

# Foodborne Botulism

## A Public Health Emergency

**Larry Michael** – NC DHHS

**Vanessa Greene** – NC DHHS

**Kipper Price** – Ashe County Health Department

**Katie Overbey** – NC State University

**Natalie Seymour** – NC State University

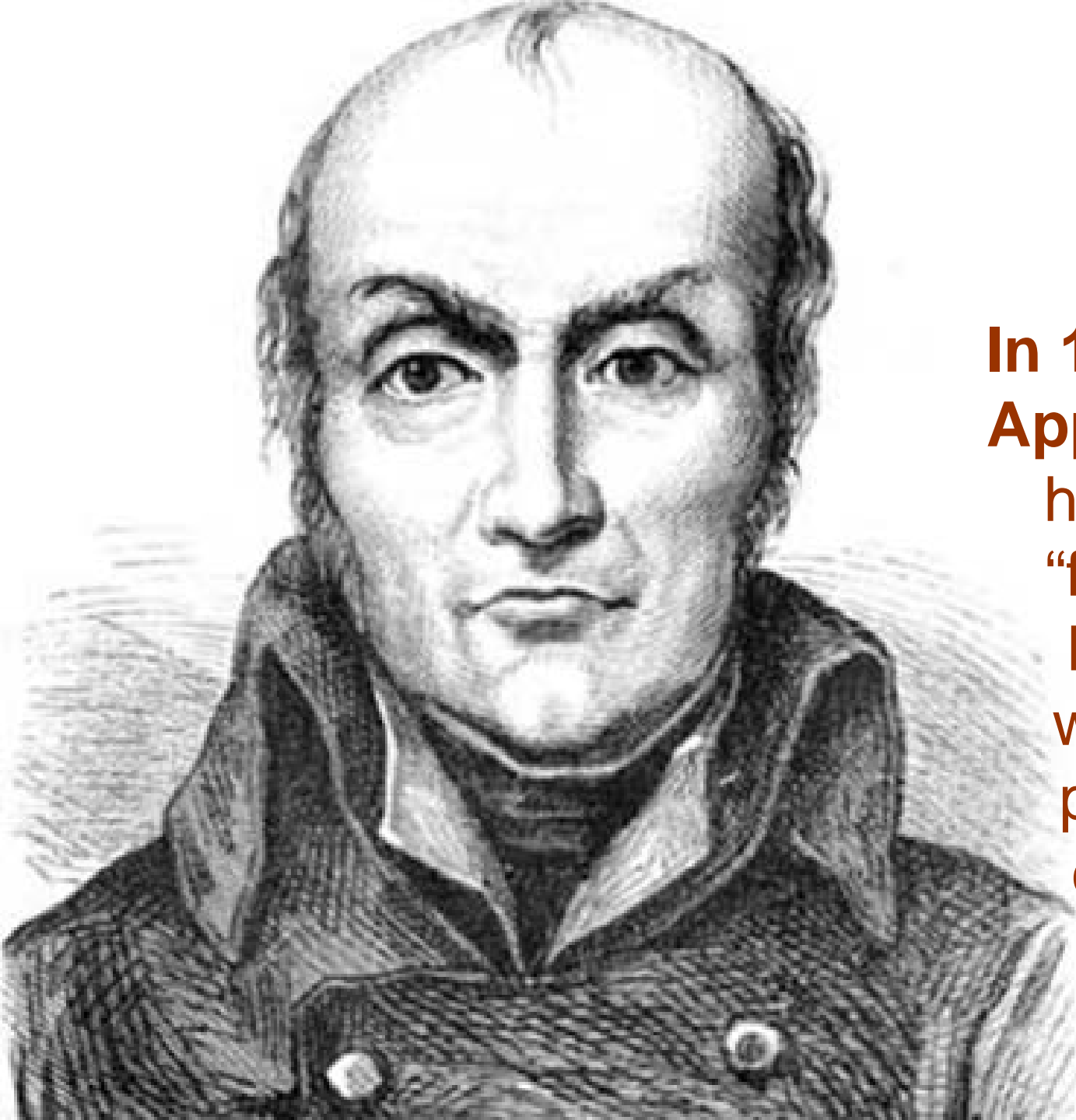
State Health Director's Conference  
January 21, 2015

# Panel Discussion

- Canning and Foodborne Botulism
- Timeline of Events
- Q & A

# Panel Discussion

- Canning and Foodborne Botulism
- Timeline of Events
- Q & A



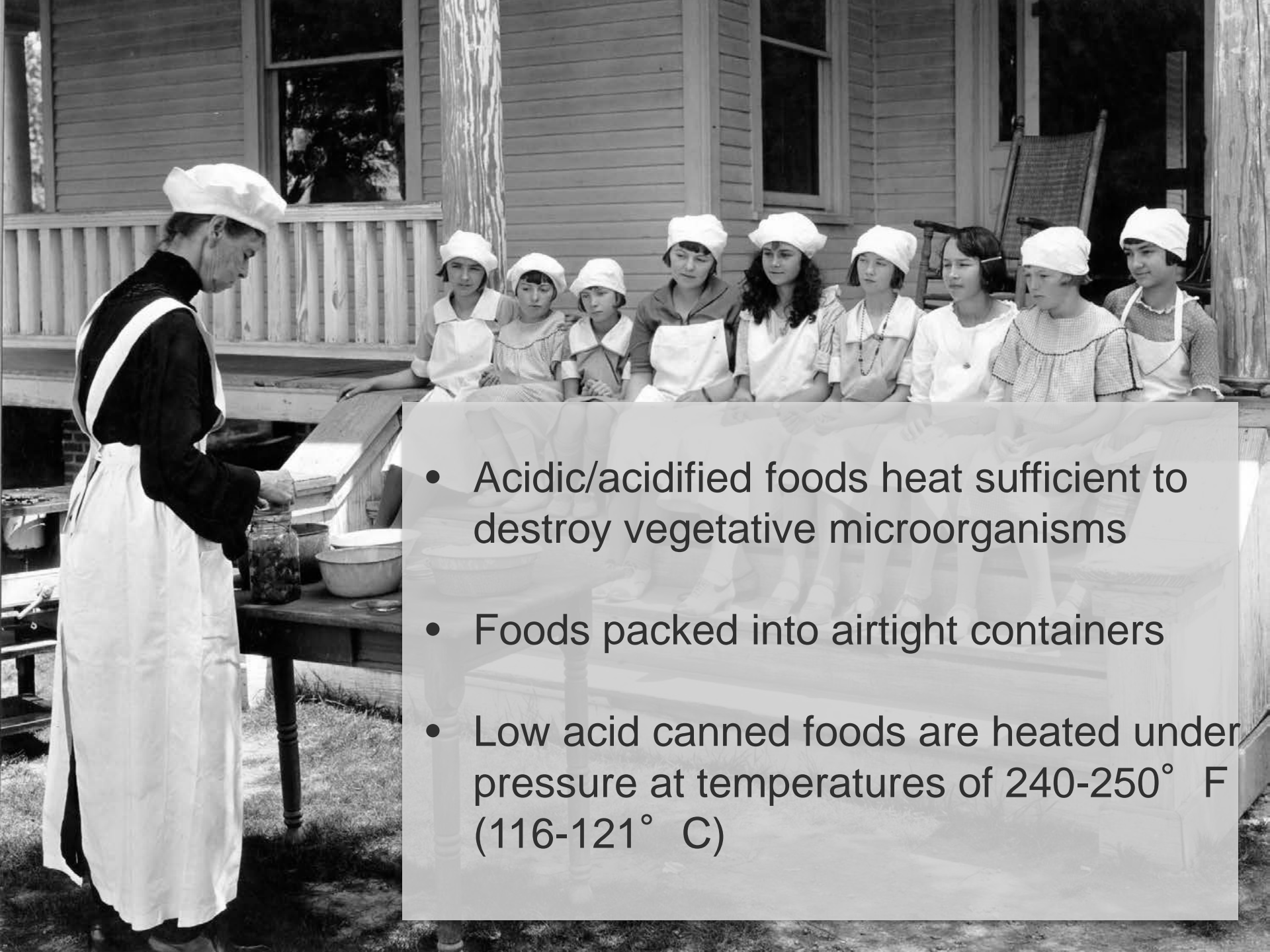
## Origins of Canning

**In 1809 Nicholas Appert** submitted his method of “food in glass bottles” to a wartime food preservation competition

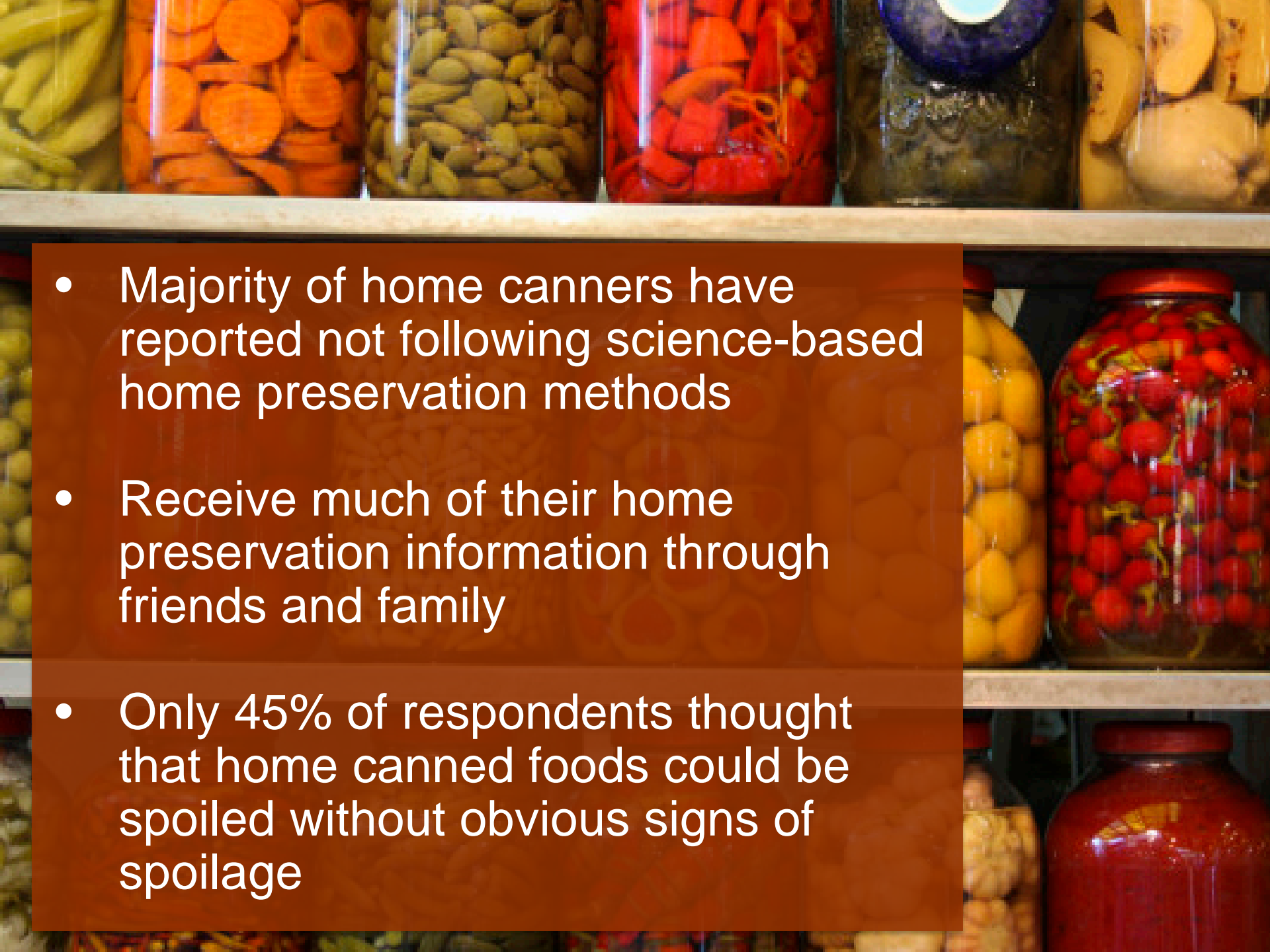
# *Clostridium botulinum*

- Found in the environment in spore form
- Becomes vegetative in low oxygen, low acid environments





- Acidic/acidified foods heat sufficient to destroy vegetative microorganisms
- Foods packed into airtight containers
- Low acid canned foods are heated under pressure at temperatures of 240-250° F (116-121° C)

- 
- Majority of home canners have reported not following science-based home preservation methods
  - Receive much of their home preservation information through friends and family
  - Only 45% of respondents thought that home canned foods could be spoiled without obvious signs of spoilage



- 
- Popularity of home canning and fermenting on Pinterest and social media may lead to misinformed canners

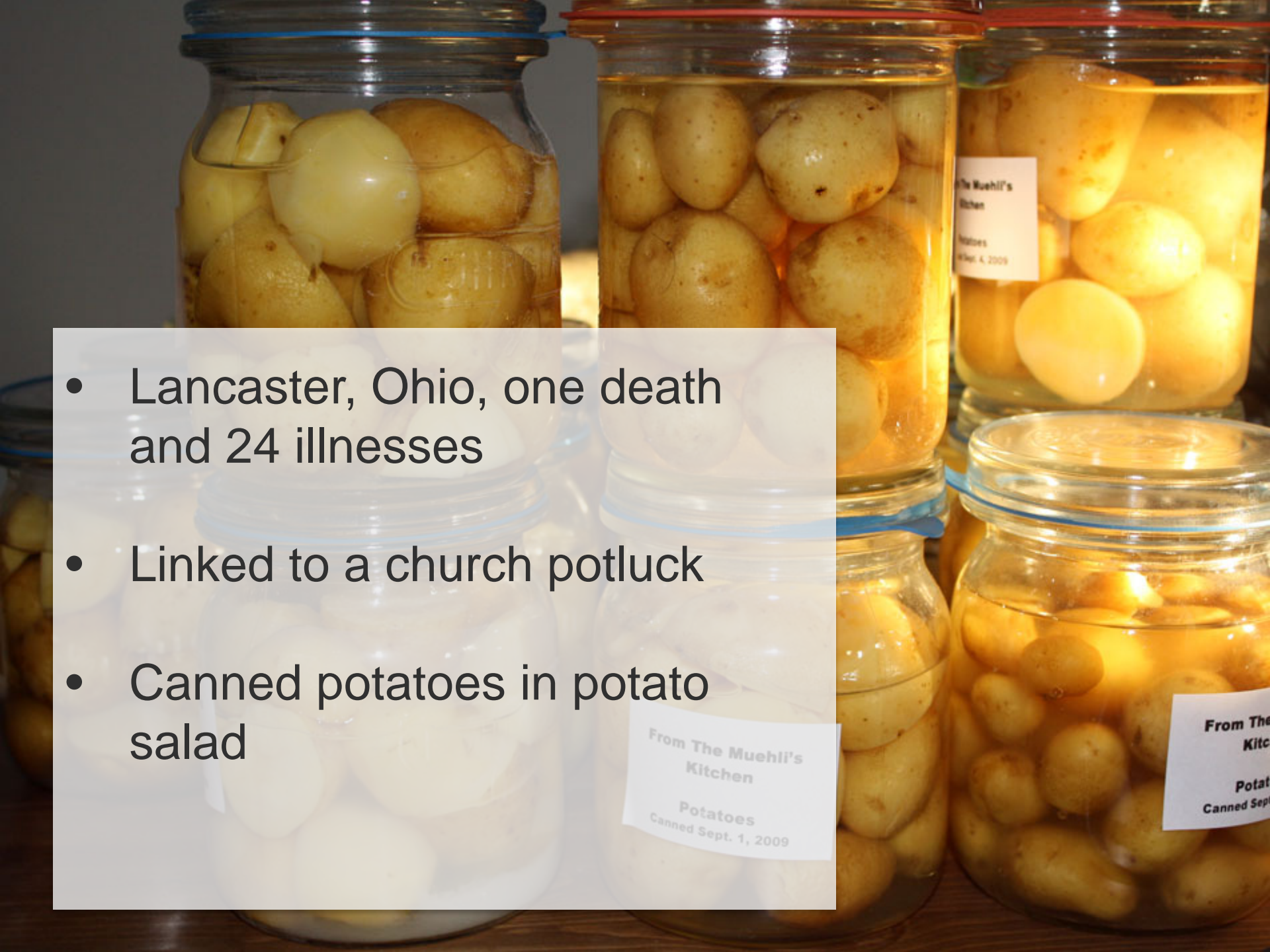




- 2012 CDC surveillance
- 160 cases
- 25 cases foodborne
- 12 were linked to 2 pruno outbreaks

Pickled beets,  
that weren't  
actually pickled  
linked to 3  
Oregon illnesses  
in 2012



- 
- The image shows several glass jars filled with small, round, yellowish potatoes. The potatoes are submerged in a liquid, likely water or a light sauce. Some jars have white labels with black text. One label in the foreground reads "From The Muehl's Kitchen Potatoes Canned Sept. 1, 2009". Another label on a jar in the background also reads "From The Muehl's Kitchen Potatoes Canned Sept. 4, 2009". The jars are arranged in a row, and the lighting is warm, highlighting the texture of the potatoes.
- Lancaster, Ohio, one death and 24 illnesses
  - Linked to a church potluck
  - Canned potatoes in potato salad

# Panel Discussion

- Canning and Foodborne Botulism
- **Timeline of Events**
- Q & A

# January 2015

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Day  
1

4

7

10

13

16

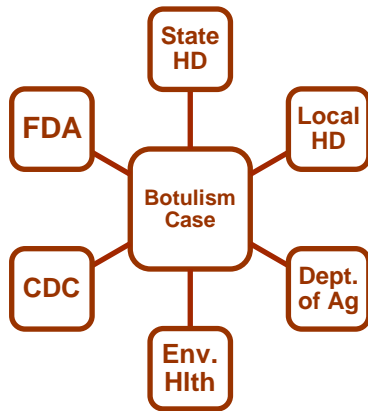
19

22

25

28

2015

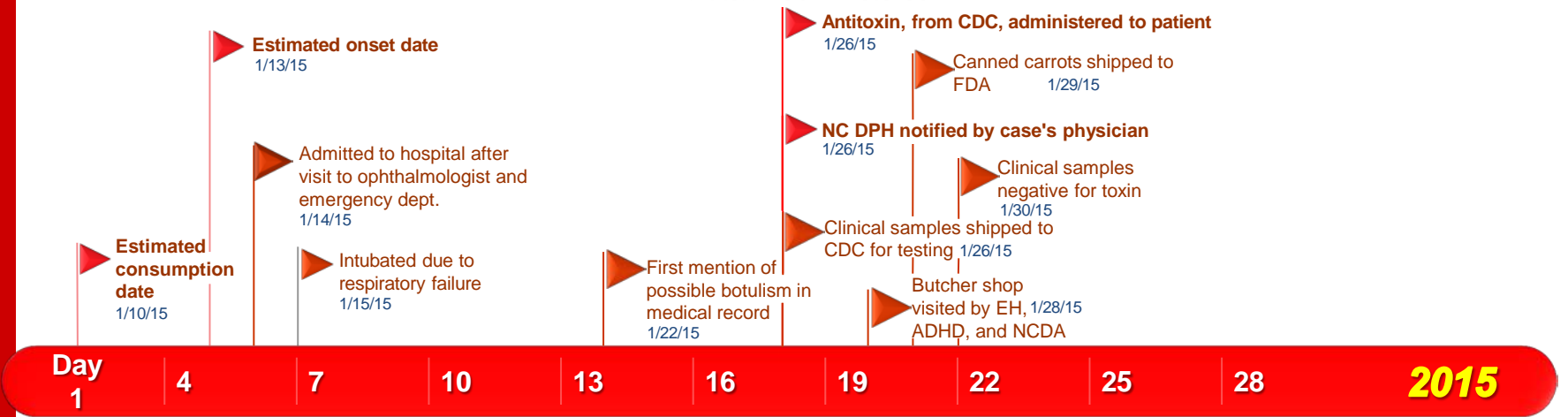


## January 2015

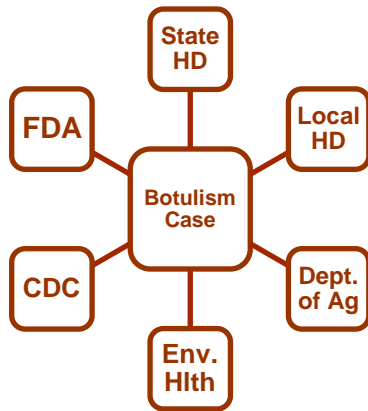
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10 <i>Consumption</i>
11	12 <i>Onset</i>	13	14 <i>Admitted</i>	15 <i>Intubated</i>	16	17
18	19	20	21	22	23	24
25	26 <i>DPH</i>	27	28 <i>Butcher shop visit</i>	29 <i>Canned carrots</i>	30 <i>Clinical samples</i>	31

Stool/blood obtained  
 Antitoxin administered

shipped to FDA (-) for toxin





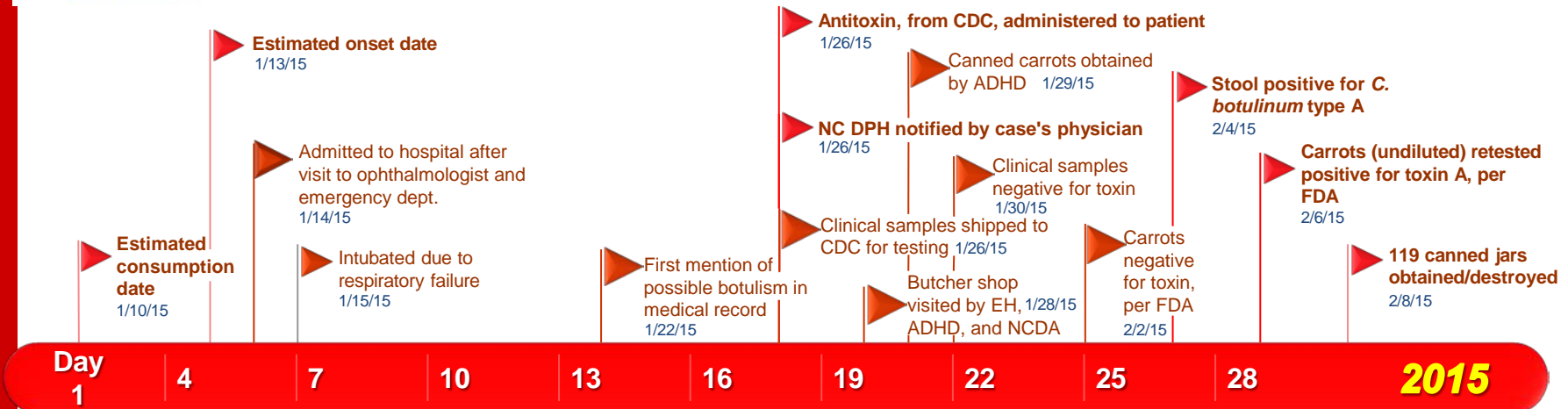


# February 2015

SUN	MON	TUE	WED	THU	FRI	SAT
1	2 Carrots (-) for toxin	3	4 Stool (+) <i>C. Botulinum</i> type A	5	6 Carrots retested (+) toxin A	7
8 119 canned jars destroyed (imminent hazard)	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

### January 2015

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10 consumption
11	12	13 onset	14 admitted	15 intubated	16	17
18	19	20	21	22	23	24
25	26 DPH notified/ Stool/blood obtained Antitoxin administered	27	28 Butcher shop visit	29 Canned carrot obtained	30 Clinical samples (-) for toxin	31



# What *happened* to all those jars?!

- Through extensive interviews with the patient's family and close friends, it was determined that no one else had been exposed to any of the canned items in the home.
- With assistance from the patient's family, Ashe County Health Department obtained 119 jars of canned food items from the pt.'s residence.
- All of these cans were properly destroyed, per current CDC guidelines.

# How did we *dispose* of the jars?

Followed CDC protocol:

- Safely dispose of food and cans that may be contaminated.
- Put on rubber or latex gloves before handling open containers of food that you think may be contaminated.
- Avoid splashing the contaminated food on your skin.
- Place the food or can in a sealable bag.
- Wrap another plastic bag around the sealable bag.

# How did we *dispose* of the jars?

Continued..

- Tape the bags shut tightly.
- Place bags in a trash receptacle for non-recyclable trash outside the home and out of reach of humans and pets.
- Don't discard the food in a sink, garbage disposal, or toilet.
- Wash your hands with soap and running water for at least 2 minutes after handling food or containers that may be contaminated.

Source:

<http://www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/consumers.html#dispose>

# Status of Case A Today

- Discharged from hospital in April after being hospitalized for 11.5 weeks
- Independently living and suffers from few residual effects of Botulism
- Just expanded her business, and reopened her store in bigger and better location.
- Is still canning. 😊

# Take Home Points

## Public Health Event

- Canning is a cultural tradition
- Processes are passed on for generations, but perhaps not the why behind the processes
- This was a tragic mistake that can happen to anyone not using proper canning procedures

## Response

- Rely on the strength of your partners
- Communication is vital
- Mechanics of response involve a lot of moving pieces



# Acknowledgments

*We gratefully acknowledge the family members of our botulism case who provided valuable information and assistance during a very difficult time in their personal lives.*

- **Appalachian District Health Department**

- **Beth Lovette (Health Director)**
- **Candy Graham (District CD Nurse)**
- **Kipper Price (Ashe County CD Nurse)**
- **Michael Roberson (District Food Specialist)**

- **NC Department of Agriculture**

- **Jim Melvin**
- **Joan Sims**
- **Julie Schlegel**

- **NC Division of Public Health**

- **Megan Davies**
- **Larry Michael**
- **Chris Hoke**
- **Jennifer Stewart**
- **Zack Moore**
- **Carl Williams**
- **Nicole Lee**
- **Kristin Sullivan**

- **FDA**

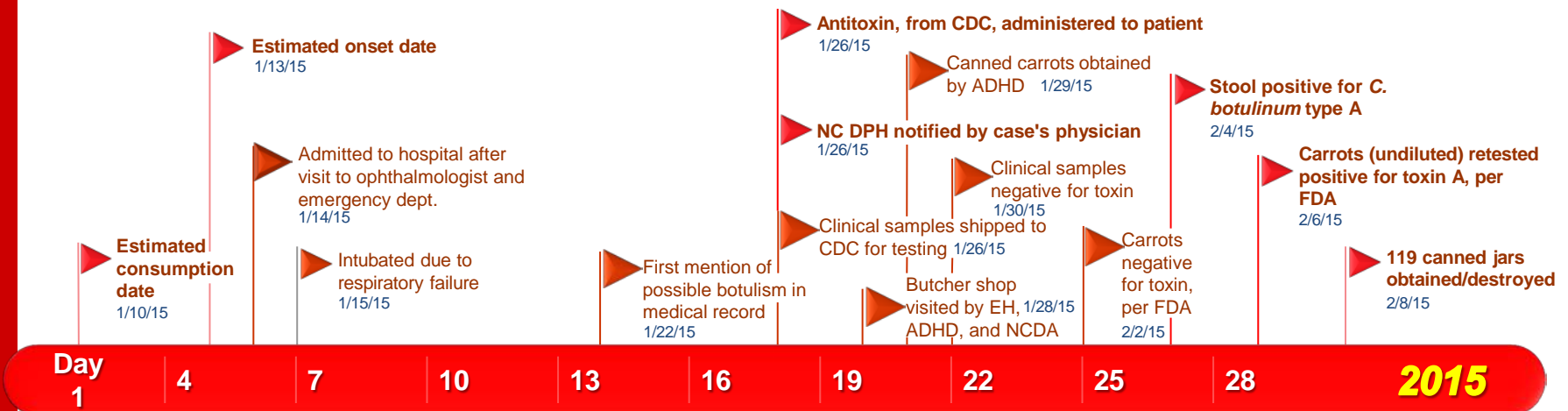
- **Brett Weed**
- **Southeastern Regional Lab Microbiology Department (SRL)**

- **CDC**

- **Carolina Luquez**
- **Rupa Narra**
- **Agam Rao**

# Panel Discussion

- Canning and Foodborne Botulism
- Timeline of Events
- Q & A



## January 2015

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10 consumption
11	12	13 onset	14 admitted	15 intubated	16	17
18	19	20	21	22	23	24
25	26 DPH notified Stool/blood obtained Antitoxin administered	27	28 Butcher shop visit	29 Canned carrot obtained	30 Clinical samples (-) for toxin	31

## March 2015

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## February 2015

SUN	MON	TUE	WED	THU	FRI	SAT
1	2 Carrots (-) for toxin	3	4 Stool (+) C. Botulinum type A	5	6 Carrots retested (+) toxin A	7
8 119 canned jars destroyed (imminent hazard)	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

## April 2015

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3 Discharged	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		



APPALACHIAN DISTRICT HEALTH DEPARTMENT

DISTRICT OFFICE: 126 Poplar Grove Connector, Boone, NC 28607
Telephone 828-264-4993 Fax 828-264-4997
www.appdhsdhs.com



Health for All: Promote. Prevent. Empower.

February 6, 2015

[Redacted recipient address]

Thank you very much for your assistance and complete cooperation with the Appalachian District Health Department's investigation to determine and confirm that botulism from a jar of home-canned carrots had been the cause of illness for [redacted]. Your availability for interview and your subsequent actions at our request are greatly appreciated, especially in light of [redacted] serious health situation.

Because of the laboratory confirmation, our investigatory state/local team determined that all of the home-canned goods have the potential risk for botulism contamination. Therefore, according to North Carolina General Statute 130A-20, as local health director, I have declared all of the home-canned goods at [redacted] residence an imminent public health hazard, unsafe for human consumption. This required immediate abatement. As such, and with your assistance, we have embargoed and safely destroyed all of the home-canned goods that you delivered to Kipper Price, RN. I have copied the General Statutes for your information:

§ 130A-2. Definitions. The following definitions shall apply throughout this Chapter unless otherwise specified:
(3) "Imminent hazard" means a situation that is likely to cause an immediate threat to human life, an immediate threat of serious physical injury, an immediate threat of serious adverse health effects, or a serious risk of irreparable damage to the environment if no immediate action is taken.
\*§ 130A-20. Abatement of an imminent hazard.
(a) If the Secretary or a local health director determines that an imminent hazard exists, the Secretary or a local health director may order the owner, lessee, operator, or other person in control of the property to abate the imminent hazard or may, after notice to or reasonable attempt to notify the owner, lessee, operator, or other person in control of the property enter upon any property and take any action necessary to abate the imminent hazard. If the Secretary or a local health director abates the imminent hazard, the Department or the local health department shall have a lien on the property of the owner, lessee, operator, or other person in control of the property where the imminent hazard existed for the cost of the abatement of the imminent hazard. The lien may be enforced in accordance with procedures provided in Chapter 44A of the General Statutes. The lien may be defeated by a showing that an imminent hazard did not exist at the time the Secretary or the local health director took the action. The owner, lessee, operator, or any other person against whose property the lien has been filed may defeat the lien by showing that that person was not culpable in the creation of the imminent hazard.
(b) The Secretary of Environment and Natural Resources and a local health director shall have the same rights enumerated in subsection (a) of this section to enforce the provisions of Articles 9 and 10 of this Chapter. (1893, c. 214, s. 22; Rev., ss. 3446, 4450; 1911, c. 62, ss. 12, 13; 1913, c. 181, s. 3; C.S., ss. 7071, 7072; 1957, c. 1357, s. 1; 1983, c. 891, s. 2; 1997-443, s. 11A.63; 2002-179, s. 6; 2006-255, s. 13.6; 2011-145, s. 13.3(uu).)

Again, please accept my thanks for your assistance. Best wishes for a complete and speedy recovery to [redacted]

Sincerely,
Beth Lovette
Beth Lovette, MPH, RN, Public Health Director

cc. Nicole Lee, Nicole Lee, MPH, Epidemiologist, Communicable Disease Branch, N.C. Department of Health and Human Services