Attack of the Killer VEGIS!!

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Multistate Outbreak of Listeriosis: Whole Cantaloupes from Colorado

Name that outbreak!

Salmonella
Listeria
Norwalk
Salmonella
E.Coli O157:H7

73 Produce Outbreaks 2000-2010

- Lettuce/Romaine 15
- Tomatoes 16
- Cantaloupe 7
- Raspberries/“berries” 7
- “Melons” 5
- Basil/ herbs 5
- Spinach 3
- Green onions 2

- Celery 1
- Mango 1
- Green grapes 1
- Jalapeno/serrano 1
- Snow peas 1
- Unknown 6

Listeriosis: Clinical Symptoms

- Eating food contaminated with the bacterium
- Affects older adults, persons with weakened immune systems, and pregnant women and their newborns.
- Fever, muscle aches, diarrhea or other GI symptoms.
- Invasive infection (bacteria spread from the intestines to the bloodstream or other body sites).
- Illness is treated with antibiotics
- Can experience flu-like symptoms 2 months after eating contaminated food

Source: FDA CFSAN
Clean up?
- Listeria bacteria can grow produce and surfaces at room and refrigerator temperatures.
- Wash the inside walls and shelves of the refrigerator, cutting boards and countertops;
- Sanitize with a solution of one tablespoon of chlorine bleach to one gallon of hot water;
- Dry with a clean cloth or paper towel that has not been previously used.
- Wipe up spills in the refrigerator immediately and clean the refrigerator regularly.

Poor condition of equipment
- “Clean” Processing equipment showed signs of dirt and product build-up
- Rusted and corroded equipment
- Retro fitted potato washer used to clean melons

Outbreak Summary
- Total of 146 persons infected from 28 states.
- Four outbreak-associated strains of Listeria monocytogenes
- Thirty deaths were reported.
- One woman miscarried.

Improper cooling
- Problems with packing and storage
- Melons were not properly cooled before cold storage

So what went wrong?
- Poor working conditions
- Pools of water on the floor
Cross contamination

- Truck used to haul culled cantaloupe to a cattle operation

Weakness of third party audit

- Failure to Audit for Compliance with FDA Guidance and Best Industry Practices
- Failure to Require Correction of Deficiencies
- No Reporting to FDA or State Officials
- Concerns about Advance Notice and Thoroughness of Third -Party Audits
- Potential Conflicts of interest in Auditor Relationships

Third party audit failures:

- **Salmonella outbreak in peanut butter** products sold by the Peanut Corporation of America (PCA). The auditor awarded a "superior" rating then six months later PCA's products killed nine people and sickened 691 people.

Third party audit failures:

- **Outbreak of Salmonella in eggs** produced by Wright County Egg revealed after federal officials inspected facilities that serious violations of food safety standards, including barns infested with mice, chicken manure piled eight feet high, and uncaged hens tracking through excrement. Two months before the outbreak, rated "superior" by auditor.

…the investigation identified significant problems with the third-party inspection system used by growers and distributors to ensure the safety of fresh produce. This auditing system is often the first and only line of defense against a deadly food borne disease outbreak.
In order of prevalence associated with a foodborne outbreak

1. Lettuce, romaine, spinach, romaine, beef, iceberg, bagged lettuce
   - E. coli O157:H7 (EHEC)
   - Salmonella enterica
   - Norovirus

2. Tomatoes
   - Roma, cherry, grape
   - Salmonella enterica
   - Norovirus

3. Melons
   - Watermelon, cantaloupe, honeydew, musk
   - E. coli O157:H7 (EHEC)
   - Salmonella enterica

4. Mixed produce
   - Salads (lettuce, vegetable or fruit based, garden, green, house, chef, lettuce), mixed vegetables, mixed fruit, greens mixes
   - E. coli O157:H7 (EHEC)
   - Salmonella enterica

5. Herbs
   - Basil, parsley, cilantro
   - E. coli O157:H7 (EHEC)

6. Berries
   - Strawberry, raspberry, blackberry, grapes
   - E. coli O157:H7 (EHEC)

USDA GAP Audit
- Part 1: Review of farm operation
- Part 2: Harvesting & field packing activities
- Part 3: Packing house/shed facility
- Part 4: Storage and transportation
- Part 5: (reserved)
- Part 6: Wholesale distribution center
- Part 7: Preventive food defense procedures

Table 1: Pathogens associated with fresh produce commodities from 1996 to 2006
(Adapted from RTI International 2009)

<table>
<thead>
<tr>
<th>Commodity and Category</th>
<th>Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lettuce, romaine, spinach, romaine, beef, iceberg, bagged lettuce</td>
<td>E. coli O157:H7 (EHEC), Salmonella enterica, Norovirus</td>
</tr>
<tr>
<td>Romaine, cherry, grape</td>
<td>Salmonella enterica, Norovirus</td>
</tr>
<tr>
<td>Watermelon, cantaloupe, honeydew, musk</td>
<td>Salmonella enterica</td>
</tr>
<tr>
<td>Cabbage, colelaw, broccoli</td>
<td>E. coli O157:H7 (EHEC), Cryptosporidium parvum</td>
</tr>
<tr>
<td>Salad (lettuce, vegetable or fruit based, garden, green, house, chef, lettuce), mixed vegetables, mixed fruit, greens mixes</td>
<td>E. coli O157:H7 (EHEC), Salmonella enterica</td>
</tr>
<tr>
<td>Basil, parsley, cilantro</td>
<td>E. coli O157:H7 (EHEC)</td>
</tr>
</tbody>
</table>

Good Agricultural Practices & Good Handling Practices Audit Verification Program Scoresheet

GAPs Audit Score
- **A Passing Score is 80% of the Possible Points or the Adjusted Points, if adjustment are necessary, with no “automatic unsatisfactory” conditions is required for certification.**
All questions on the Produce GAPs Harmonized Food Safety Standard, Pre-Farmgate - USDA Checklist shall be assessed according to the Verification Instructions outlined in the Produce GAPs Harmonized Food Safety Standard. Auditors shall have a copy of the Standard with them when performing audits to verify questions are assessed appropriately. All questions shall be assessed using one of the following:

- **Compliant (C)** - The operation meets the requirements of the Harmonized GAP Standard.
- **Corrective Action Needed (CAN)** - The operation does not meet the requirements of the Harmonized GAP Standard, however the non-conformance is not considered to be an immediate food safety risk.
- **Immediate Action Required (IAR)** - The operation does not meet the requirements of the Harmonized GAP Standard and the non-conformance is considered an imminent food safety risk. An imminent food safety risk is present when produce is grown, processed, packed or held under conditions that promote or cause the produce to become contaminated. Observation of employee practices (personal or hygienic) that jeopardize or may jeopardize the safety of the produce are considered an “IAR”. The presence or evidence of rodents, an excessive amount of insects or pests are also considered an “IAR”.
- **Not Applicable (N/A)** - The question is not applicable to the operation.


**H-GAP Checklist**

**SO WHAT DO WE DO NOW??**
In plain sight:

**FDA report**: Factors that likely contributed to the contamination of cantaloupes:

**Growing Environment:**
- Low level sporadic *Listeria monocytogenes* in the agricultural environment and fruit contributed to the introduction of the pathogen into the packing facility.

**Packing Facility and cold Storage:**
- **A truck used to haul culled cantaloupe** to a cattle operation was parked adjacent to the packing facility.
- **Facility design allowed for the pooling** of water on the packing facility floor adjacent to equipment and employee walkway access to grading stations.
- **The packing floor was not easily cleanable**;
- **The packing equipment was not easily cleaned and sanitized**.
- The washing and drying equipment was previously used for postharvest handling of another raw agricultural commodity.
- There was no **pre-cooling step to remove field heat** from the cantaloupes before cold storage.

**QUESTIONS?**
- NM GAPs CONTACT:
  - Local CES county agents
  - USDA GAPs
  - Harmonized GAPs
  - Global GAPs
  - NMSU Extension Food Technology GAP website: http://aces.nmsu.edu/ces/foodtech/gap-nm.html
  - naflores@nmsu.edu 575-646-1179