



Food safety culture, audits, and public perception or, how to make fewer people sick and save your business

Dr. Douglas Powell | Professor

Department of Diagnostic Medicine/Pathobiology

Kansas State University

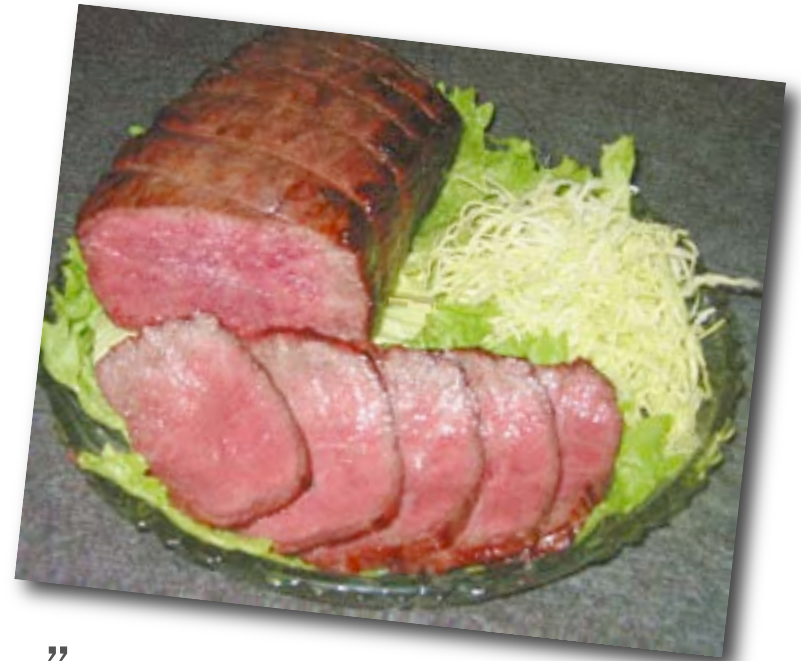
dpowell@ksu.edu

bites.ksu.edu

barfblog.com

E. coli O157:H7, nursing home, 1985

- 19 of 55 affected people at a London, Ontario nursing home died after eating roast beef sandwiches
- Ontario government announced a training program for food-handlers in health-care institutions, “stressing cleaning and sanitizing procedures and hygienic practices in food preparation”









Maple Leaf Foods, Canada 2008

- *Listeria monocytogenes*-contaminated deli meats caused 57 illnesses and 23 deaths
- contamination source was commercial meat slicers that had meat residue trapped deep inside the slicing mechanisms
- textbook risk communication, lousy risk management
- delay in warning the public



Maple Leaf listeria review

- focus on food safety was insufficient among senior management at company and government
- insufficient planning for a potential outbreak;
- those involved lacked a sense of urgency at the outset of the outbreak
- Weatherill (2009) specifically identified the need for cultures of food safety at food processing companies, calling for "actions, not words"



Maple Leaf – try harder

- provide a chronological accounting of the outbreak (who knew what when)
- add warning labels to packages of ready-to-eat meats for persons at high risk for listeriosis
- release details of product and environmental testing results, perhaps through the establishment of a website that provided *Listeria* spp. testing data in real time





Really big nosestretcher alert: Leading Toronto hospital says cold cuts, raw fish, OK for expectant mothers

- According to the (incorrect) Canadian Family Physician's statement: *"pregnant women need not avoid soft-ripened cheeses or deli meats, so long as they are consumed in moderation and obtained from reputable stores."*
- Deli meats or cold-cuts top the list of foods to avoid while pregnant
- Nearly 60 per cent of pregnant women diagnosed with listeriosis either miscarry or have stillbirths
- The CDC has estimated approximately 2,500 cases of listeriosis occur annually in the U.S., with about 500 cases resulting in death



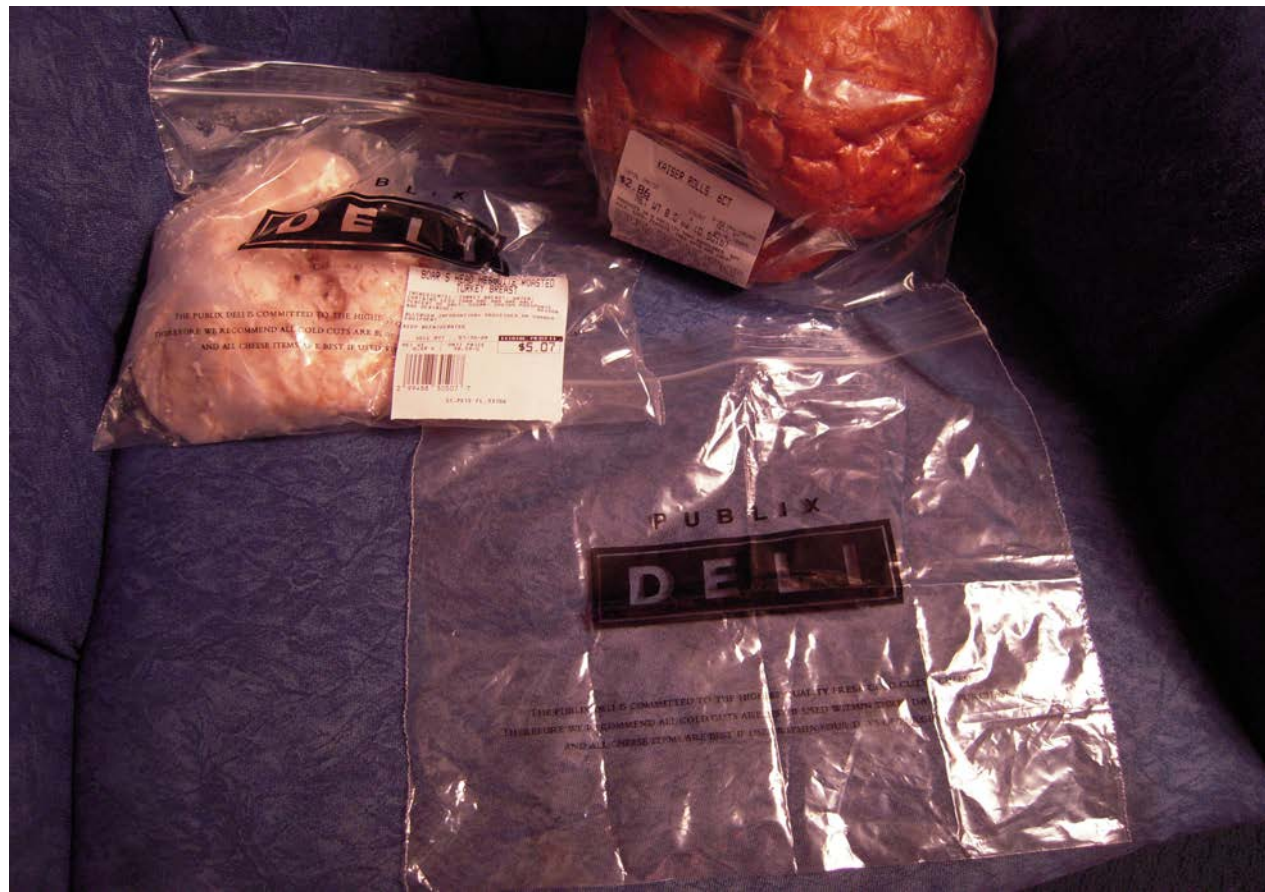
Really big nose stretcher alert: Leading Toronto hospital says cold cuts, raw fish, OK for expectant mothers

- The information provided to pregnant women by health care providers needs to be targeted and clear
- The CDC has estimated approximately 2,500 cases of listeriosis occur annually in the U.S., with about 500 cases resulting in death
- In 2000, listeria exposure resulted in a higher rate of hospitalization than any other foodborne pathogen and more than one-third of reported deaths from food pathogens

“The Publix Deli is committed to the highest quality fresh cold cuts & cheeses

Therefore we recommend all cold cuts are best if used within three days of purchase

And all cheese items are best if used within four days of purchase”



E. coli in fast food lettuce, 2012

- Belle Bourque of Westville, Nova Scotia, spent almost a month in hospital with *E. coli* O157:H7 after eating lettuce at a restaurant
- “You know, one minute you’ re healthy, you’ re living a normal life and then ‘boom,’ you’ re dying.”
- 26 sickened from Calif. lettuce in KFC-Taco Bell
- Table of leafy green outbreaks available at <http://bites.ksu.edu/leafy-greens-related-outbreaks>.



E. coli O157:H7 in Cardinal Meat burgers

- 8 people sick including one in Saskatchewan
- Outbreak began Nov. 2012; investigators focused on burgers from Cardinal Meats
- “If we were in a situation where tons and tons of people were getting sick, we’d probably act faster. You don’t want to initiate a food recall unless you have good solid evidence that’s the offending product because there’s big implications ... for the producer and marketer it’s a big loss and cost to them.” CFIA



E. coli O157:H7 in Cardinal Meat burgers

- No excuse to wait for positive test; epidemiology works
- CFIA: “The consistent message we have to Canadians is to fully cook your hamburger. We’ve got a good food safety system in this country, but nothing’s perfect.”



E. coli O157:H7 in XL beef

- 17 sick
- condensation on pipes in the tripe room;
- water in a sanitizer was not maintained at a high temperature;
- meat cutting areas were not adequately cleaned; and,
- no sanitizing chemical solution in the mats used for cleaning employees' boots.
- deficiencies were never noticed by 40 inspectors, six veterinarians at the plant until people started getting sick



A horse is a horse of course

- Canada is largest exporter of horsemeat to Europe
- Two companies are trying to open horse slaughter plants in U.S.
- Food fraud more than food safety
- “Food safety at retail is faith-based, faith has been violated.”



Listeria in Cantaloupe, Colorado 2011

- 33 dead
- 146 sickened
- Producers blame auditors, auditors blame government
- Producers lose, consumers lose



Salmonella in mangoes

- 121 sick U.S.
- 25 hospitalized
- 22 sick Canada



<http://www.cdc.gov/salmonella/braenderup-08-12/index.html>

<http://barfblog.foodsafety.ksu.edu/blog/155927/12/08/28/when-mango-bites-back>

Salmonella in cantaloupe, 2012

- 3 dead
- 270 sick
- 78 hospitalized



<http://www.cdc.gov/salmonella/typhimurium-cantaloupe-08-12/index.html>

<http://barfblog.foodsafety.ksu.edu/blog/155929/12/08/28/2-dead-178-sick-are-consumers-responsible-salmonella-field-or-packing-shed-fda->

Cantaloupe: Not worth the risk

“We’ re done. No more cantaloupe. We will let someone else raise the cantaloupe. We have already towed the equipment out of the building. It’ s not worth the liability.”

– Jimmy Burch, co-owner of Burch Farms, Aug. 30/12



A table of cantaloupe-related outbreaks is available at <http://bites.ksu.edu/cantaloupe-related-outbreaks>

E. coli O157 in Romaine lettuce, Dec. 2011, Missouri

- 60 people sick in 10 states
- publicly linked to salad bars at Schnucks
- possibly grown in California
- limited availability of risk information



<http://bites.ksu.edu/leafy-greens-related-outbreaks>

<http://www.barfblog.com/blog/151817/11/12/07/60-sick-e-coli-o157-10-states-it-was-romaine-lettuce-grown-california-served-sc>

E. coli O157 outbreak on strawberries in Oregon

- 1 dead 14 sick
- Deer droppings caused outbreak
- Six samples from Jaquith Strawberry Farm in Washington County tested positive for the *E. coli* O157:H7 strain that sickened 15 people and killed one in Oregon
- The positive tests probably indicate that several or perhaps many of the deer around Jaquith's property carry O157:H7



E. coli O157:H7 in walnuts, Canada

- April 4/11, Canadian Food Inspection Agency said people were sick but wouldn't say how many
- Walnuts imported from California and imported by Amira Enterprises of St. Laurent, Quebec named as the suspected source
- Later on April 4/11, Public Health Agency of Canada says 13 sick



E. coli O157:H7 in hazelnuts

- Majority produced in Oregon
- Salmonella found in 2009
- 13 sickened with E. coli O157:H7 in 2011
- Develop good handling management practices
- Educate growers processors
- No evidence of follow-up, verification, food safety assistance



Fruit compote juice linked to *E. coli* O157 outbreak at festival in Winnipeg

Food handlers should be careful not to contaminate ready-to-eat or drink products

What you can do:

•Wash and dry hands using soap, potable water and paper towels prior to handling foods.

•When storing food in coolers or fridges, keep ready-to-consume products covered and above items like raw meat that might drip.



Juices have been linked to outbreaks in the past

- E. coli* O157 contaminated Odwalla brand juices linked to 66 illnesses in 1996
- Salmonella* contaminated Orchid Island Juice Company brands linked to 15 illnesses in 2005
- In 2006, Bolthouse Farms carrot juice was the source of 6 botulism illnesses including a death

37 illnesses and 18 hospitalizations linked to outbreak

A fruit juice is the most likely culprit in sickening visitors to a Winnipeg (Canada) festival in August 2010. The majority of illnesses were associated with a Russian combination platter served at Folklorama, an annual heritage celebration. The Russian platter contained borscht (beet soup), meatballs, a rice dish, and the compote juice. The focus narrowed to the juice as ill patrons reported eating both a vegetarian and non-vegetarian dish, with the juice as the only common food.

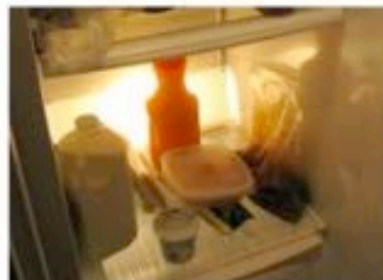
The compote juice was prepared by adding washed, unpeeled apples, blueberries and

blackberries to boiling water. Once boiled for five to 10 minutes, the juice was decanted into large plastic pails. The juice was then refrigerated until served cold.

Post-boiling contamination likely



As fruits were washed and boiled as part of the juice-making process it's likely that juice was contaminated either by a staff member or through cross-contamination in the fridge. Health officials believe that ground beef, which was also being handled and prepared at the site, was the most likely source of contamination.



FOR MORE INFORMATION CONTACT BEN CHAPMAN, BENJAMIN.CHAPMAN@NCSU.EDU OR DOUG POWELL, DPOWELL@KSU.EDU

▶ **M•T•O®**

- Subs
- Burgerz
- Salads
- Nachos
- Hot Dogs
- Bagelz
- Breakfast
- Shpecialties
- MTO Lo

▶ **Dot'z Bakery®**

▶ **Coffeez™**

▶ **Fizz City®**

▶ **Mailing List**

Store Locator

Contact Us



Search



Inbox Lonely?

Join Our Mailing List



HOT SUBS

- Steak**
- Meatball**
- Roasted Chicken**
- Buffalo Chicken**
- Pepperoni**

(Click on item for nutritional info)

TOPPINGS

- Black Olives**
- BBQ Sauce**
- Deli Mustard**
- Fat Free Honey Mustard**
- Green Peppers**
- Horse Radish**
- Hot Pepper Relish**
- Italian Dressing**
- Jalapeno Peppers**
- Ketchup**
- Lettuce**
- Marinara**
- Mayonnaise**
- Mild Pepper Rings**
- Mustard**
- Olive Oil**
- Onions**
- Pickles**
- Sweet Pepper Strips**
- Tomatoes**

COLD SUBS

- Cold Cut**
(Bologna, Cooked Ham, Salami)
- Club Combo**
(Roast Beef, Cooked Ham, Turkey)
- Italian**
(Capicola, Peppered Ham, Salami)
- Ham**
- Turkey**
- Roast Beef**
- Chicken Salad**
- Tuna Salad**
- Egg Salad**
- Veggie**
- Cheese**

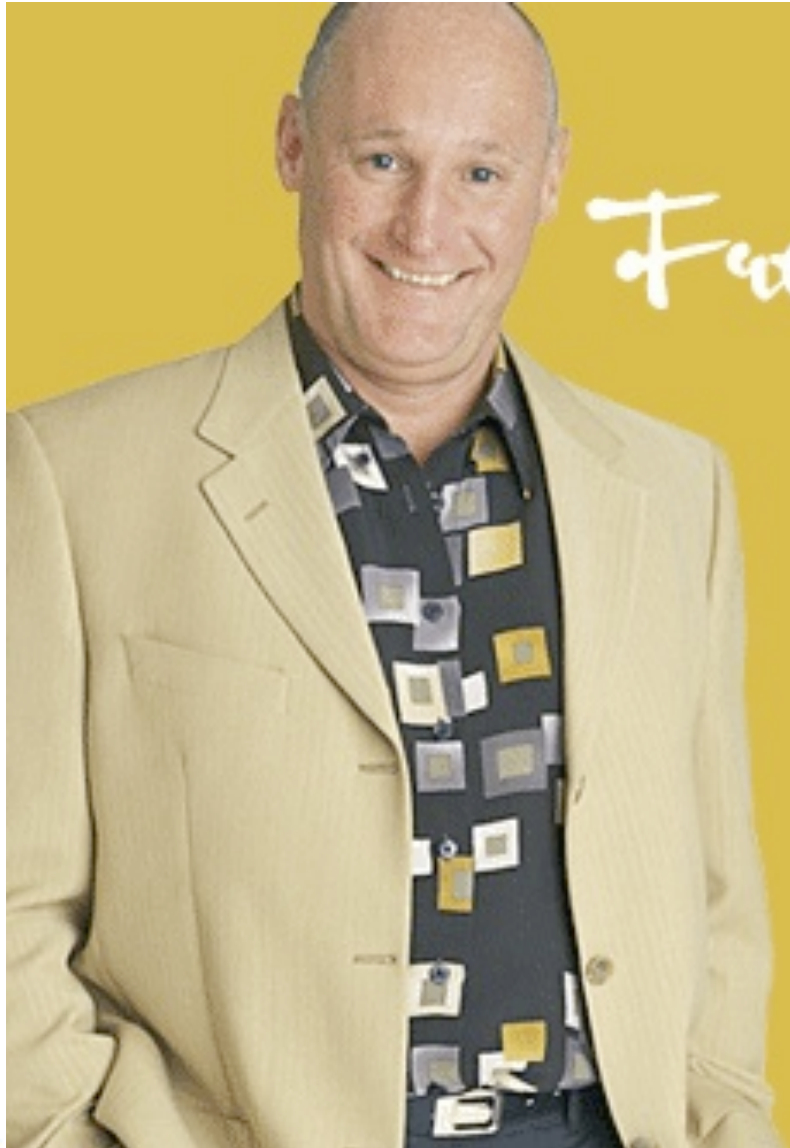
(Click on item for nutritional info)

Consumer Reaction?

- A customer at the store cheerfully assured him she wasn't worried about the food at Sheetz
- She gets diarrhea from her own cooking all the time

Partnership for Food Safety Education -- July 20, 2004

- “In light of recent news related to salmonella and potential produce contamination...”
- ”...In all cases, the first line of defense to reduce risk of contracting foodborne illness is to cook, clean, chill and separate,”



“Everybody's getting too
anal about it --
I mean, come on now, we're
dealing with living fruits and
vegetables”

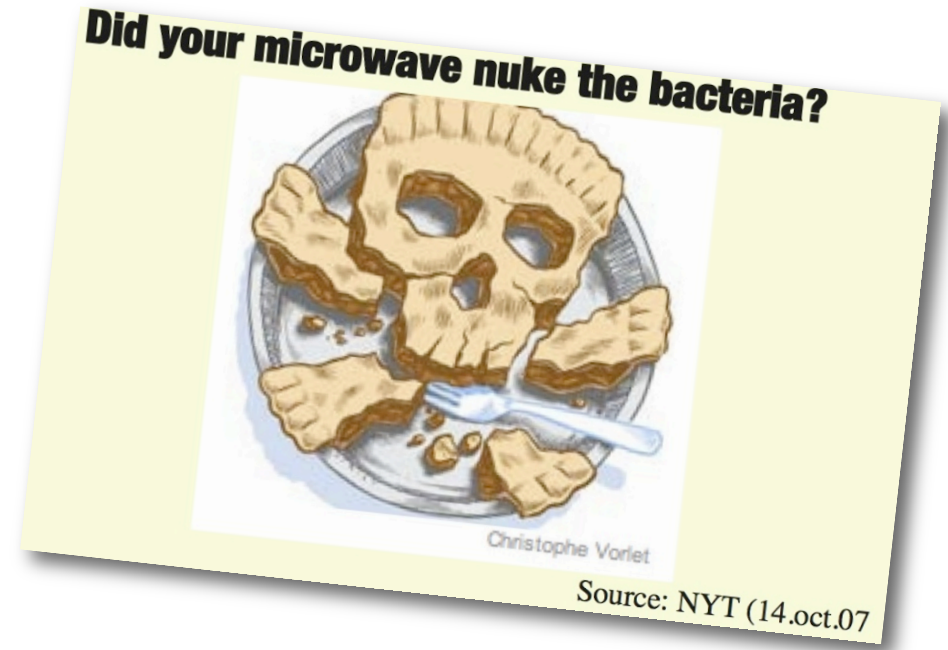
Salmonella Banquet pot pies, 2007

- Oct. 9 2007, warned of Salmonella contamination of single serving Banquet brand, and generic store brand, frozen pot pies produced by ConAgra Foods
- ConAgra said pot pies were safe if consumers followed cooking directions
- Oct. 10/07, 11 am, barfblog.com post showing poor quality of microwave instructions <http://barfblog.foodsafety.ksu.edu/blog/137867/07/10/10/cooking-frozen-pot-pie-microwave>



Salmonella Banquet pot pies, 2007

- pot pies did not reach an internal temperature sufficient to ensure microbial food safety
- Oct. 11/07, ConAgra announces voluntary recall of frozen pot pies
- Oct. 14/07, N.Y. Times article highlighting barfblog pot pie experiment
- 401 illnesses in 41 states eventually connected to the outbreak; 32% hospitalized

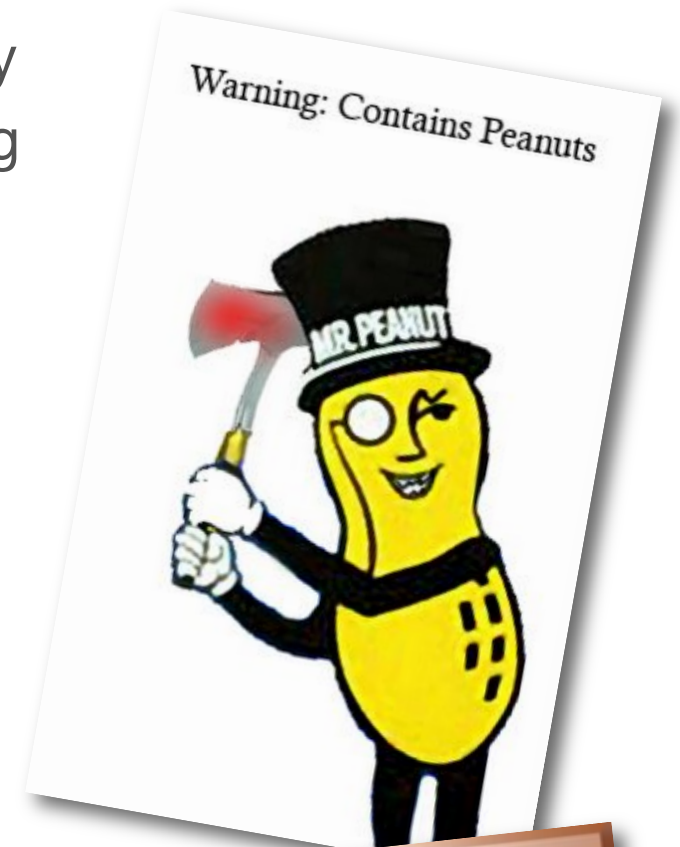


Peanut Corporation of America, 2009

- PCA supplied peanuts, peanut butter, peanut meal and peanut paste to food processors for use in cookies, snacks, ice cream and dog treats; to institutions such as hospitals, schools and nursing homes; and directly to consumers through discount retail outlets such as dollar stores
- Salmonella serotype Typhimurium outbreak sickened 691 people and killed 9 in 46 U.S. states and Canada
- over 3,900 peanut butter and other peanut-containing products from more than 350 companies recalled

Food safety culture at PCA

- former buyer recalled a filthy plant with a leaky roof and windows that were left open, allowing birds into the building
- company purchased only low quality, inexpensive peanuts and paid food handlers the minimum wage lawfully allowed
- FDA report identified instances in which product was retested until a *Salmoella*-negative result was achieved
- PCA also shipped product to customers despite positive test or before the test result was



Food safety culture at PCA

- inadequate controls to prevent contamination and insufficient cleaning and sanitation
- handwashing facilities sucked
- roasting temperature and belt speed had not been evaluated to ensure that the roasting step was sufficient to kill bacteria
- raw and roasted peanuts stored directly next to one another, allowing for potential contamination of the roasted finished product.
- PCA maintained the highest possible rating from AIB International



Would you buy from this business?



- Not sure of risks associated with their product
- Ingredient manufacturer
- Reportedly knowingly shipped contaminated products
- Received superior audit rating

Kellogg's

- Kellogg's hotline (800-962-1413) says: "If you would like to share comments regarding our relationship with Michael Phelps, please press 1...If you are calling about the recent peanut butter recall, please press 2."



Fat Duck norovirus, England, 2009

- run by celebrity chef and molecular gastrologist Heston Blumenthal
- voluntarily closed restaurant in Feb. 2009
- originally said it wasn't food, but an airborne virus
- UK Health Protection Agency reported in Sept. 2009, 529 patrons ill with norovirus in January and February 2009
- source was probably contaminated shellfish, including oysters that were served raw and razor clams that may not have been appropriately handled or cooked.



Fat Duck norovirus, England, 2009

- Fat Duck had delayed response to the incident, use of inappropriate environmental cleaning products, and staff working when ill; up to 16 of the restaurant's food handlers were reportedly working with norovirus symptoms before it was voluntarily closed
- *"I'm appalled because I was so entranced by Heston Blumenthal and he comes across as being very decent and clever. We had been so ill and, at the very least, we expected some kind of acknowledgment. We really thought they would be interested in what had happened to us"* (Freeman, 2009)
- Blumenthal apologized in Sept. 2009, but continued to blame others



Salmonella in DeCoster eggs, Iowa, 2010

- 1,608 confirmed cases of Salmonella linked to DeCoster eggs
- 550 million eggs recalled
- live mice were found inside laying houses at four sites, and numerous live and dead flies were observed in egg-laying houses at three locations
- chicken manure accumulated 4 -8 feet high underneath the cages at two locations, pushing out access doors, allowing open access for wildlife and other farm animals
- uncaged birds were using tall manure piles to access egg-laying areas



Salmonella in DeCoster eggs, Iowa, 2010

- inspectors saw employees not changing or not wearing protective clothing when moving from laying house to laying house
- three Hillandale Farms locations contained unsealed rodent holes with evidence of live rodents at one of the facilities, with gaps in walls and doors at other sites
- uncaged chickens were observed tracking manure into the caged hen areas
- AIB gave DeCoster egg operations “superior” rating and “recognition of achievement” in June 2010
- *“The contributions of third-party audits to food safety is the same as the contribution of mail-order diploma mills to education”*
(Mansour Samadpour)

What is safe food?



Food that doesn't make you barf





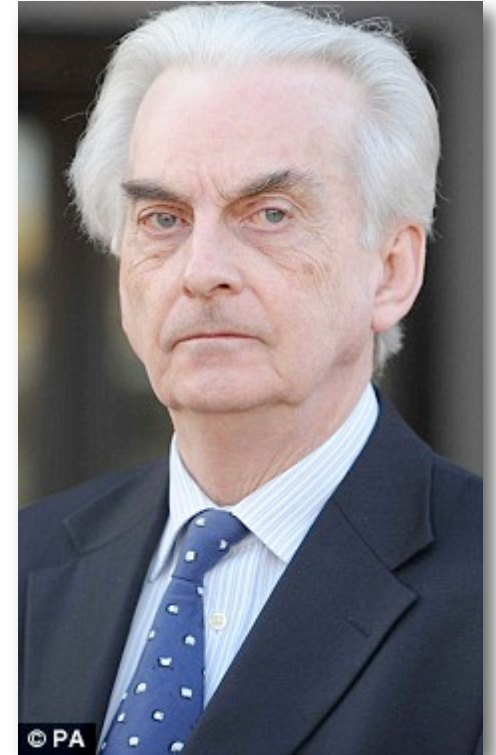
John Tudor & Son, Wales, 2005

- 157 school children sickened by E. coli O157:H7 in cooked meats in school lunches
- 31 hospitalized, 1 death
- packaging machine used by Tudor for both raw and cooked meats probable source of contamination



Pennington inquiry

- Tudor had significant disregard for food safety
- serious, repeated breaches of federal food safety regulations
- failures in cleaning and separation of raw and cooked meats
- falsified records
- HACCP plan poorly designed, inaccurate and misleading
- no food safety culture, money trumped safety



WHO factors contributing to foodborne illness

- Improper cooking procedures
- Temperature abuse during storage
- Lack of hygiene and sanitation by food handlers
- Cross-contamination between raw and ready-to-eat foods
- Foods from unsafe sources
 - All human factors, behavior based
 - WHO, 2002

Challenge: A broad range of foods can be contaminated

- 10 new food vehicles identified in multi-state outbreaks since 2006
- Bagged spinach
- Carrot juice
- Peanut butter
- Broccoli powder on a snack food
- Dog food
- Pot pies
- Canned chili sauce
- Hot peppers
- White pepper
- Raw cookie dough





“Anyone who tries to distinguish entertainment from education doesn't know the first thing about either”

Marshall McLuhan

Stick it in



Jessica Simpson who?



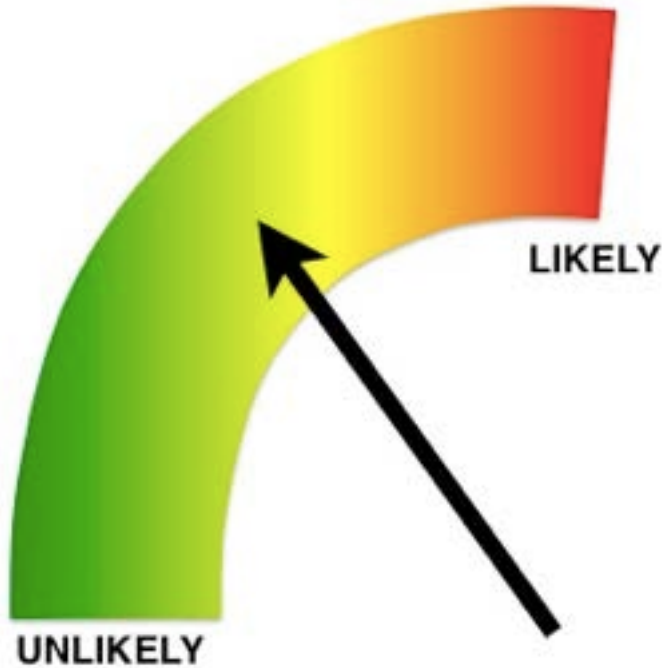
Safer food with smiley faces – Danish Food Safety Authorities



FOOD SAFETY

BARF-O-METER

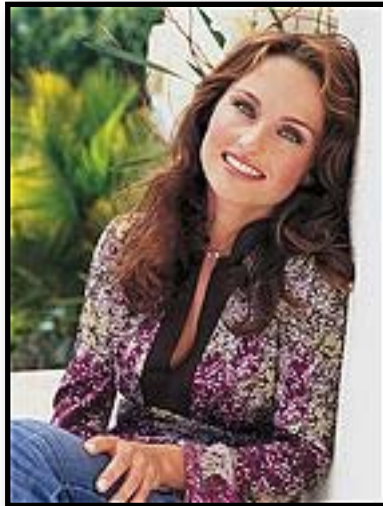
Likelihood of getting sick



Based on recent inspection



Spot the mistake – celebrity chefs



Eat Local: Movement stresses safety

- "Buying locally is much safer than just eating food that has been purchased en masse from god knows where."



Farmers markets and local foods



- Carnivore, herbivore, omnivore, locovore
- All at risk for foodborne illness
- Bacteria are blind to source, they don't care whether the product they live in is sold at a retail store or farmers market

Is porn industry more responsible than food industry?

- California's multibillion-dollar adult entertainment industry halted production after an actor tested positive for HIV
- food industry blames the consumer
 - cook pot pies
 - cook hamburger
 - cook eggs
- equivalent would be porn industry saying, use a condom





Lessons learned?

- Food safety begins on the farm
- Biological systems, not conspiracies
- Systems are only as good as the weakest link
- Stop blaming consumers

Third-party audits

“The contributions of third-party audits to food safety is the same as the contribution of mail-order diploma mills to education. ... I have not seen a single company that has had an outbreak or recall that didn't have a series of audits with really high scores.”

– *Mansour Samadpour, president, IEH Laboratories, Seattle*

Third-party audits

“No one should rely on third-party audits to ensure food safety.”


– Will Daniels, food safety, Earthbound Farm

“There is no scientific basis for certification/validation in audits” and audits often are not “transparent enough for the scientific community to survey and critically analyze what they are actually measuring”

– Robert Buchanan, director of the Center for Food Systems Safety & Security at the University of Maryland

Improving audits and inspection

- More companies evaluating risks of suppliers themselves
- More companies evaluating own practices internally, at arms length
- An auditor industry that polices itself better
- Auditors with better risk identification
- Companies using audit results
- Adopting new technologies such as social media, infosheets, video observation
- Combat indifference

The background of the slide is a photograph of a bright sun rising over a blue ocean. The sun is positioned in the upper left quadrant, creating a lens flare effect. The sky is a deep blue, and the water is a lighter blue with white-capped waves. The overall scene is serene and bright.

The Alternative to HACCP: Faith-Based Food Safety

“We’ve always done it this way and we’ve never hurt anyone before...”



Food safety culture

- A set of shared values within an organization
- “Dude, wash your hands”
- A new area of study/emphasis



Background communication



- “If you think the 10 commandments being posted in a school is going to change behavior of children, then you think “Employees Must Wash Hands” is keeping the piss out of your happy meals. It's not.”
- Source: Jon Stewart, Saturday Night Live monologue, 2002

Cultural factors influencing food safety performance

- leadership
- food safety management systems and style
- commitment to food safety
- food safety environment
- risk perception
- communication

Griffith, Livesey & Clayton (2010)



A food safety culture program

Develop tools
Designed to address target audience needs

Getting dirty
Reality-based research

Evaluation
Did our efforts work?



Risk assessment and microbial modeling

Behavior



What to do?

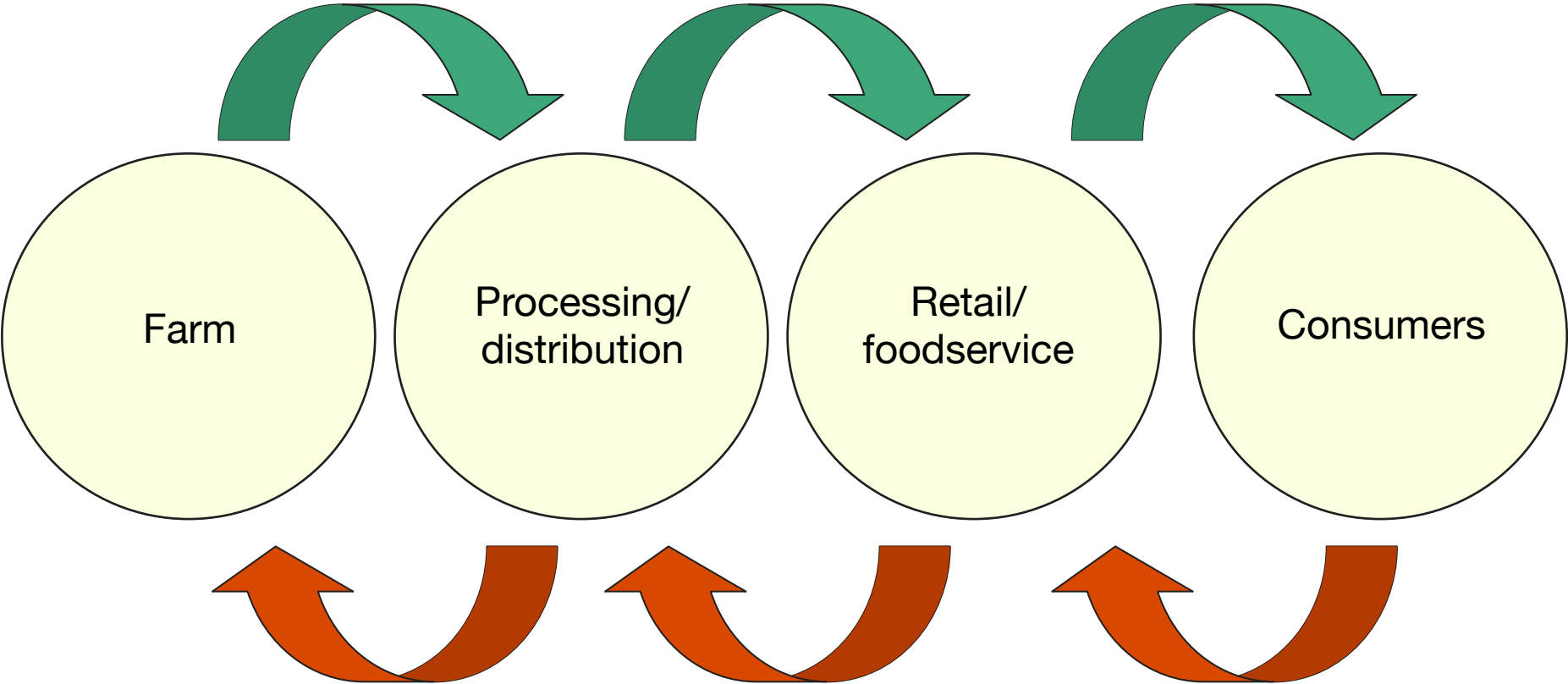


- Try not to make people sick
- Create a culture of food safety in your organization
- Embrace evidence-based microbiologically safe food
- Market it (and back it up)
- Be the bug

Marketing food safety

- Source food from safe sources
- Public disclosure of food safety inspection results
- Mandatory food handler certification
- Rapid, relevant, reliable and repeated information
- Compel rather than educate

Marketing food safety culture



Customer feedback

Food safety leaders do more than follow perceptions



Leaders create perceptions

Information must be:

- Rapid
- Reliable
- Relevant
- Repeated

4 C's of Food Safety

- Complex
- Constant
- Commitment
- Compelling

The screenshot shows a web browser displaying a blog post. At the top is the barfblog logo with the tagline 'safe food from farm to fork'. Below the logo is a navigation bar with links for 'Home', 'Categories', 'Infosheets', and 'About Us', along with a search box. The article is dated 'August 19, 2012' by user 'dpowell29'. The title of the article is 'Calif. lettuce positive for E. coli O157:H7 in Canada'. The text of the article includes a warning from the Canadian Food Inspection Agency, details about the affected Tanimura & Antle brand Romaine Lettuce (UPC 27918), and a list of provinces where the product was distributed. At the bottom of the article are two photographs: one of the lettuce packaging and another showing the back of the package with a QR code and website information. A 'Follow' button is visible in the bottom right corner of the article frame.

barfblog
safe food from farm to fork

Home Categories Infosheets About Us

Posted on August 19, 2012 by dpowell29

← Previous Next →

Calif. lettuce positive for E. coli O157:H7 in Canada

Canadians are being warned by the [Canadian Food Inspection Agency](#) not to eat [Tanimura & Antle](#) brand Romaine Lettuce from Salinas, Calif. because it may be contaminated with E. coli O157:H7.

The affected product, Tanimura & Antle brand Romaine Lettuce, produce of USA, is sold in a plastic package containing 1 head of lettuce. The package bears the UPC0 27918. The affected product was sold at retail from August 8, 2012 through August 17, 2012.

This product has been distributed in Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Nunavut and Yukon.

There have been no reported illnesses associated with the consumption of this product.

Follow