



# Food safety and audits

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bites.ksu.edu

barfblog.com



<http://barfblog.foodsafety.ksu.edu/2007/10/articles/culture-of-food-safety/its-undercooked-or-is-it/>

# 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.”

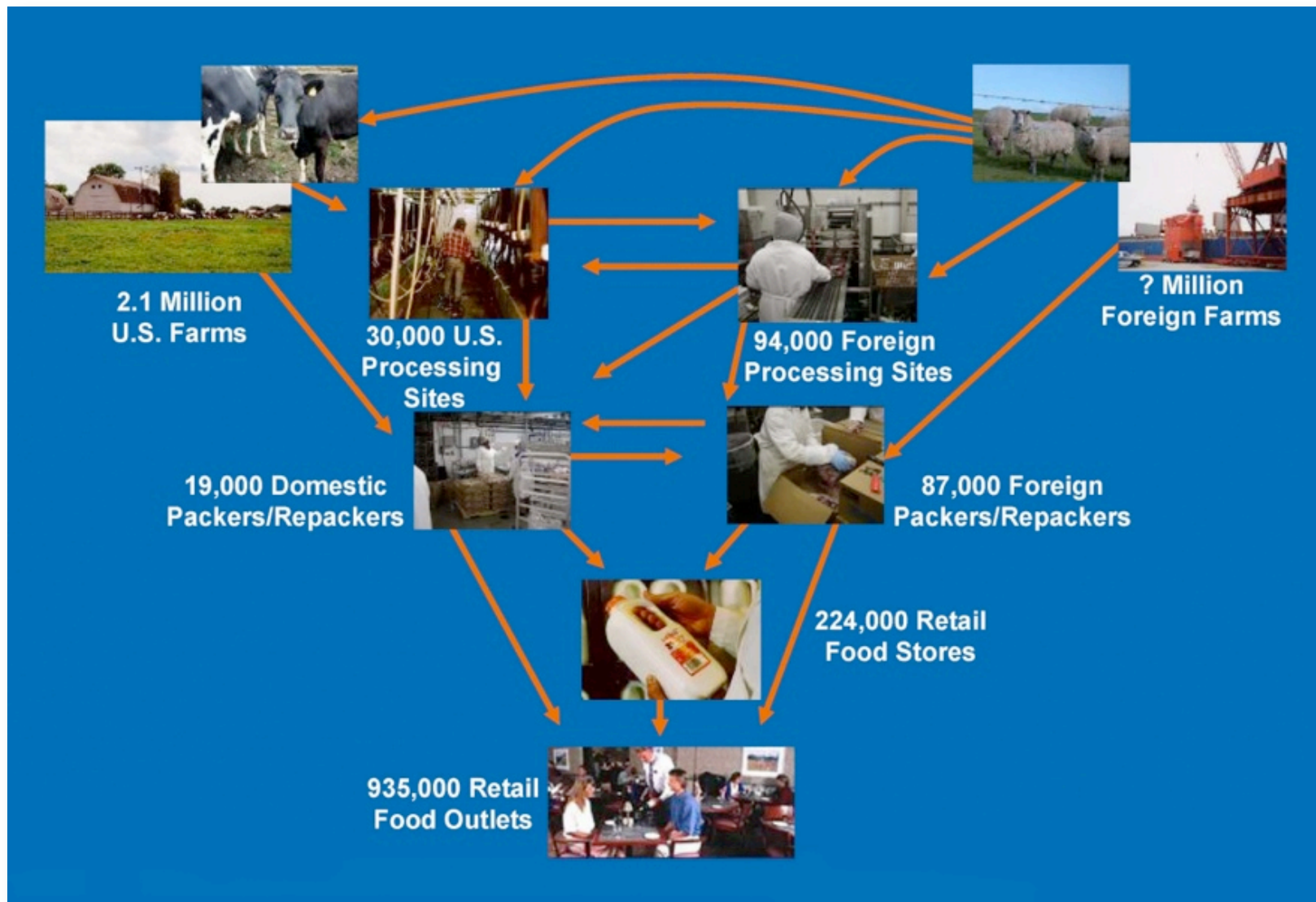
– *Mansour Samadpour, president, IEH Laboratories, Seattle*

# Third-party audits

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

*– Will Daniels, food safety, Earthbound Farm*

# Structure of the United States food industry



# Food safety mess

- Third-party audit Ponzi scheme
- Marketing hucksterism instead of food safety
- Blaming consumers
  - Safest food in the world
  - Foodborne illness happens at home



# Once in a Lifetime

*Letting the days go by/let the water hold  
me down*

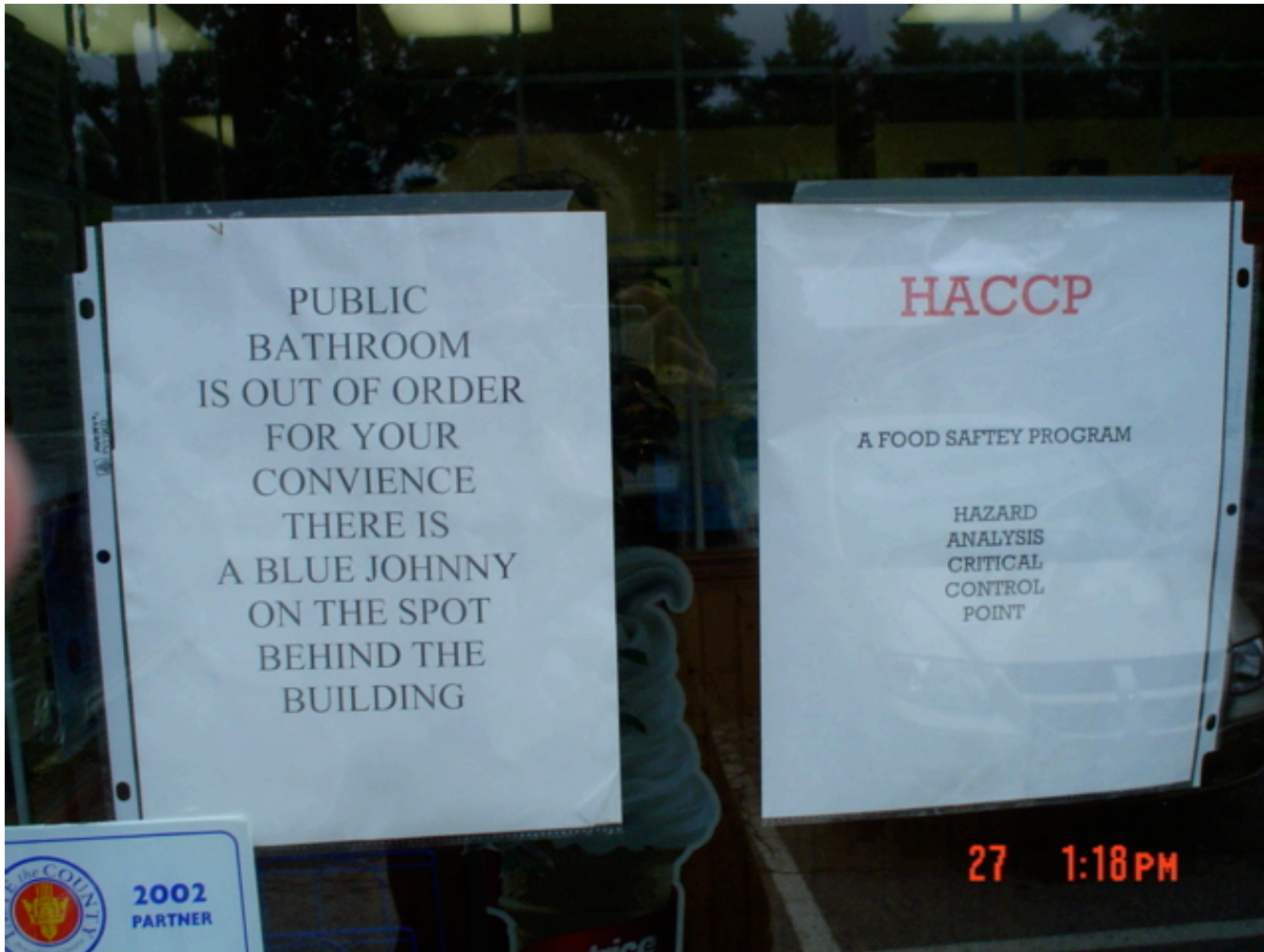
*Letting the days go by/water flowing  
underground*

*Into the blue again/after the moneys gone*

*Once in a lifetime/water flowing  
underground*

*And you may ask yourself  
Am I right? ...am I wrong?  
And you may tell yourself  
My god!...what have I done?*

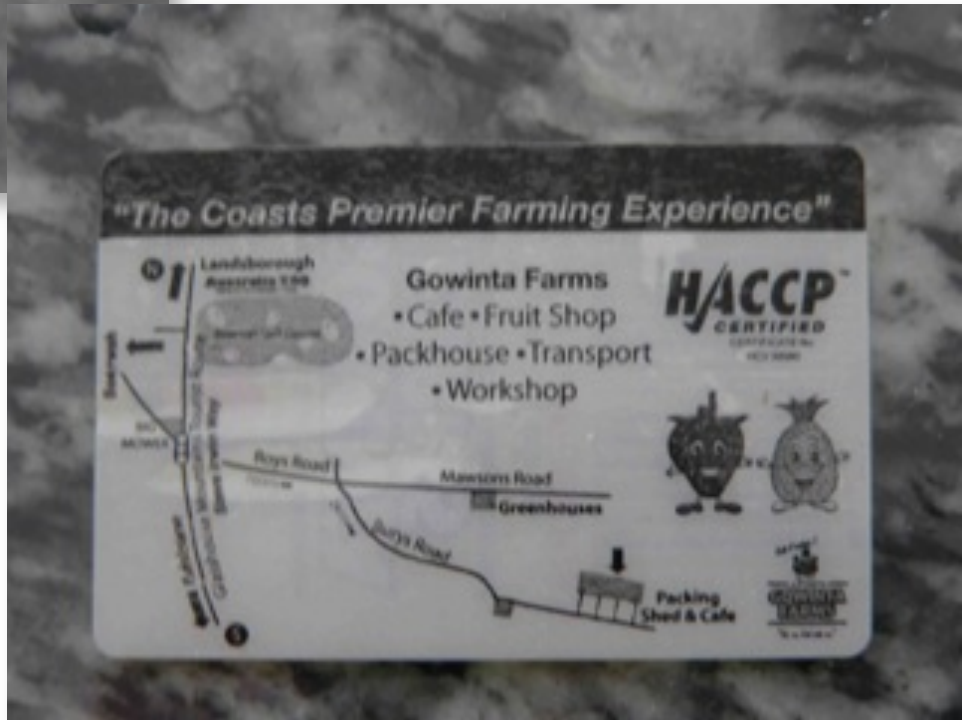














# *E. coli* O157 outbreak on strawberries in Oregon

- 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, Odwalla juice, 1996

- 64 sick, 16-month-old died from E. coli O157:H7 in fresh Odwalla juice
- numerous juices with unpasteurized apple cider base
- good risk communication, lousy risk management
- US Army had rejected Odwalla as a supplier in Jan. 1996
- unpasteurized juices were not routinely tested for E. coli because industry experts agreed that the acid level in the apple juice was sufficient to kill the pathogen; this was either gross negligence or a lie
- moved to flash pasteurization of all juices







DEPARTMENT OF THE ARMY  
HEADQUARTERS, UNITED STATES ARMY VETERINARY COMMAND  
2050 WORTH ROAD  
FORT SAM HOUSTON, TEXAS 78234-6000

REPLY TO  
ATTENTION OF

August 6, 1996

Approved Sources  
Division

Odwalla  
1900 Davis Drive  
Dinuba, California 93618

Gentlemen:

We received the report of the June 6, 1996,  
initial sanitary inspection of your establishment.

We reviewed the deficiencies noted in the report,  
which our inspector discussed with you at the time of  
the inspection. As a result, we determined that your  
plant sanitation program does not adequately assure  
product wholesomeness for military consumers. This  
lack of assurance prevents approval of your  
establishment as a source of supply for the Armed  
Forces at this time.

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Approved Sources Division



From: C B  
To: SK , FJB  
Date: 9/2/96 11:30am  
Subject: BSK Testing -Reply -Reply -Reply

It is not the vendors criteria I am concerned about. It is Odwalla's...why are we doing it, why now, what do we waNT TO PROVE...IF THE DATA is bad, what do we do about it. Once you create a body of data, it is subpoenaable...you should look at this as though the Fresno Bee has looked into the results and asked a lot of questions. This should be done in advance so you know what you are in for if you don't like the data. I'm not saying no, I'm just saying that you want everyone in Dinuba on board.

>>> S K 08/31/96 02:13pm >>>

The day I talked to R I asked him for a list of Criteria for the test, the purpose of the different samples and his concerns for taking these samples. I should have that list on Monday and I can give you a copy. I can delay testing if you would like time to look the criteria over.

>>> C B 08/31/96 12:13am >>>

It is not the vendors criteria I am concerned about. It is Odwalla's...why are we doing it, why now, what do we waNT TO PROVE...IF THE DATA is bad, what do we do about it. Once you create a body of data, it is subpoenaable...you should look at this as though the Fresno Bee has looked into the results and asked a lot of questions. This should be done in advance so you know what you are in for if you don't like the data. I'm not saying no, I'm just saying that you want everyone in Dinuba on board.





# 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





# Spinach outbreak

200 people, 26 states, 3 dead



# E. coli O157:H7 spinach, U.S., 2006

- 102 (51%) were hospitalized and 31 (16%) developed hemolytic-uremic syndrome
- samples of river water, wild pig feces, and cattle feces tested positive for the outbreak strain of E. coli O157:H7, and infected feces of nearby grass-fed cattle were found on one of the four fields where the contaminated spinach was grown, under organic production standards, in Salinas Valley
- despite 29 previous leafy green outbreaks, this was the tipping point



# E. coli O157:H7 spinach, U.S., 2006

- *“While our food safety systems have always been at the top of the industry, this outbreak has demonstrated the immediate need for improved industry protocols”*
- no verification that farmers and others in the farm-to-fork food safety system were seriously adapting to the messages about risk and the numbers of sick people, and then translating such information into behavioral changes that enhanced front-line food safety practices



# 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





# *Salmonella in Veggie Booty snack*

- June 2007 recall announced
- 52 people sick, four hospitalized, 17 states beginning in March
- Mostly children under 10 years old
- July 2007, FDA found Salmonella Wandsworth in the snacks
- Preliminary investigations suggested seasoning mix might have been the actual source of contamination



# *Salmonella in Veggie Booty snack*

- Company said seasoning ingredients came from China
- 69 people eventually sickened in 23 states
- Plant that made Veggie Booty scored ‘excellent’ from the American Institute of Baking
- Audit did not extend to ingredient suppliers





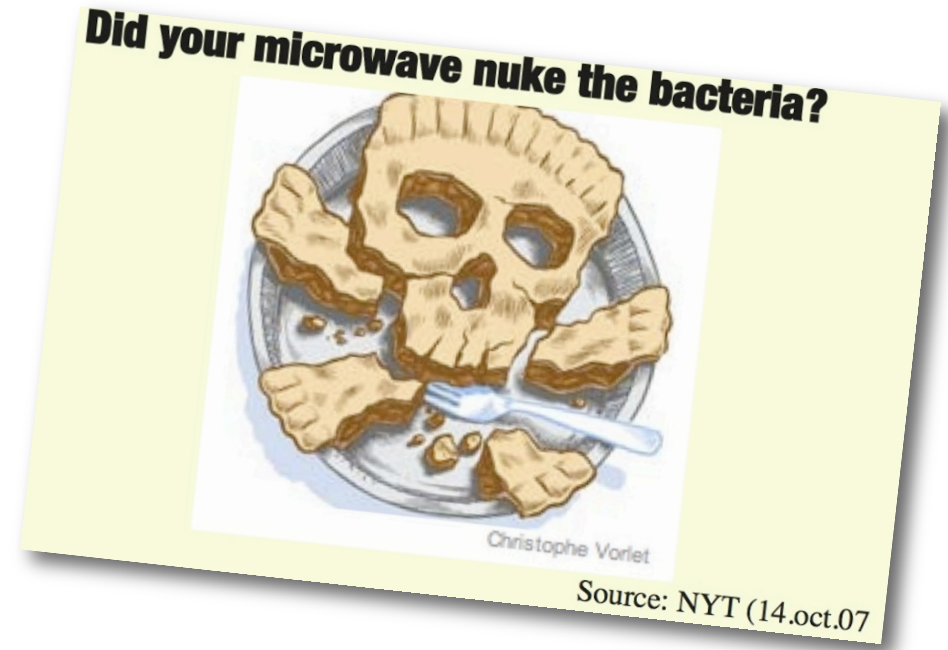
# Salmonella Banquet pot pies, 2007

- 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](http://barfblog.com) post showing poor quality of microwave instructions <http://barfblog.foodsafety.ksu.edu/blog/137867/07/10/10/cooking-frozen-pot-pie-microwave>



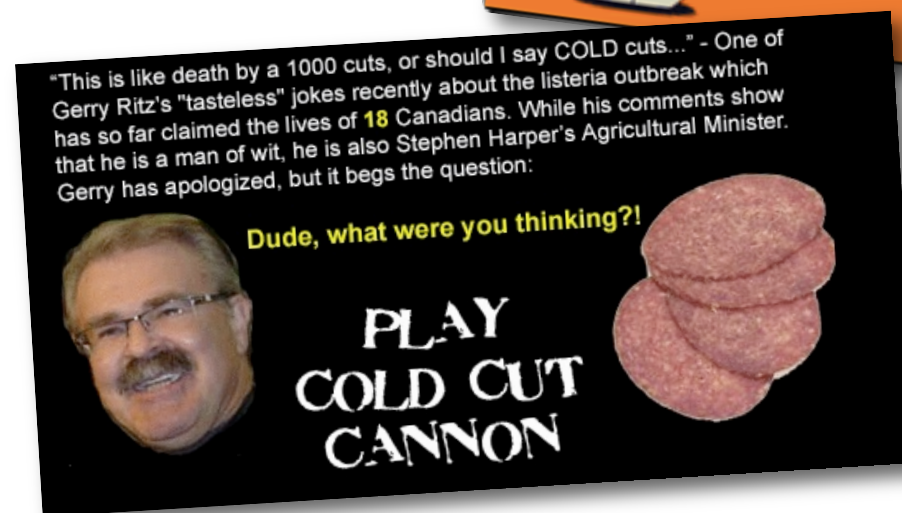
# Salmonella Banquet pot pies, 2007

- 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



# 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 nosestretcher alert:

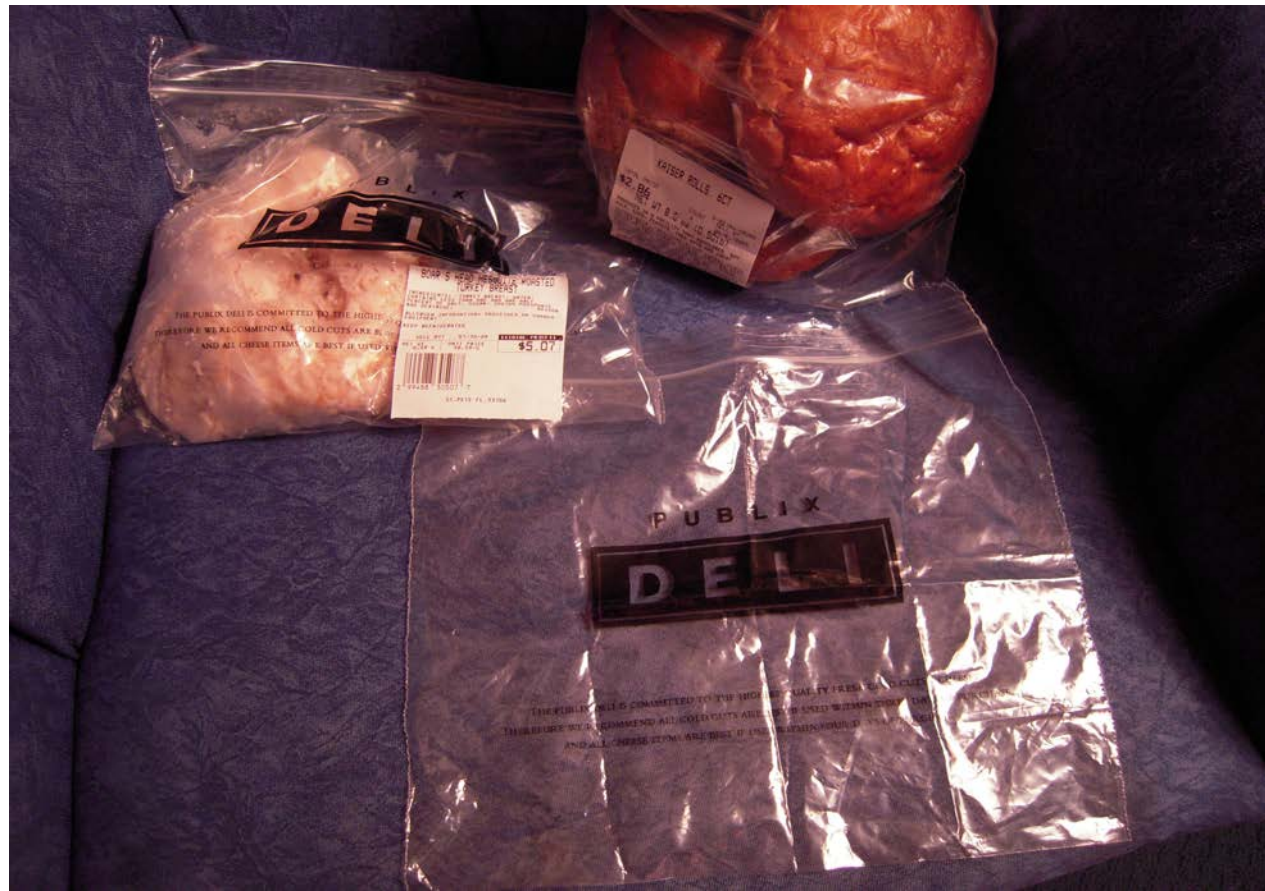
## Leading Toronto hospital says cold cuts, raw fish, OK for expectant mothers

- 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”*

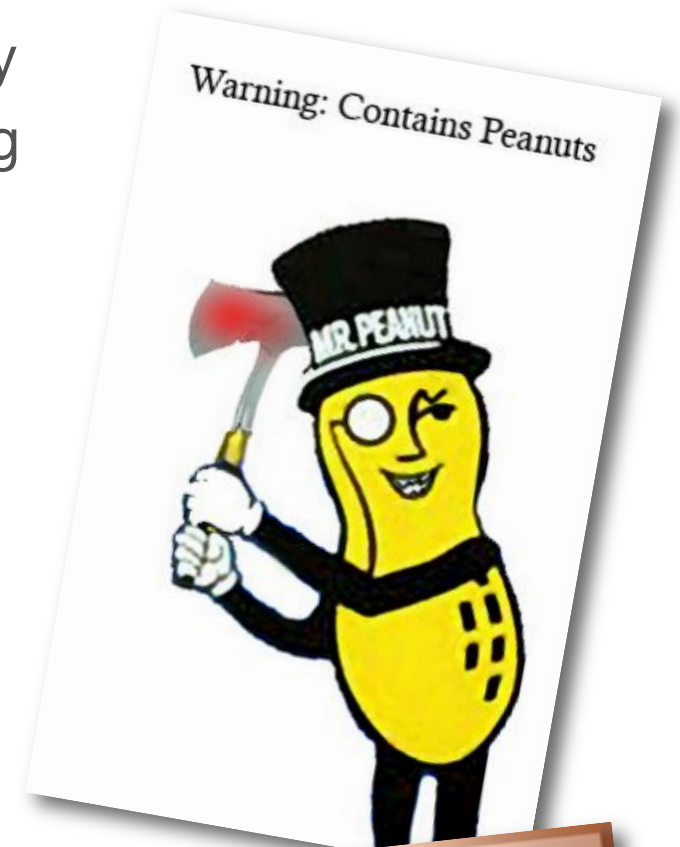


# Peanut Corporation of America, 2009

- 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



# 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."



# 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

# What do you know about your suppliers?

- What are the risks associated with the product you are buying?
- How do you know they are managing them?
- What do you require from them?
  - 3rd party audits?
  - Why? What do you take from them?

# 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)

# 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



# 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 walnuts, Canada

- “Consumers who have raw shelled walnuts in their home can reduce the risk of E. coli infection by roasting the walnuts prior to eating them. Consumers should place the nuts on a cooking sheet and bake at 350°F for 10 minutes, turning the nuts over once after five minutes.”
- April 7/11, Quebec confirms death of one person linked to the walnuts and a spokethingy said, "The Canadian Food Inspection Agency has serious doubts as to whether the infections are related to walnuts, but it's the most probable source.”



# E. coli O157:H7 in walnuts, Canada

PHAC says:

*“If you have these products in your home, don’t consume them.”*

*And*

*“Until further notice, consumers who have raw shelled walnuts in their home can reduce the risk of E. coli infection by roasting the walnuts prior to eating them. Consumers should place the nuts on a cooking sheet and bake at 350°F for 10 minutes, turning the nuts over once after five minutes. Wash your hands and cooking utensils thoroughly after handling the walnuts.”*

Consumers not CCP for walnuts sitting in a jar at home.

<http://www.barfblog.com/blog/147661/11/04/08/oopy-nuts-update-public-health-hopeless-straight-talk>

# *E. coli* O104:H4 in Germany

- 53 deaths
- 4,321 illnesses
- 852 cases of HUS

abc NEWS / Health

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## Europeans Trade Blame Over E.coli Outbreak



A farmer holds cucumbers in a field in Malaga, southern Spain, May 27, 2011. (Jorge Guerrero/AFP/Getty Images)

- Alfalfa sprouts grown in Illinois sickened at least 112 people in 18 states with salmonella since Nov. 2010, and many of those sick ate the sprouts on Jimmy John's sandwiches
- On Jan. 3, 2011, in a separate outbreak, health officials fingered clover sprouts produced by Sprouters Northwest, Inc. of Kent, Wash. as the source of a salmonella outbreak that sickened three in Oregon and four in Washington; the vehicle in at least some of the illnesses was Jimmy John's sandwiches with sprouts.
- In mid-Jan. 2011, John Liautaud, the owner of the Jimmy John's sandwich shop chain, said his restaurants will be replacing alfalfa sprouts with allegedly easier-cleaned clover sprouts, effective immediately.



- U.S. Food and Drug Administration inspected the Sprouter's Northwest facility and found:
  - Failure to take necessary precautions to protect against contamination of food and food contact surfaces with microorganisms and foreign substances;
  - Failure to clean food-contact surfaces as frequently as necessary to protect against contamination of food;
  - Failure to clean non-food-contact surfaces of equipment as frequently as necessary to protect against contamination;
  - Effective measures not being taken to protect against contamination of food on the premises by pests;



- Failure to properly store equipment, remove litter and waste, and cut weeds or grass that may constitute an attractant, breeding place or harborage area for pests, within the immediate vicinity of the plant, building, or structures;
- Failure to maintain buildings, fixtures, or other physical structures in a sanitary condition;
- Failure to hold raw materials in bulk or suitable containers so as to protect against contamination; and,
- Failure to maintain buildings and physical facilities in repair sufficient to prevent food from becoming adulterated.



The original table of North American raw sprout-related outbreaks is available at <http://bites.ksu.edu/sprout-associated-outbreaks-north-america>.

**YOUR SANDWICH MADE  
BY A **HEALTHY** JIMMY  
JOHN'S WORKER**



**YOUR SANDWICH MADE  
BY A **SICK** JIMMY  
JOHN'S WORKER**



**CAN'T TELL THE DIFFERENCE?**  
**THAT'S TOO BAD BECAUSE JIMMY JOHN'S WORKERS DON'T  
GET PAID SICK DAYS. SHOOT, WE CAN'T EVEN CALL IN SICK.**  
WE HOPE YOUR IMMUNE SYSTEM IS READY BECAUSE YOU'RE ABOUT TO TAKE THE SANDWICH TEST...

**HELP JIMMY JOHN'S WORKERS WIN SICK DAYS**  
CALL THE OWNER ROB MULLIGAN AT  TO LET HIM KNOW YOU WANT  
HEALTHY WORKERS MAKING YOUR SANDWICH!

# Measuring behavior indicators

- **Inspections and training most often used**
  - Not good indicators Cruz et al., 2001; Jones et al., 2004; Yiannas 2009
- **Violations of temperature control most strongly associated with outbreaks**
  - Irwin et al., 1989
  - Or just easiest to inspect for (resulting in more violations recorded?)





# 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)*





# Performance indicator (food safety culture) data

- Inspection results
- Audit results
- Microbiological results
- Self-audits
- Staff knowledge
- Self-reported practices
- Behavior

# Know the risks

- What products do you serve have been historically linked to foodborne illness outbreaks?
- Know what factors led to the illnesses



# On-farm food safety model

- Look at the literature on risks (easy)
- Develop guidelines to be followed (easy)
- Implement (hard)
  - Food safety culture
  - Aides are important here
- Measure and evaluate implementation (hard)
  - Needs to go beyond just auditing/certification

# Another model

- Restaurant inspection
  - Expensive (but society pays for it)
  - Standards are set, and sometimes revisited
  - Not predictive (Jones et al., 2004; Cruz et al., 2001)
  - Some locations it is strictly enforcement, some it is coaching
  - A snapshot
  - Transparent?
- Welsh study showed that “confidence in operator” was correlated to microbial hazards
  - Griffith, 2007

# Change in philosophy

- Hire own field staff to implement and verify programs
- Promote a competitive advantage for being able to prove risk reduction
- Communicate this all to the public through various means
- Market food safety



# External and internal

- Demonstrate to their staff **and** customers that:
  - they are aware of current food safety issues
  - learn from others' mistakes
  - food safety is important within the organization

# 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

# What to do?

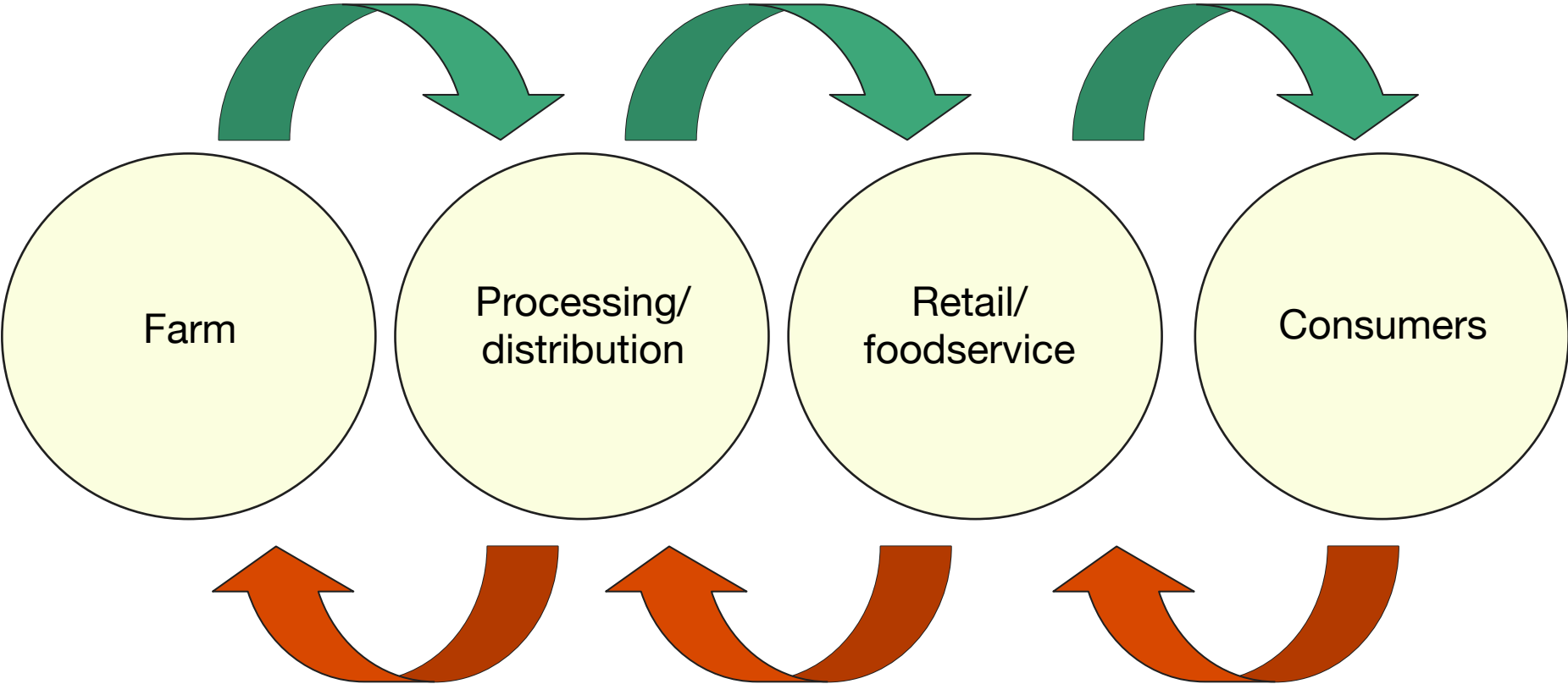


- Try not to make people sick
- Create a culture of food safety in your organization
- Embrace evidence-based microbiologically safe food
- Market it (and back it up)
- Be the bug

# 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



Farm

Processing/  
distribution

Retail/  
foodservice

Consumers

Customer feedback



# Australian supermarkets racing to the hormone-free gutter

**COLES Beef**  
**NO ADDED HORMONES**  
*More Tender*

## **NO BULL**

Beef that's free from Hormone Growth Promoters (HGP) is scientifically proven to be more tender.

**That's no bull.**  
Because when we say quality food costs less at Coles, we mean it.

Quality food costs less at **coles**

Beef that's free from Hormone Growth Promoters (HGP) is scientifically proven to be more tender. For more information, visit [coles.com.au/beef](#)

# Information must be:

- Rapid
- Reliable
- Relevant
- Repeated

# 4 C's of Food Safety

- Complex
- Constant
- Commitment
- Compelling

Latest Update: 05/12/09, 07:43 PM



## US: New study: Keep kids with diarrhea out of pool - Swim diapers not best solution

COLORADO SPRINGS, Colo. -- A new scientific study demonstrates that swim diapers will not prevent the spread of the most common cause of documented recreational water illness (RWI), *Cryptosporidium* (Crypto).

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- MANITOBA: Couple finds baby rodent in food court stir-fry
- SASKATCHEWAN restaurant inspection reports available online
- SOUTH CAROLINA: Researchers study the human factor in spread of pandemic illness
- US: FDA takes issue with Cheerios health claims
- Two glasses of wine a day helps to reduce quantity of fat in liver
- TEXAS: Food service inspections
- Interlaboratory validation of a real-time PCR 24-hour rapid method for detection of Salmonella in foods
- Prevalence and antimicrobial resistance patterns of Salmonella from different raw foods in Mexico
- Quantitative risk assessment for Listeria monocytogenes in selected categories of deli meats: Impact of lactate and diacetate on Listeriosis cases and deaths
- PENNSYLVANIA: 3 stricken with crypto in Abington
- US: Hoping to make food safer, states decide to go it alone
- Put up your dukes: Fighting disease with soap and water
- UK: Takeaway boss escapes prison sentence

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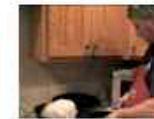
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flashdance stripper pig



dude, wash your hands



Thanksgiving Turkey

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Posted 04/29/09 by Doug Powell



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Posted 04/27/09 by Doug Powell

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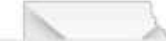
Hepatitis A in staff member at Littleton, CO grocery store

Posted April 22nd, 2009 - 9:24am

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