



United States
Department of
Agriculture



Food Safety and Inspection Service

Protecting Public Health and Preventing Foodborne Illness



Food Safety and Inspection Service:

USDA FSIS Outbreak Investigations and Lessons Learned

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Food Safety and Inspection Service: Outline

- Ground beef outbreaks
- *Salmonella*: Pork and chicken outbreaks
- *Listeria monocytogenes*: Public health regulatory context
- Chicken liver outbreaks
- After action reviews
- Summary

Food Safety and Inspection Service: Mission in Action



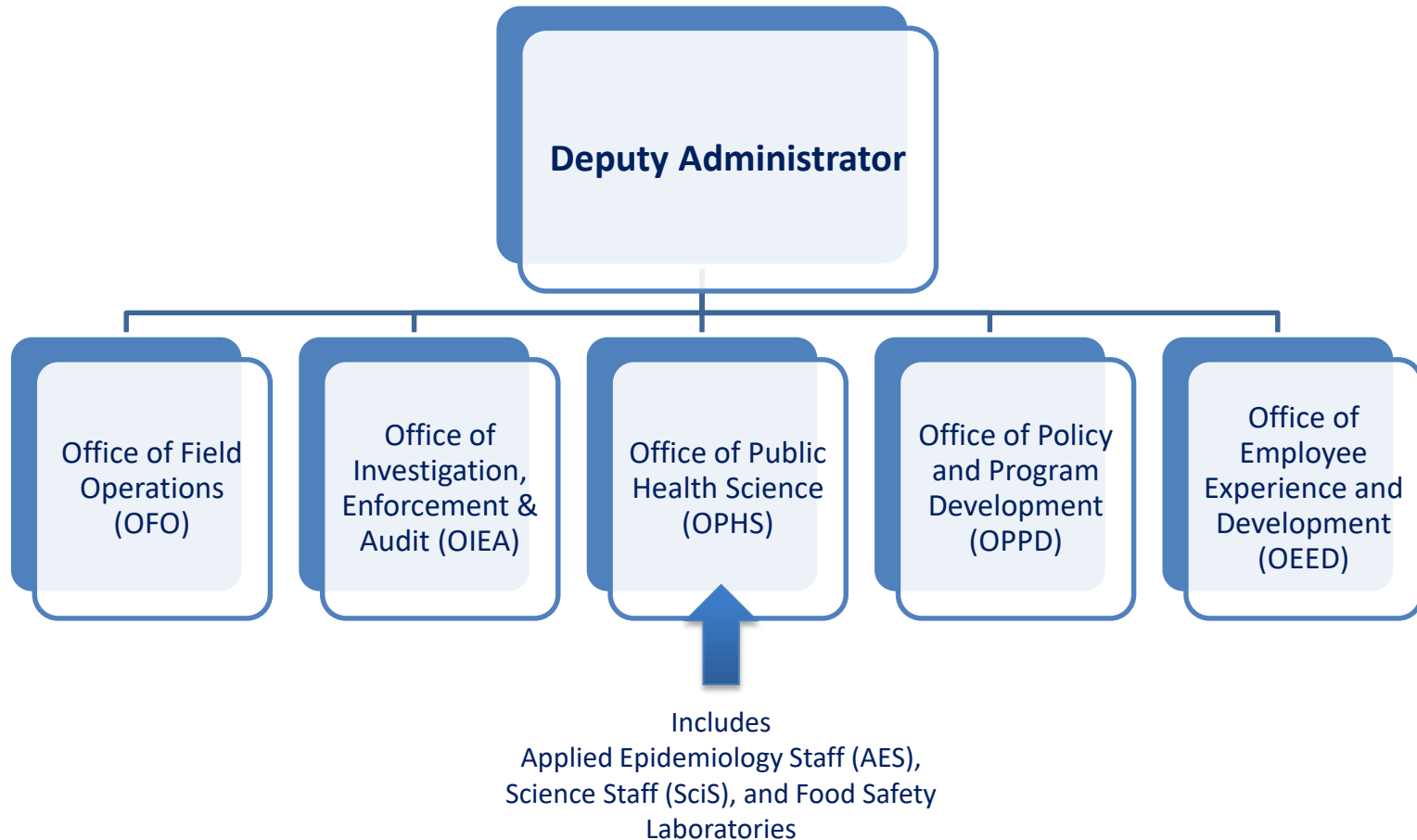
Public health agency in the USDA responsible for ensuring that meat, poultry, processed egg products are safe, wholesome, and accurately labeled.

Our Authority

Through a series of Acts, Congress empowers FSIS to inspect all meat, poultry, and processed egg products in interstate commerce.

- Federal Meat Inspection Act (FMIA), 1906
- Agricultural Marketing Act (AMA), 1946
- Poultry Products Inspection Act (PPIA), 1957
- Humane Methods of Slaughter Act (HMSA), 1958
- Egg Products Inspection Act (EPIA), 1970

Food Safety and Inspection Service: Organizational Structure



Food Safety and Inspection Service: Ground Beef Investigations

- Between 2007—2015, 37 outbreak investigations implicated beef ground or re-ground at retail
- 41% had complete production records



Food Safety and Inspection Service: Retail Grinding Logs

- December 2015, FSIS published a Final Rule requiring industry to maintain retail grinding records
 - Facilitate timely traceback
 - Shorten time between outbreak detection and elimination of public health hazard
- Grinding logs must be kept where beef is ground and retained for one year

Food Safety and Inspection Service:
Not-Ready-to-Eat (NRTE) Stuffed Chicken Products

- Contain raw, comminuted chicken breast meat or whole chicken breast meat
- Finished product is heat-treated to set batter or breading and give an RTE appearance



Food Safety and Inspection Service:
Salmonellosis Associated with NRTE Stuffed Chicken Products


- Since 2005, FSIS, in collaboration with public health partners, investigated 12 *Salmonella* outbreaks linked to NRTE, frozen, stuffed chicken products
- Many case-patients reported not following package cooking instructions
- Cooking instructions often poorly validated
- Products may have appeared to be fully cooked

Food Safety and Inspection Service: *Salmonella* Outbreaks Associated with NRTE Stuffed Chicken Products


- Two illness clusters identified by MN Department of Health in June 2015 associated with consumption of frozen, raw, stuffed and breaded chicken products
- For the first time, greater number of case-patients knew products were raw based on the label and stated that they followed cooking instructions


THE RAW STORY


Some frozen chicken entrees look like they're cooked—but they're not!





Handle raw frozen chicken — including frozen meals, entrees, and appetizers — the same way you handle raw fresh chicken to prevent foodborne illness:

- 


1 Read the package carefully.
- 

2 Follow cooking instructions exactly as written.
- 

3 Use a food thermometer to check doneness (165°F for chicken).
- 

4 Clean and disinfect any surfaces and utensils that touched the raw product.
- 

5 Wash your hands with soap and water after handling the raw product.

 U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Learn more: www.cdc.gov/foodsafety/prevention

CS298054

Food Safety and Inspection Service: FSIS Response

- Release of a Public Health Alert regarding both outbreaks
- Each outbreak resulted in a recall and recall expansion
 - Establishment A
 - Recalled approximately 2.5 million pounds of products
 - Product detained and Public Health Alert released prior to expansion of recall
 - Establishment B
 - Recalled approximately 1.7 million pounds of products
- Intensified sampling was conducted at both establishments

Food Safety and Inspection Service: Policy Response to Outbreaks with NRTE Stuffed Chicken Products

- Instructed inspection program personnel to update the Public Health Information System profile so the Agency can determine which establishments produce stuffed chicken products
- One of the goals is to improve understanding of production process

UNITED STATES DEPARTMENT OF AGRICULTURE FOOD SAFETY AND INSPECTION SERVICE WASHINGTON, DC		
FSIS NOTICE	15-16	2/18/16
PROFILE UPDATE IN ESTABLISHMENTS THAT PRODUCE NOT-READY-TO-EAT STUFFED CHICKEN PRODUCTS THAT APPEAR READY-TO-EAT		
I. PURPOSE		
<p>A. This notice provides instructions to inspection program personnel (IPP) at all establishments that produce raw and heat-treated but not fully cooked, not shelf stable stuffed chicken products that they are to update the Public Health Information System (PHIS) profile. This notice also instructs supervisory personnel to verify that the establishment's PHIS profile information is accurate.</p>		
<p>B. IPP are to update the profile so that FSIS can determine which establishments produce not-ready-to-eat (NRTE) stuffed chicken products that appear ready-to-eat (RTE). After IPP update the PHIS profiles, FSIS will use this information to schedule a public health risk evaluation (PHRE) at these establishments. FSIS plans to capture information concerning these establishments' production practices, and FSIS will determine whether establishments have reassessed their Hazard Analysis and Critical Control Point (HACCP) plans in response to recent outbreaks associated with these products. This information, in addition to the PHRE, will be used to determine whether a food safety assessment (FSA) needs to be conducted.</p>		
<p>C. Properly identifying these products within PHIS will also aid the Agency in identifying establishments to include in an upcoming exploratory sampling program. FSIS expects to design a sampling program to verify industry's level of process control for these products. FSIS is considering sampling (as part of a FSA) multiple locations including: poultry source materials (to assess incoming contamination), finished product (to assess whether a reduction of incoming contamination occurred during product formulation and processing), and post par-frying food contact surface contamination (to assess whether recontamination occurred before packaging).</p>		

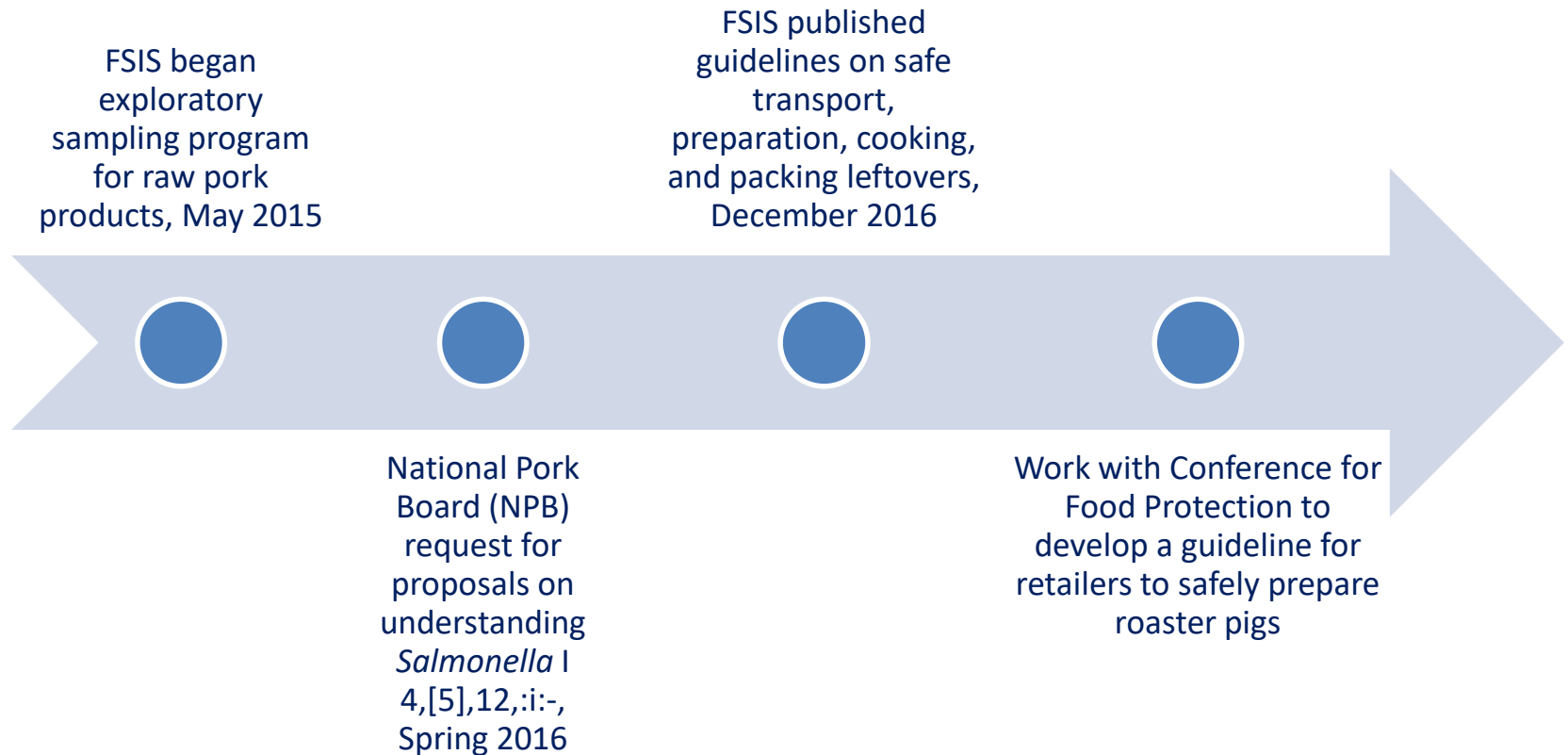
Food Safety and Inspection Service: Salmonellosis Outbreaks Associated with Roaster Hogs

- 2015 outbreak
 - 192 case-patients in 5 states (AK, CA, ID, OR, WA)
 - 76% pork exposure
- 2016 outbreak
 - 15 case-patients in WA
 - 93% pork exposure
- Resistance pattern: ASSuT
- Epidemiological and traceback data led to Establishment C

Food Safety and Inspection Service: FSIS and Establishment Actions

- Agency Actions
 - Issued Notice of Intended Enforcement (NOIE) in 2015
 - Public health alerts and recalls
- Establishment Actions
 - Voluntarily suspended operations
 - Modify sanitation practices
- FSIS rescinded its grant of inspection in response to the establishment's request

Food Safety and Inspection Service: After Action Review and Efforts Towards Roaster Hogs Food Safety



Food Safety and Inspection Service:
2016-2017 Salmonella I 4,[5],12:i:- Outbreak

- 63 case-patients from 13 states (West Coast focus)
 - Illness onset: 7/5/16 – 1/24/17
 - 88% case-patients consumed chicken
 - 60% case-patients consumed rotisserie chicken products from 11 retail D chain locations



Food Safety and Inspection Service: FSIS Actions

- On 10/9/16, FSIS issued a public health alert for rotisserie chicken salad produced from a WA retail chain D location
- In December 2016, FSIS visited 4 retail chain D stores for observation
 - Noted opportunities for undercooking and cross-contamination
- Findings shared with chain D corporate personnel

Food Safety and Inspection Service:

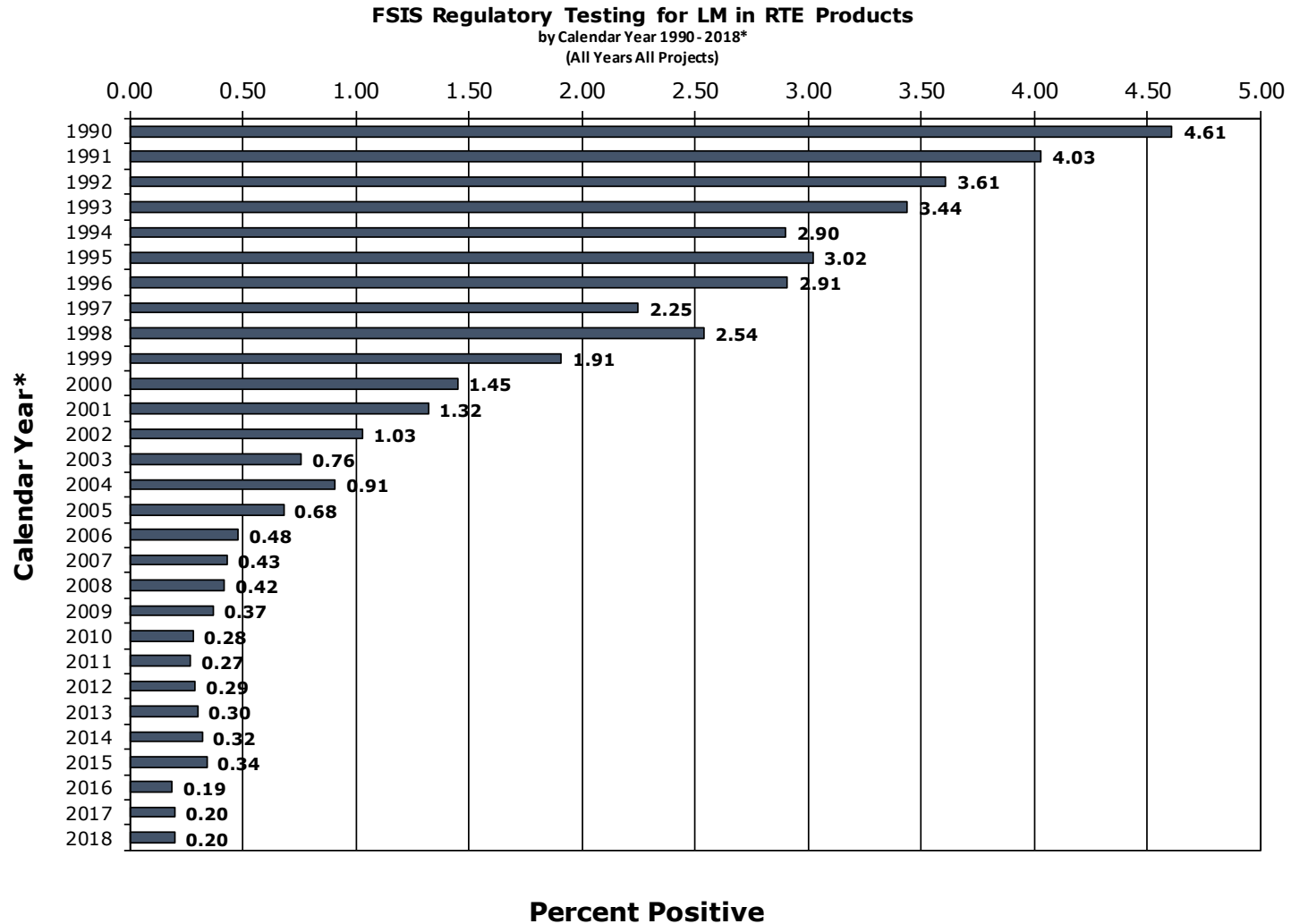
Actions Taken and Efforts Towards Rotisserie Chicken Food Safety

- Chain D retrained employees on temperature measurement and log keeping
- Adjusted holding temperatures in coolers to minimize ice on chicken so starting temperatures for cooking are more consistent
- Worked with suppliers to standardize chicken size
- Explored use of wireless thermometer system

Food Safety and Inspection Service: *Listeria Rule*

- Outlines the requirements establishments must follow to produce safe RTE products
- Applies to RTE products exposed to environment after the lethality step
- Establishments must comply with the requirements included in one of the following alternatives
 - **Alternative 1:** Use post-lethality treatment AND an antimicrobial agent or process
 - **Alternative 2:** Use post-lethality treatment OR an antimicrobial treatment
 - **Alternative 3:** Use sanitation measures only

Food Safety and Inspection Service: Impact of FSIS Regulation and Industry Response



Food Safety and Inspection Service: Actions Following an *Lm* Positive Result from FSIS Testing

- FSIS Actions
 - Schedule a Public Health Risk Evaluation (PHRE) followed by Intensified Verification Testing (IVT) and for-cause Food Safety Assessment (FSA)
 - Potential documentation of noncompliance or enforcement action
- Establishment Corrective Actions
 - Address affected product
 - Intensified cleaning and sanitation; follow-up testing may be performed
 - Reassessment of the HACCP plan may also be required

Food Safety and Inspection Service:
Food Safety Research Priorities

- 2018 *Lm* outbreak linked to RTE ham products
 - 4 illnesses from 2 states; 1 death
 - Whole genome sequencing results showed that *Lm* isolates from illnesses and deli ham are closely related genetically
 - Country cured ham cooked multiple times using Appendix A as support for achieving lethality of *Lm* has been associated with human illness
 - Determine whether sufficient lethality is achieved for low water activity cured meat products

Food Safety and Inspection Service: *Lm* at Retail

- FSIS Comparative Risk Assessment for *Lm* in RTE Meat and Poultry Deli Meats (May 2010) estimated that of the listeriosis illnesses attributed to deli meat, 83% are associated with deli meat sliced and packaged at retail (Endrikat et al. 2010)
- FSIS Retail *Lm* Pilot Project
- Outreach materials focus on:
 - Product handling
 - Cleaning and sanitizing
 - Employee practices
 - Facility and equipment controls

(Lm) in Retail Delicatessens

Best practice tips for deli operators

The information in this brochure is taken from *FSIS Best Practices Guidance for Controlling Listeria monocytogenes (Lm) in Retail Delicatessens*. **These are suggestions and not requirements.**

Retailers should be aware that the recommendations in this guidance, especially those based on the 2013 Food Code may be requirements in State, local, or tribal regulations.



Food Safety and Inspection Service: Chicken Liver Outbreaks

- Pathogens (external and internal)
- Inadequate cooking
- Outbreaks continue to occur
- Outbreak commonalities point to prevention targets
 - Safe cooking at restaurants
- Research needed on chicken liver
 - Pathogen prevalence; virulence factors; processing interventions; safe cooking methods




Food Safety and Inspection Service: Chicken Liver Action Plan


- Guidance for FSIS establishments
- Consumer focus groups
- Presentations/peer-reviewed manuscript
- Continuing research

Accessible Version: <https://www.cdc.gov/nceh/ehs/publications/chicken-liver-infographic.html>

CHEFS, COOKS, AND CATERERS: COOK CHICKEN LIVER LIKE IT'S CHICKEN (IT IS) Cook Chicken Liver to 165°F



ALWAYS COOK CHICKEN LIVER ALL THE WAY THROUGH



Use a **food thermometer** (you can't tell by looking)


Cook the inside of the liver to **165°F**, just like you would for other chicken parts

BACTERIA INSIDE + PARTIAL COOKING = RECIPE FOR ILLNESS

You might be used to leaving the middle rare when cooking chicken liver for pâté and similar dishes.


But *Campylobacter* is a type of bacteria that can live **inside** chicken liver. If the middle isn't cooked to **165°F**, bacteria can survive and cause illness.

most often




cramps, diarrhea (sometimes bloody), fever

less often




life-threatening illness, or even death


At higher risk




PROPER COOKING CAN PREVENT ILLNESSES




U.S. outbreaks from eating undercooked chicken liver are **on the rise**. Most are associated with restaurants.



In one outbreak, the restaurant went out of business after customers ate undercooked chicken liver and got sick.



Chefs, cooks, and caterers are **key** to helping prevent these outbreaks.



Centers for Disease Control and Prevention
National Center for Environmental Health

USDA

Learn more:
www.fsis.usda.gov/ChickenLiver

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Food Safety and Inspection Service: After Action Review and Illness Investigation Reports

- Internal and external discussions
 - Outbreak successes
 - Areas for improvement
- Identify lessons learned
- Published on FSIS website

The screenshot displays the FSIS website interface. At the top, the USDA logo and 'United States Department of Agriculture Food Safety and Inspection Service' are visible. Navigation links include 'About FSIS', 'District Offices', 'Careers', 'Contact Us', 'Ask Karen', 'askFSIS', and 'En Español'. A search bar is located in the top right. Below the navigation, a 'Topics' menu is open, showing a list of categories: Careers, Fact Sheets, Food Safety Education, Data Collection and Reports, Food Defense and Emergency Response, Inspection, International Affairs, Recalls and Public Health Alerts (highlighted in green), Regulatory Compliance, Regulations, Directives and Notices, Rulemaking, and Science. The main content area is titled 'Illness Investigation Reports' and features three articles:

- Salmonella enterica Serotype I 4,[5],12:i:- Illness Outbreak Associated with Rotisserie Chicken, 2016–17**
During July 2016–March 2017, public health officials in California, Washington, the Centers for Disease Control and Prevention (CDC), and the Food Safety and Inspection Service (FSIS) investigated an outbreak of 63 Salmonella enterica serotype I 4,[5],12:i:- illnesses linked to rotisserie chicken products produced and sold at multiple stores under the same corporation (Retailer A).
- Salmonella enterica serotype I 4,[5],12:i:- Illness Outbreaks Associated with Pork Products, 2015-2016**
During 2015-2016, the Washington State Department of Health, the Centers for Disease Control and Prevention (CDC), and FSIS investigated two outbreaks of Salmonella I 4,[5],12:i:- infections linked to pork products produced by Establishment A, a federally inspected establishment.
- Salmonella Enteritidis Illness Outbreaks Associated with Raw, Frozen, Stuffed Chicken Products, 2015**
Several Minnesota State agencies, CDC, and FSIS investigated two Salmonella Enteritidis outbreaks from June 2015 to October 2015. Both resulted in recalls of frozen, raw, stuffed and breaded chicken products.

At the bottom right of the content area, it says 'Last Modified Sep 26, 2018'. The footer contains various links: FSIS Home | USDA.gov | FoodSafety.gov | USA.gov | WhiteHouse.gov | Site Map | Policies & Links | Significant Guidance | FOIA | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Civil Rights | No FEAR | Information Quality.

Food Safety and Inspection Service: Communication with Partners

- Published template for including FSIS in Foodborne Illness Outbreak Response Procedures
- Published information on what FSIS needs to take regulatory action
- Updating FSIS Directive, *Policy on use of results from non-FSIS laboratories*

Food Safety and Inspection Service: Summary

- Outbreaks lead to policy changes, such as Final Rule requiring official establishments or retail stores that grind raw beef to keep grinding records
- Provided guidance to mitigate risk associated with roasting pigs and cooking chicken livers
- Although FSIS is not a research funding agency, it has developed a list of food safety research priorities as suggestions for researchers
- Private and public partnerships essential to protect and improve public health

Food Safety and Inspection Service:

Questions?