



Lake County, Illinois Ammonia ACE investigation

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National Center for Environmental Health
Agency for Toxic Substances and Disease Registry



Outline

- **What is an ACE Epi-AID?**
- **How was it used in the Lake County Illinois ammonia incident?**
- **What did we do with the lessons learned?**

ACE

- **In 2010, the Agency for Toxic Substances and Disease Registry (ATSDR) created the Assessment of Chemical Exposures (ACE) program**
- **ACE is used to complete epidemiologic assessments after major chemical incidents (10 completed to date)**
- **ACE has a toolkit intended to be modified to begin data collection immediately**

ACE Epi-AID

- **State epidemiologists can request ACE assistance from CDC as an Epi-Aid**
- **Epi Aids allow CDC EIS officers to obtain field experience and is a great resource (win – win)**

What happened?

- **On April 25, 2019 a farm worker was transporting 2-1,000 gallon anhydrous ammonia fertilizer tanks on the road with his farm tractor from southern Wisconsin into Illinois**
- **At 4:24 AM that morning, on Green Bay Road in Beach Park, IL, the tanks malfunctioned and the worker abandoned the tractor**
- **Approximately 500 gallons of ammonia were released**

What happened?

- **Forty persons (exposed motorists, residents, and first responders) were transported via EMS to 6 area hospitals**
- **Hours later a reverse 911 notification was sent to residents to shelter in place**
- **First responders went door to door in a one mile radius to perform well-checks.**



Body-cam image of plume on Green Bay Rd at Clarendon in Beach Park on April 25, 2019

Aerial view of ammonia cloud from SW looking NE



Spill location

Green Bay Rd shown as yellow line.



Golf course

Green Bay Road

Drone photo

LIVE

SKYMAP7



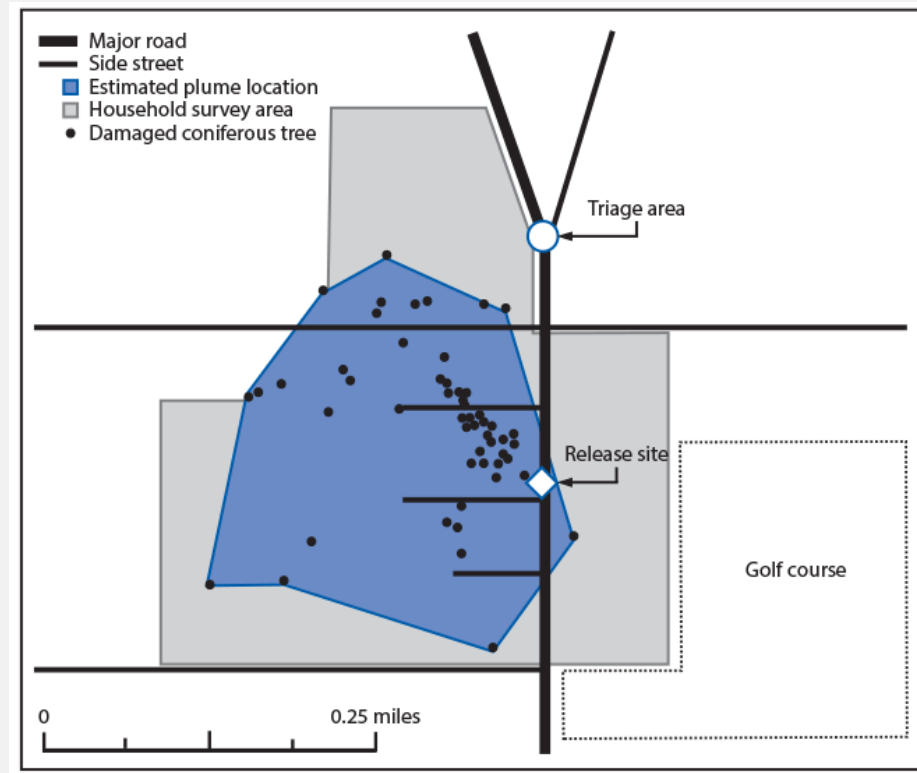
Public Health Response

- **The Illinois Department of Public Health State Epi requested an ACE Epi-Aid from CDC**
- **ACE team arrived on scene 10 days after the incident**

Components of ACE used



Anhydrous ammonia release site, estimated plume location based on damaged coniferous trees



What we learned

■ Communication Challenges

- Approximately 165 first responders from multiple agencies were dispatched to the scene with no common communication mode
- The initial 911 calls were mistaken for a car fire, so first arriving responders were exposed to the ammonia
- Hospitals did not get good information from the scene or the poison control center and there was secondary contamination of hospital staff
- Many residents were not subscribed to the reverse 911 and it was several hours before it was activated; they wanted answers

Review of Medical Charts (83 patients)

- **Forty-three males; median age 34 years (range = 1–79 years)**
- **Treatment**
 - 14 Admitted (8 ICU, 6 wards)
 - 69 Treated and discharged
- **Where exposed?**
 - Home (n=29)
 - Car (n=25)
 - Responders (n=14)
 - Unknown (n=15)

Main Symptoms

- Shortness of breath
- Cough
- Upper airway pain
- Headache
- Dizziness
- Chest tightness

What did we do with this information?

- Results presented in Epi 2 report and MMWR weekly
- Recommended hospitals review their mass casualty hazmat plans
- Produced a Clinician Ammonia fact sheet
- Outreach to Poison Control Center
- Outreach to agricultural industry
- Recommended a shared communication method for all area first responders
- Recommended standard 911 operator training for hazmat

Clinician outreach

- **Informational fact sheet for clinicians**
 - Incident specific information
 - Health effects from ammonia
 - Assessment and management of ammonia exposed patients
- **Distributed to local hospital and physicians**

Farm Outreach

- **Follow standard procedures for transport of anhydrous ammonia tanks**
- **Operator should take responsibility for pre-use inspection of equipment and addressing problems during application**
- **Sponsor safety classes for farmers and operators**
- **Bring awareness through farm industry publications and training materials/videos**

CDC/ATSDR Team

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- **Lake County HD volunteers**

Thank you!

Beach Park Fire Department; Chief Paul Tierney, Incident Commander
Lake County Sheriff Department
Lake County Health Department
Illinois Department of Public Health
Wisconsin Division of Public Health

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