Public Health Investigation
Following the Discovery of Ricin in a Vermont Retirement Community
June 5, 2019

Jessica Chenette- VDHL BT Coordinator
A Little About Vermont

- 624,000 residents
  - 2nd smallest population in US
  - State Capital Montpelier
    - 7,705 people-smallest capital
- 1 in 4 Vermonters live in Burlington and surrounding metropolitan area
What is Vermont known for?
Police: Retiree made ricin, tested poison on neighbors

By Jennifer Costa and Dom Amato | Posted: Fri 10:35 AM, Dec 01, 2017 | Updated: Fri 6:52 PM, Dec 01, 2017

SHELBURNE, Vt. (WCAX) An arrest in connection with a deadly poison scare at a Shelburne retirement community. The poison in question? Ricin, a toxin that can be extracted from a common garden plant.

The suspect is Betty Miller, 70, a resident of the Wake Robin retirement community. Our cameras are not allowed in federal court but our Jennifer Costa was there Friday as Miller was brought in handcuffed for her initial appearance. She’s charged with possession of a biological weapon.

For days, the grounds of Wake Robin have been overrun with state and federal authorities. An investigation that required hazmat suits following the discovery of a deadly poison inside an apartment at this upscale retirement community.

Federal court papers unsealed Friday outline disturbing details. They allege Betty Miller was plotting to hurt herself with homemade ricin, but she’s accused of testing the poison’s power on her neighbors for weeks.
What is Ricin?

- Poison found naturally in castor beans
- Symptoms vary by route of exposure
- Rapid onset of vomiting, abdominal pain and diarrhea following ingestion
- No antidote, supportive care only
Biothreat Agent

- **Biowapon History**
  - 1940s US & Britain
    - Experimented with Ricin as a Weapon
  - 1978 Georgi Markov
    - assassinated with a ricin-tipped umbrella
  - 1980s Iraq reportedly
    - weaponized ricin

- **Federal Select Agent Program**
  - HHS List of Select Agents and Toxins

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**Ricin: potential bioterror weapon**

*What is it?*
- Poison found naturally in the seeds of the castor plant, provides plant with natural pesticide
- Can be made from waste material left over from the industrial production of castor oil
- Can be in form of powder or pellet, dissolved in water or weak acid
- Has been used experimentally in medicine to kill cancer cells

*Symptoms*:
- Inhaled: difficulty breathing, heavy sweating, fluid build up on lungs, low blood pressure, respiratory failure
- Injection: Severe internal bleeding, tissue death, collapse of organ systems
- Ingestion: Vomiting, bloody diarrhea, severe dehydration, low blood pressure, seizures, Organ failure: liver, spleen, kidneys

*Cause of death*:
- Blocks cell protein synthesis leading to cell death, organ failure and death
- Death can take place within 36 to 72 hours of exposure
- 5 micrograms per kg of body weight can be lethal

*Use*:
- The US and Britain experimented with ricin as a weapon in the 1940s
- Ricin was used in the 1978 assassination of Bulgarian writer Georgi Markov in London when he was stabbed with a ricin-tipped umbrella
- Reportedly weaponised by Iraq in the 1980s

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**Source:** Congressional Research Service / CDC/Spiez Laboratory
The Situation Unfolds

- VDH notified on 11/28/17 that law enforcement, HAZMAT, VT CST were on scene investigating possibility of ricin at a large-scale retirement community in Chittenden County.
- Law enforcement alerted by UVM MC staff where the apartment owner had presented at the ED.
- Two castor bean plants identified outside apartment.
- Field test for a powder labeled “ricin” was positive and specimens submitted to VDHL.
The Ricin Evidence & Test Results

- **LRN-B Lab Results:** Powder presumptive positive for Ricin toxin
- **LRN-C Lab Results:** Urine low positive for Ricinidine

Vermont Department of Health
Next Steps at VDH

- Conference call with FBI
- Notification of CDC Emergency Operations Center
- Fact Sheet and talking points developed for communicating to Retirement Community residents
- Preliminary check of hospital syndromic surveillance data
- Health Advisory for hospitals, ambulatory care centers, health care providers and EMS providers

Vermont Department of Health
Health Advisory
November 29, 2017

TO:
Chittenden County Health Care Providers, Hospitals, Ambulatory Care Centers, EMS Providers

FROM:
Mark Levine, MD, Commissioner of Health

Possible Ricin Exposure
A field test performed by the Vermont State Hazardous Materials Response team (STRM) today identified ricin at Wood Robin, a Shipbourne retirement community. Confirmatory testing is underway at the Vermont Department of Health Laboratory. Ricin is believed to have been processed, from castor beans, by a resident. That individual is hospitalized at the University of Vermont Medical Center, not necessary for ricin poisoning. Law enforcement officials are investigating the incident.

Symptoms of ricin poisoning develop rapidly after exposure. No other possibility individuals have been identified, nor are expected, based on the last possible date of exposure on Sunday, November 26.

What is Ricin?
Ricin is an extremely toxic poison found naturally in castor beans. Ricin can be made from the castor oil found in castor beans by the process of the seeds from castor beans and then purified, and treated to form a powder that can be inhaled or ingested.

What are the symptoms of ricin exposure?
Initial symptoms of ricin poisoning are most likely to occur within four to 10 hours if the ricin was inhaled or swallowed. Symptoms of ricin poisoning depend on whether ricin was inhaled or swallowed, and the dose received.

Symptoms of Inhalation Exposure: Respiratory distress (difficulty breathing), fever, cough, nausea, tightness in the chest, and heavy sweating. Symptoms may occur as early as four to eight hours, and as late as 24 hours after exposure. Symptoms are then likely to progress to include problems such as worsening respiratory distress, pulmonary edema (fluid within the lungs), and eventually respiratory failure.

Symptoms of Ingestion Exposure: Vomiting, diarrhea, which may become bloody. Other signs may include hallucinations, slurred speech, and Bui to the urine. Following ingestion of ricin, initial symptoms typically occur in less than 12 hours.

Treatment
• Get off or out of the body as quickly as possible. There is no antidote.
• Provide supportive treatment to minimize the effects of ricin poisoning, based on exposure and symptoms (outlined below).

FOR MORE INFORMATION ABOUT RICIN: www.emergency.cd.gov/agent/ricin

Vermont Department of Health
A Woman Made Ricin Poison and Tested It on Retirement Home Residents, Investigators Say

Vermont senior tested ricin recipe on retirement community, feds say

By Steve Almasy, CNN
Updated 12:37 PM ET, Sat December 2, 2017

Vermont retiree made ricin, tested it on neighbors, police say

Continuing the Response

- Moved to Incident Command System
- Activated the Health Operations Center with twice daily briefings
- Conference calls with CDC subject matter experts
- Ongoing communication with Retirement Community administration
So Did Anyone Get Ill? Surveillance System Look-Back

- SIREN – Vermont Statewide Incident Reporting Network
  - Comprehensive electronic prehospital patient care data collection, analysis and reporting system
  - All Vermont licensed ambulance agencies and 1/3 of non-transporting EMS providers submit patient care reports
  - Data used for surveillance purposes is deidentified
Additional Surveillance

- ESSENCE - The Electronic Surveillance System for the Early Notification of Community-Based Epidemics
  - Visit information collected from EDs and urgent care centers across the state
  - Data is deidentified - examples of variables include date of visit, sex, age, patient’s city, chief complaint, and diagnosis

- Death Certificate Review

- Health Center and employee absenteeism record reviews

Vermont Department of Health
Results

- **SIREN** – 2 individuals transported by EMS had compatible symptoms unrelated

- **ESSENCE** – 2016 & 2017 data compared for the same timeframe no increase observed in 2017

- **Death Certificates** – 5 deaths all unrelated

- **Health Center Records Review** – no increase on patient visits

- **Employee Absenteeism** – no anomalies among employee absenteeism
No incidents of severe illness attributable to ricin poisoning observed!
Successes and Lessons Learned - Lab

- Expanded contacts with FBI
- Successful collaboration within the VT Health Dept
- Backup equipment in LRN-B Lab
  - Plate washer
- Continue discussion with HAZMAT and CST to improve field test documentation & proper sample collection
  - Continual work in progress and more frequent meetings and trainings are warranted

Vermont Department of Health
Successes and Lessons Learned- Epi

- Use proven emergency management strategies and practice them
  - Incident Command Structure and Health Operations Center
- Encourage communication and transparency
  - Health advisory, media interviews, visit to affected community
Successes and Lessons Learned - Epi

- Look to use the data you have in different ways
- Seek guidance from experts
  - Multiple conference calls with CDC SMEs
- Don’t assume the worst
What was the outcome of the case?

- Paid $90,000 in restitution to Wake Robin for cleanup costs
- Judge imposed another $10,000 fine for cost of the massive law enforcement response
- Served time in jail from time of her arrest to Sept 2018
- 5 years probation with strict conditions
- Release to mental health treatment facility in Maine
No more Castor Bean Plants at Wake Robin


Vermont Department of Health
Acknowledgements

Vermont Department of Health

Laura Ann, MPH
Deputy State Epidemiologist
Division of Health Surveillance

Veronica Fialkowski, MPH
Infectious Disease Epidemiologist
Division of Health Surveillance

Chelsea Dubie, Med, AEMT
Emergency Medical Services Data Manager
Division of Emergency Preparedness, Response, and Injury Prevention

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PH Lab Safety Compliance Chief
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Technical Guidance - CDC

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National Center for Environmental Health

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National Center for Emerging and Zoonotic Infectious Diseases

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Laboratory Response Network Program Office
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