EHS-Net Listeria monocytogenes Deli Study & Deli Equipment Design

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The Problem: Lm and Slicers

- 80% of the Lm cases attributed to deli meats were sliced and packaged at retail.

- Recent data shows that slicers may serve as niches for Lm and could be linked to many outbreaks.
EHS-Net Retail Deli Study

- Determine how deli practices can cross-contaminate RTE deli foods
- Recommend more effective ways to prevent serious risk for illness
- 50 random retail delis at each of 7 EHS-Net sites
- Grocery stores with deli dept (at least one slicer)

Research Activity Timing:
- 2012: Survey design, training w/ pilot
- 2013: Conducted study
- 2014: Analysis
Study Design

- Interview & Observation Data:
  - Interviewed one Manager and one Worker per deli regarding policies & practices, and food safety knowledge
  - Evaluated Deli Environment and Facility
  - Observed deli worker behaviors while performing work-related tasks
  - Evaluated Deli manager and worker characteristics, such as:
    - Food safety practices
    - Knowledge
    - Training and certification.
RI Experience

Most said it was “Easy” or “Somewhat Easy” to fully wash, rinse, sanitize (WRS) slicers, but...

- Also said “cleaning difficulty” was related to type of food sliced, e.g. cheese
- Most said check slicer seams, seals, & parts with every WRS or wipe down, but not looking for slicer condition – just looking for trapped food residues.
RI Experience

• Many were *not able to WRS slicers properly* due to:
  - Improper sink set up
    • (lack of detergent, sanitizer, towels, etc.)
  - No brushes, disassembly tools, improper lighting

• Observed many *not doing the job right*:
  - Food Residues remained on recently WRS slicers
    • Not disassembled, no detergent, skipped rinse, no visual check before sanitizing
  - Sanitizer applied, but wiped off
  - Completed WRS, but re-contaminated during re-assembly
  - Slicers needing repair were not taken out of service
    • Cracked/missing seals, loose parts, etc.
RI Experience

- Most often: Continuous/constant slicing
  - WRS every 4 hours and often several “wipe downs”
- Sometimes: Discontinuous/isolated use of slicers
  - Fully WRS immediately after use and not used again until next day/week
- Once in a while: Use is variable
  - “Wipe downs” after each use and wait to do a full WRS at end of day
- Frequent Cleaning, not WRS
  - Applied sanitizer, then wiped off or improper/contaminated wiping cloths used
- Glove contamination from switches, door handles, etc
Maple Leaf Listeriosis Outbreak

- 22 deaths from commercially processed luncheon meat
- Processing slicer impossible to clean and sanitize without tools
- Similar issue with retail slicers
Washington Slides from

Janet Anderberg, RS

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Then unscrewed and swabbed again
The Carriage was not well sealed
Organic debris found under the handles
Silicone seal – degraded - did not keep meat scraps or dirt out - This area was swabbed
Swabbed the press then swabbed both the goo on the plate and on the carriage
Where the handles came from...
Lab Results

- Slicer sample results:
  - Salmonella positive on handles, the press, the goo
  - Negative on the blade and guard
100% of slicers from Chain A had degraded food scraps under the handles - in un-cleanable areas.
Washington found plastic and metal not staying connected in more than 50% of Bizerba slicers surveyed.
Additional slicer concerns...
Cracked Handles
• Old slicers from chains end up in mom and pop facilities.
  – Hobart said there are slicers on the market that are 50 years old
Georgia tested slicers as a result of a Salmonella outbreak
Globe Slicer - Area under white plastic piece (secured with screw) tested + for Salmonella
RI Outbreak May 2010
Globe Slicer-Model 3600

Blade side view of slicer blade guard

Non-removable, non-cleanable white plastic on inside of blade guard was Salmonella + PFGE match to outbreak
Globe Slicer-Model 3600

Area between blade and guard could not be easily cleaned and sanitized

Area under foot was also positive for RI outbreak strain of Salmonella
Greatest Predictor for Listeriosis is Consuming Luncheon Meat Sliced at Deli

- Role of slicers in question
  - Hollow spaces inside of handles and knobs that retain liquids
  - Failed seals and gaskets
  - Poor maintenance and cleaning

- NSF national standards for slicers changed November 2012

- Take unsafe slicers out of service
Commercial Deli Slicer Inspection Tips for Food Safety Professionals

- Mechanical deli slicers commonly used in retail and foodservice establishments to slice meats, cheeses and produce may become difficult or impossible to adequately clean and sanitize after a period of use.
- Recent foodborne illness outbreaks have been associated with the accumulation of food soils and disease-causing microorganisms on areas of commercial deli slicers that are difficult to clean and sanitize.
- These outbreaks have resulted in serious illnesses and hospitalizations.

There are many seams created between the numerous adjoining parts and components of a typical deli slicer. Sealsants and gaskets are often used to seal these seams. These seams can become worn, degraded or removed as a result of the heavy use and cleaning regiments to which deli slicers are subjected. As these seals and gaskets become degraded, spaces can be created that can trap debris and moisture, which can lead to areas that may not be adequately cleaned and sanitized under normal cleaning methods.

During routine inspections of retail and foodservice establishments:

- Pay special attention to commercial deli slicers.
- Examine the equipment for degraded, defective or worn parts.
- If there are any signs of cracks, chips, deep scratches or loss of adhesion or if any seam or part is found defective or damaged, have the food establishment remove the slicer from service until repaired or replaced.
- Stress that establishment managers need to contact the slicer manufacturer for repairs and maintenance; all repairs should be performed by the manufacturer’s authorized service representatives.
- Check that the retail or foodservice establishments are following the manufacturer’s instructions for cleaning and maintenance.

NSF/ANSI Standard 8, Commercial Powered Food Preparation Equipment

Most slicers used in food establishments are models that have been certified to the NSF/ANSI (American National Standards Institute) Standard 8, Commercial Powered Food Preparation Equipment by an ANSI accredited certification body. However, these certifications are issued for newly manufactured products only, and do not ensure that the slicer will be maintained in a cleanable condition after extended use. Once in the field, slicer seal and gasket life will be affected by a variety of factors such as conditions of use, type and frequency of cleaning protocols, and types of foods being sliced. Since slicers typically remain in use for a number of years, operators and regulators must be diligent in their inspection, evaluation and maintenance of this equipment.

For additional copies and more information visit:
www.fda.gov/retailfoodprotection
FDA Slicer Poster and Brochure

- Keep Commercial Deli Slicers Safe
  - English and Spanish posters

- FDA Commercial Deli Slicer Inspection Tips for Food Safety Professionals
  - [http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/IndustryandRegulatoryAssistanceandTrainingResources/ucm240554.htm](http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/IndustryandRegulatoryAssistanceandTrainingResources/ucm240554.htm)