Building an external and internal food safety culture – and measuring it

Dr. Ben Chapman
Food safety extension specialist
North Carolina State University
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PLEASE HELP US SAVE WATER!
Instant Hand Sanitizer – No Rinse Required
Thank you!
University Housekeeping
Food safety culture

• It is a set of shared attitudes, values and beliefs around food safety
  o Production/sources
  o Handling/storage
  o Preparation

• You can have a good food safety culture or a bad one

Why should I care?

- **People actually do get sick**
  - You can’t control how people handle your products
  - You can limit their exposure

- **Making people sick is bad for business**
  - Reputation
  - Lawsuits
  - Real costs

- **Marketing food safety**
  - Differentiation and following best practices
Regardless of standard

- You have to have a plan
- You have to have validated controls that are verifiable
- Someone is going to check
  - These are all minimum standards (especially if there is an outbreak)
Smiling Hara Tempeh

- Salmonella Paratyphi B
- 71 illnesses
- 9 hospitalizations
- Linked to starter culture
“For us it means that we’ve identified the point of entry. It had nothing to do with our sanitation, protocol or Blue Ridge Food Ventures. It did not originate in Asheville and it was unknowingly passed along to us. So it’s a big relief to us. Now we can look at moving forward — it’s up to the FDA to trace this further.”

Do they ask for any proof of micro analysis?  
Do they have compelling labels?  
Do they know how their product is used?
What FSMA Safe Food For Canadians Act and GFSI don’t address

Product packaging of fully cooked vs. uncooked products

Similar appearance of fully cooked and uncooked breaded products

REHEATING PROCEDURES FOR CLASSIC PASTAS

Taylor Street’s Baked Ziti
Mom’s Lasagna
Eggplant Parmesan

All Other Pastas

1. Place pasta and 1 oz. of water into an oven-safe container covered with foil.
2. Preheat oven to 425.
3. Bake until thoroughly hot.
   - Baked Ziti: Approximately 20 minutes
   - Lasagna/Eggplant: Approximately 25 minutes.

1. Place pasta and 1 oz. of water into a large saucepan and cover with a lid.
2. Turn heat on low and slowly reheat, stirring occasionally, for about 5 minutes or until thoroughly hot.

Oven or Stovetop

1. Remove lid from plastic container and replace on top, allowing some room for steam to escape.
2. Cook on high heat for about 1 1/4 minutes.
3. Stir pasta (if applicable), rotate container a quarter turn, and cook for an additional 1 – 2 minutes, or until thoroughly hot.

Microwave

MAGGIANO’S

© 2005 Maggiano’s
• “You sir... are a moron. They send you home with cooked food not raw meat.”
We evaluate food handling behaviors.
Performance indicator (food safety culture) data

- Inspection results
- Audit reports (GFSI or otherwise)
- Microbiological results
- Self-audits
- Staff knowledge
- Self-reported practices
- Behavior
Welcome

Since 1892 - Four generations, one family.
Dedicated to farming with care and sharing the fresh, local harvest year round at our century farm retail store.
NEWS & EVENTS

VOLUNTARY RECALL OF SOUP

Further to the recall of our broccoli soup, as a precautionary measure, we are asking customers and retail locations to return all pressure canned soups the point of purchase for credit. The soups were manufactured in a Quebec-area food production facility contracted by Barrie Brothers, and it has been determined that there was inadequate processing.

We apologize for any inconvenience and appreciate your assistance with this voluntary recall.

Here is a link to the Canadian Food Inspection Agency, the report is also posted below.

OTTAWA, December 9, 2010 - The public warning issued on December 8, 2010 has been expanded to include other vegetable soup products.

The Canadian Food Inspection Agency (CFIA) and Barrie Bros. Local Food Company 1892 are warning the public not to consume Barrie Bros. vegetable soups described below because these products may be contaminated with Clostridium botulinum. Toxins produced by these bacteria may cause botulism, a life-threatening illness.

The following Barrie Bros. Local Food Company 1892 vegetable soup products, sold in a 744 ml. Mason glass jar with a metal lid, are affected by this alert. These products do not have a lot code or a Best Before date.

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<tr>
<th>Product</th>
<th>Size</th>
<th>UPC</th>
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<tr>
<td>Fresh Asparagus Soup</td>
<td>744</td>
<td>None</td>
</tr>
<tr>
<td>Fresh Cauliflower Soup</td>
<td>744</td>
<td>None</td>
</tr>
<tr>
<td>Butternut Squash Soup</td>
<td>744</td>
<td>None</td>
</tr>
<tr>
<td>Sweet Potato &amp; Red Pepper Soup</td>
<td>744</td>
<td>B 31411 00045 3</td>
</tr>
<tr>
<td>Potato &amp; Leek Soup</td>
<td>744</td>
<td>B 31411 00046 C</td>
</tr>
<tr>
<td>Jeff Sudsbury's Gourmet Curried Pumpkin &amp; Sweet Potato Soup</td>
<td>744</td>
<td>B 31411 00040 8</td>
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</table>
ConAgra food safety culture survey
(Food Technology, Jan 2012)

- Surveyed plant staff, managers, supervisors
- Asked about perception, self policing, good and bad
  - Specifically wanted to know more about lessons learned from food safety issues and incidents and how they would prevent future problems.
  - Employees want to be able to rely on one another.
  - Recognition
Here’s the rub

• Significant deviations between stated and actual behavior
  - DeDonder et al.; 2008; Clayton and Griffith 2003; Jay et al., 1999; Redmond et al., 2004; Surgeoner et al., 2009

• Most evaluations use this self-reported data for measuring knowledge and intended changes
  - Redmond and Griffith, 2004; Chapman et al., 2010
Our food safety issues would be fixed if...

- We just had more education
Why did my grandmother overcook pork?
Evaluating messages

- Consumers are often blamed in outbreaks
- “common sense/food safety is simple”
- Education alone ≠ application of knowledge gained
- Providing easy access to tools does not necessarily improve desired practices
From the literature

- Using stories and narratives better than statistics alone
  - Cole, 1998; Cole, 1997; Howard, 1991; Leventhal, 1970; Morgan et al., 2002; Slater and Rouner, 1996

- Sticky factor
• Put food safety into context
  - Leventhal et al., 1965; Lordly, 2007

• The medium is the message – and it better be correct for the target audience
• Generate dialogue
  o Ajzen, 1991; Bohm et al., 1993; Dignum et al., 2001; Schein, 1993
• Surprising messages
  o Shannon, 1948
Surprising message?

- "Upon indigestion, the larvae are freed from the cyst by and then proceed to migrate to the intestine. Here they develop to maturity and after fertilization the adult worms produce living embryos which invade the bloodstream and are carried to all, or nearly all, of the voluntary muscles of the body."
Dirty Hands = Runny Bum

20/20 Rule
Wash 20 seconds
Dry 20 seconds

Clean Hands
Wash 20 seconds
Dry 20 seconds

Now Wash Your Hands!

Your Choice
Clean Hands = Runny Bum

0800 693 721
We tell our staff about outbreaks at businesses similar to ours.
Our training program is designed to generate dialogue.
We look at research on food safety training (what has worked, what hasn't).
I survey my staff about their food safety practices.
Results: Mean events per food handler

<table>
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<tr>
<th>Event</th>
<th>Pre (13.4 hrs)</th>
<th>Post (13.5 hrs)</th>
<th>Change</th>
<th>percentage</th>
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<tr>
<td>Handwashing attempts</td>
<td>21.1</td>
<td>22.5</td>
<td>+1.42*</td>
<td>+6.7%</td>
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<tr>
<td>Correct handwashing events</td>
<td>2.4</td>
<td>4.0</td>
<td>+1.64*</td>
<td>+68.9%</td>
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<tr>
<td>Indirect cross-contamination</td>
<td>15.7</td>
<td>13.1</td>
<td>-2.57*</td>
<td>-19.6%</td>
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<tr>
<td>Direct cross-contamination</td>
<td>1.9</td>
<td>1.0</td>
<td>-0.85*</td>
<td>-81.7%</td>
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*Significance level (p < 0.05, 95% CI)
What we were able to take away for the organization

- When it's busy, people get sloppy and food safety isn't a priority
- Training in context to the environment
  - (team/activities)
- Handwashing problems
  - almost always around paper towel use
- Anecdotes about hot holding (or lack of)

A framework for success

- Survey questions to assess food safety knowledge, as well as skills and ability
  - Cannot stop there, and don’t dedicate too many resources
- Validate food safety management tools
  - Equipment/policy audits
- Implement behavior science into existing food safety and outreach programs
  - Ethnography or observation
Home-canned food kills Argentinean man: Botulism in food causing deaths for over 1000 years

Mrs. Kalisz, my grade 7 and 8 family studies teacher warned of the dangers of botulism by showing our class a bulging can of beans (which she kept in a ziplock bag). What I took away from that story was to never buy or use dented cans (although that practice can be debated). Botulism from commercially canned foods has been pretty rare in North America since the 1970s with only a couple of cases in 40+ years.

The first case of food-related botulism recorded in the medical literature occurred in Germany in 1735 and was traced to uncooked fermented blood sausage. Food safety history guru (and pretty decent margarita recipe developer) Carl Custer pointed out in an IAFP workshop that botulism concerns (and regulatory responses) go back further than that. In the 10th century, Emperor Leo VI of Byzantium prohibited the manufacture of blood sausage because of repeated illnesses leaving folks paralyzed and dying not too long after exposure. Botulism (derived from botulus, the Latin word for sausage) is pretty nasty.
Food Safety Talk Podcasts
By Don Schaffner and Ben Chapman

To listen to an audio podcast, mouse over the title and click Play. Open iTunes to download and subscribe to podcasts.

Podcast Description
Ben Chapman is an Assistant Professor and Extension Food Safety Specialist at North Carolina State University and Don Schaffner is Extension Specialist in Food Science and Professor at Rutgers University. Every two weeks or so Ben and Don get together to talk about food safety current events and the challenges of making the food supply safer.

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Total: 9 Episodes

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