

Foodborne Terrorism

How Will We Know It When We See It ?



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Why Bioterrorism?

Top 10 Reasons

Why Food ?

Industry Concentration

- 84% of US cattle in southwest
- 78% of chickens in SE Atlantic region
- Cattle feedlots hold 300,000 head
- 78% of US beef stock through 2% of feedlots
- 10,000 hogs and 100,000 birds together

Huge Impact

- 170,000 *S. typhimurium* from contaminated pasteurized milk, US, 1985
- 300,000 hepatitis A, clams, China, 1991
- 224,000 *S. enteritidis*, ice cream in contaminated truck, US, 1994
- 8000 *E. coli* O157:H7, radish sprouts in school lunches, Japan, 1996
- 25,000,000 lb ground beef recall, 1997

Rapid Impact

- Taiwan- March 1997
- 2 suspect cases of FMD reported
- Within 2 weeks:
 - 1300 pig farms in 15 prefectures
- Within 1 week:
 - Swine prices dropped 60%
 - \$6.9 B lost
 - 50,000 people unemployed

Impact of Chemicals

- 800 deaths, 20,000 ill, toxic cooking oil, Spain, 1981
- 1373 ill from watermelon with aldicarb, USA, 1985

International Impact

- *Staphylococcus*, mushrooms canned in China, 1989
- *Cyclospora* from Guatemalan raspberries 1996-97
- *Salmonella* in mangos from Mexico, 1999
- Cholera, frozen coconut milk from Thailand, 1991
- *Shigella* and *E. coli* in parsley from Mexico, 1998
- *Salmonella* from Mexican cantaloupe, 2000

Costs of Ag Outbreaks

- Foot-and-mouth disease, Britain, 2001
 - \$20 billion
- Avian flu, Hong Kong, 2001
 - > \$10 million
- Mad cow disease, Britain, 1988
 - \$6.3 billion
- Exotic Newcastle disease, CA, 1971
 - \$56 million

Agricultural BW

- WWI- Germany, anthrax and glanders
- WWII- Germany, FMD and potato beetles
- Japanese disseminated infected wheat millet, contaminated cotton, anthrax, glanders
- Iraq- wheat stem rust and camel pox

Agricultural BW

- 1937- Britain stockpiled 5m anthrax laced cattle cakes
- 1951-1969- US carried out 31 anti-crop tests, stored 5000 kg anti-plant agents
- Former Soviet Union experimented with FMD, rinderpest, ornithosis, multiple plant pathogens

Non-State Terrorists

- 1978- Israeli citrus contaminated with mercury
- 1985- Sri Lankan tea threatened with cyanide
- 1989- Chilean grapes with cyanide
- 1989- "Breeders" claim to release Med fruit fly in CA

NATIONAL

Church shooting and arsenic poisoning linked

BY KEVIN WACK
Associated Press Writer

CARROLL, Miss. — Investigators have information linking a farmer who died from a gunshot wound to the arsenic poisoning in a nearby church that killed a man and sickened more than a dozen parishioners, authorities said Saturday.

The death of Donald Bondeson, 63, was reported to emergency officials as a self-inflicted wound, but investigators were awaiting autopsy results before announcing the cause of death, said Col. Michael Sperry, head of the Hattiesburg Police.

He declined to say if a note had been found at Bondeson's farmhouse, which was being searched Saturday.

Sperry said the investigation was still open, but the shooting provided some significant information to guide us.

"We're looking into notes. We have developed information in the last 24 hours to indicate what that note may be," he said.

Fifteen people were hospitalized and the 76-year-old caretaker of Central Adolph Lutheran Church in New Sweden died after drinking arsenic-laced coffee at a church reception last Sunday. Two of the victims were still in critical condition Saturday.

Bondeson, a farmer and longtime member of the church, was found with a gunshot injury at his home in Woodland on Friday and died hours later at a hospital.

He didn't attend the church service Saturday, and none of his family members

became ill, Sperry said. But Sperry declined to comment on whether Bondeson had attended a church bake sale the day before.

Sperry spoke, a half-dozen law enforcement officers were conducting a search warrant on Bondeson's farm.

Sperry said there were two focuses of the search: to determine whether the gunshot wound was self-inflicted or if someone else was involved in the shooting, and to determine if there was evidence linking Bondeson and the poisoning.



The Dalles, OR 1984



- 751 people
- Salmonellosis
- Associated with salad bars
- Extensive investigation

Intentional Contamination

- Identified over one year later
- Aum Shinrikyo cult
- Informant
- To influence election
- Published in 1997

Texas, 1996

- Pastries left anonymously
- Hospital laboratory break room
- 13 cases of severe diarrhea
- *Shigella*

Shigellosis, 1996

- Identified as laboratory strain
- Angry co-worker
- 20-year sentence

Threats

- 1997, disgruntled employee, beverage bottling plant
- 1998, terrorist group to contaminate meat with biologic agent
- 1999, milk allegedly contaminated with biological agent

Threats to Use CW

- 1984- Animal Liberation Front in UK claims to contaminate Mars candy with rat poison to protest research with monkeys. Found to be hoax.
- 1991- ALF threatens to contaminate popular drink “Lucozade”. No contaminated bottles found.
- 1992- Animal Rights Militia claims to inject liquid cleaner in “Cold Buster” bars in Canada. Determined to be hoax.

Response to the Threat

Problem? Just Call...

Open-faced meat sandwich producers are inspected daily by the USDA. If it's closed face, they're inspected by the FDA once every 5 years...

If it's beef broth it's regulated by the FDA, and if it's chicken broth it's the USDA, unless they're dehydrated, in which case it's the opposite...

Food Safety Oversight

- 14 separate federal entities
- Administer >35 separate food safety laws
- 28 congressional committees involved
- >70 MOUs to sort it all out...

WHO	JECFA	SALMSURV	GSFS
FAO	JMPR	IHR	GAO
PPS	JEMRA	CDC	RCED
APHD	OIE	BPRO	DOJ
WHA	IPCS	FoodNet	FBI
UNEP	INTOX	NARMS	OCI
IUFOST	GEMS	HACCP	FERRET
IUPAC	IAEA	FDA	OIG
WMO	OCHA	USDA	ARS
OECD	GPHIN	FSIS	OEP

***The Deputy Assistant to the Assistant Deputy Administrator for District Enforcement Operations agreed with this report...**

Who Is Responsible ?

- 68% thought food manufacturers ultimately responsible

40% of consumers thought food suppliers, retailers and the government had the greatest responsibility to ensure that food eaten at home was safe

-Redmond, JFP, 2003

Foodborne Disease

Public Health Response

- Surveillance
- Laboratory diagnosis
- Epidemiologic investigation
- Traceback / recall

Surveillance

- Data reported at state level
- Traditionally “passive”
- Relies on laboratories
- Not very timely

Surveillance

- “Notifiable Diseases”
- Outbreaks
- Legal and psychological barriers

Surveillance, 2003 Style

- “Active” surveillance
 - FoodNet
- Electronic laboratory reporting
- PulseNet
- Syndromic surveillance

Notifiable Disease Surveillance

- Lab-based reporting through states
- Isolates sent to PH labs
- Periodic analysis for trends
- Incomplete and slow

SODA

- Salmonella outbreak detection algorithm
- All human isolates in US subtyped
- Computer algorithm to detect unusual clusters
- Increase rates over expected are investigated
- Several large outbreaks have been detected

PulseNet

- Public health and veterinary labs
- “Molecular fingerprinting”
- Electronic networking of labs
- Clusters frequently investigated

FoodNet

- Part of CDC Emerging Infections Program
- Population-based active surveillance
- 10 sites, 13% of US population
- More timely and complete

Communications

- Public health
- Regulatory agencies
- Law enforcement
- Emergency response
- Medical infrastructure
- Industry
- Public / media

Surveillance Goals

- Real-time data sharing
- Integration with veterinary data
- Improved linkage to other systems
 - Government
 - Coroners
 - Absenteeism
 - Industries

Here's where you find out if you and other sick people ate the same foods...
Welcome to the RUsick2 Food Poisoning Forum



Sorry that you're sick! Maybe it's something you ate?

Epidemiologic Investigation

- Objectives same whether unintentional or covert
 - Identify causative agent
 - Vehicle
 - Manner of contamination
 - Facilitate treatment
 - Remove product from circulation

Epidemiologic Investigation

- Case finding
- Evaluate exposure data
- Case-control studies
- Collect samples
- Coordinate with law enforcement, regulatory authorities and medical

Reported Outbreaks

- Only 32% have a known etiology
- Only half have an identified vehicle

Clues to Bioterrorism

- Rare or novel disease
- Non-endemic area
- Out of season
- Unusual drug resistance
- Unusual epidemiologic features
- Unusual clinical presentation

Recognition of An Attack

- Announced / threatened:
 - Law enforcement + public health
 - Assess credibility
 - Enhance security
 - Surveillance for cases
- Covert attack:
 - Initial public health response
 - Will be detected as if unintentional
 - Rapidity will depend on infrastructure

Recent Investigations

- 1988 to 1999 CDC / EIS outbreaks
- 1,099 investigations
- 44 caused by potential BT bugs
- 55% reported by medical providers or health departments

Observations

- The only 2 true BT events weren't with agents on the "BT list"
- Only 5% were recognized by existing surveillance systems
- Half of those in which intentional contamination was suspected were not reported for 2 weeks or more (26 days!)

How Can We Improve ?

- Better toys
 - Good friends
 - Share nicely
 - Pay attention
 - Don't tattle
-

Public Health / Establishment Relations

- Epidemiologists are not “regulatory”
- We never meet until there is a disaster
- We are on the same side
- Early cooperation > less pain in end

Conclusions

- The threat is real
- Investment in infrastructure will help us all
- Intentional events may initially be indistinguishable from intentional
- Rapid epidemiologic response will limit casualties
- Multi-agency response is critical