



Kentucky Gas Pipeline Explosion ACE investigation

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Outline

- **What was reported in the in the Lincoln County, Kentucky Pipeline explosion?**
- **How was ACE used to investigate and what was learned?**
- **What were the outcomes of the investigation?**

What was reported to ATSDR

- **On August 1, 2019 around 1:30 AM a major natural gas pipeline in Lincoln County, Kentucky exploded and burned intensely until the gas could be shut off**
- **Several homes and structures were destroyed**
- **One woman trying to escape died and 6 people were taken to the hospital for treatment**
- **There were approximately 75 evacuees and 170 first responders to the incident**

During the Incident



- Residents woke to a blast
- There was a loud hissing noise from the gas
- The sky was lit up like daylight
- People fled the area with their tires melting
- First responders evacuated a ½ mile radius

After the Incident



- An area of 30 acres was burned
- There was a large 30 foot crater
- Many people lost their home and belongings and were relocated to a nearby hotel

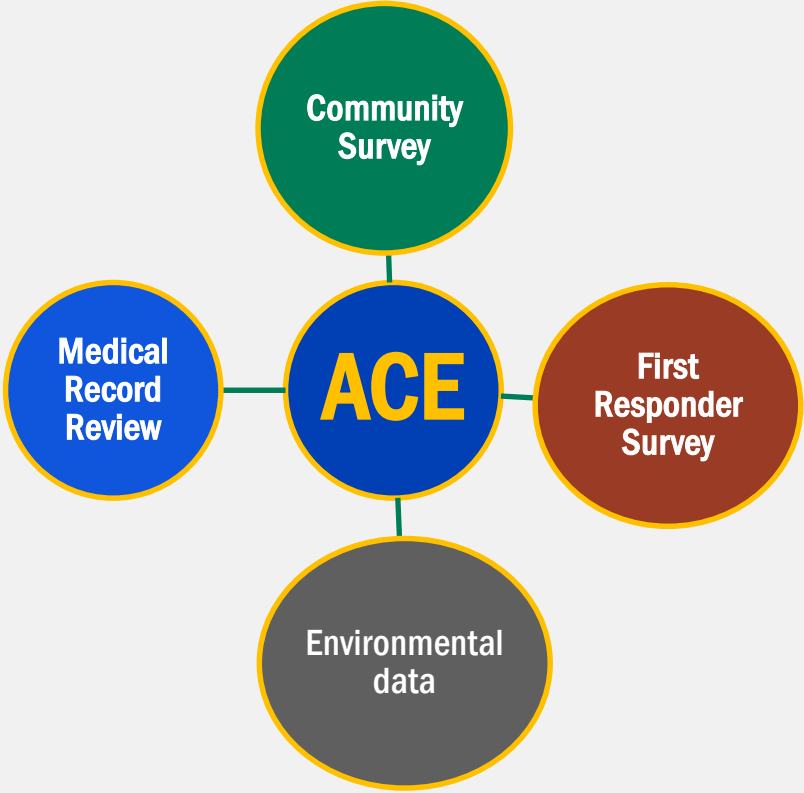
An ACE Epi Aid was requested

- **Kentucky Department of Public Health state epidemiologist requested an ACE Epi Aid September 3rd to**
 - describe the natural gas pipeline incident,
 - understand the potential health effects to the community,
 - support the local, state, and federal response,
 - and interpret the environmental data and recommend mitigation of any ongoing health exposures
- **An ACE team had a kickoff meeting with involved responding agencies to gather information and let them know our plans**

Potential Exposures the ACE Team Considered

- **The heat and debris from the explosion and subsequent fires could cause injuries**
- **The hazardous emissions from the pipeline and fires may cause respiratory problems, skin or eye irritations, or other health complications, particularly if no personal protection**
- **Psychological trauma or PTSD symptoms may be common after an incident like this**

ACE Toolkit Components Used



ACE Data Collection

■ Responder survey

- At the initial kickoff got a list of responders to the incidents and made arrangements to interview them at their stations.
- Modified the General ACE survey to ask exposures, mental and physical health effects, personal protective equipment practices
- Interviewed 105 of 173 responders beginning September 7

■ Environmental analysis

- ATSDR obtained and reviewed the soil, water and air data collected by the Pipeline's contractor looking at asbestos, particulate matter, volatiles and semi volatiles and compared it to reference values that would be most protective

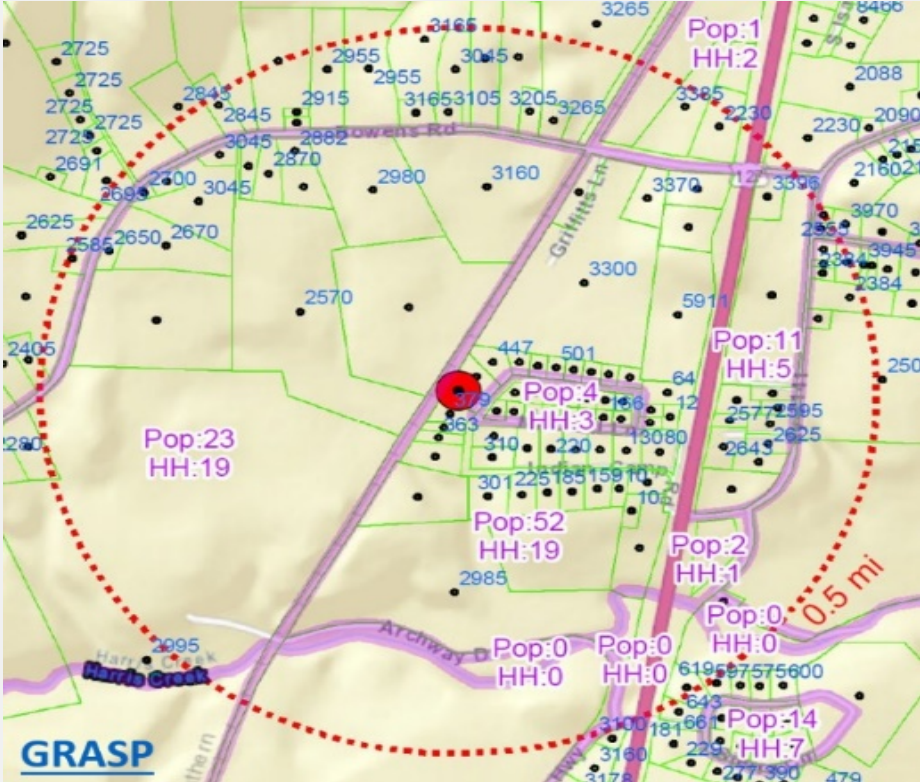
ACE Data Collection

■ **Community survey**

- Sent out a news release so the community knew we were coming
- Created a map for interviewers to locate households in a .5 mile radius
- Modified the General ACE survey concerning exposures, mental and physical health effects, urgent needs and communication
- Trained 23 volunteers to go door-to-door and to the hotels where people were relocated
- Interviewed 106 adults and 14 child residents beginning September 9 for 2 weeks

- **Medical Chart Abstraction**-Obtained hospital records for the 16 people who said they were hospitalized and signed release forms-abstracted the data on the ACE medical chart form

Mapping of Households



Community Survey Results

- **Need to increase awareness about emergency procedures i.e.; sheltering in place, evacuation and communication**
- **Many people experiencing both physical (68.3%) and mental (64.2%) symptoms, but few going for care (35.8% and 13.3% respectively)**
- **Many people appreciated getting to talk to someone about the incident**

First Responder Survey Results

- **Many (43%) were not wearing personal protective equipment (PPE) despite saying they have access to it (89%)**
- **Many had physical (49.5%) or mental (26.7%) symptoms but few sought care (17.1% physical and 3.8% mental)**
- **Many of those who denied seeking healthcare for their symptoms were still experiencing symptoms (39%) at the time of interview**

Environmental Data Results

- **This was an open NTSB investigation and it was difficult for the health department to get the data**
- **The data had many limitations**
 - Collection was not begun until three days after the explosion
 - The area sampled was only the area closest to the explosion
- **ATSDR interpreted**
 - No concern for most people
 - PM in air could be a problem for people with preexisting condition
 - Consulted with ATSDR physician about potential fungal spore exposures and thought an isolated case

What were the outcomes of this investigation?

- **Epi 2 report, CDC Connects, MMWR Notes from the field, first responder manuscript share lessons**
- **ACE formal agreement with GRASP for future incidents needing expertise in GIS**
- **ACE to update and expand the surveys to cover more hazards like explosions**

What was the outcome of this investigation?

- **Recommended that emergency responders**
 - Examine the emergency communications plan to include community leaders, multiple jurisdictions, and agencies
 - Conduct tabletop exercises
 - Formalize mutual aid agreements to improve future responses
 - Require more training on PPE use
- **Interviewers left a variety of resources to distribute to responders and residents**
 - Mental health resources and fact sheets
 - How to address home and environmental contamination after fires

Recommendations for Similar Incidents

- **Have early contact with local community crisis response resources and the Substance Abuse and Mental Health Services Administration to provide and connect counseling services to affected persons**
- **Provide the community with healthcare and toxicology expertise and assessment resources (e.g., Pediatric Environmental Health Specialty Units)**

Thank you!

Epi Aid team Esther Kukielka (ATSDR/GRASP), Erin Blau (CSELS/KDPH), David Bui (NCEH/DEHSP), Lindsay Tompkins (NCEH/DEHSP), Maureen Orr (ATSDR/DTHHS/EHSB), Leann Bing (ATSDR/DCHI/CB), Charles Edge (ATSDR/OD), Renee Funk (ATSDR/OD), and Doug Thoroughman (CPR/DSLRL).

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