reports "every nine or 10 days someone ends up dead or in the hospital from pipeline accidents." (7) Serious focus on national pipeline incidents has forced legislators to act. Senator Robert P. Casey (D-Pa.) supported the Pipeline Safety Transportation Improvement Act (S.275) and on Oct.17, 2011, this amendment to Title 49 of the U.S. Code was enacted by Senate. But this is only a beginning toward regulating these lines and protecting residents and responders.

### **Conclusion**

Until then, Scheirer urges all responders to "partner with their utilities and set a plan of action for these types of emergencies. Utility companies are more than willing to train responders on the dangers and to introduce them to equipment, such as the Gas Surveyor 500, which is issued to Allentown responders and has proven to be very accurate."

Van Allen says natural gas explosions stress the importance of EMS being involved in pre-planning for all types of unexpected events. "All large scale incidents and MCIs are exactly the same during the first 15 minutes. It's after that where everything becomes complicated. Plan and prepare for the first 15 'predictable minutes' with mutual aid agencies. Know and understand what your options are after that. Set up a solid foundation. Practice sizing up initial safety aspects, looking for clues on how the incident may evolve; setting up initial command posts that are moveable should things change [and they will] and setting up communications equipment and systems so you are ready to use them.

"Part of pre-planning is coordination with hospitals for medications and transportation services for evacuations, such as public buses and school buses, so that everyone involved knows what is available and how to utilize them. Everyone needs to have a plan, even if they think it will never be used," he says.

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