



United States Department of Agriculture

**One Team, One Purpose**



# **Food Safety and Inspection Service**

Protecting Public Health and Preventing Foodborne Illness



## Food Safety and Inspection Service:

### Overview – Raw Pork Products Exploratory Sampling Project (RPPESP)

- RPPESP Phase I
  - Design
  - Results
- Transitional Exploratory Sampling

Food Safety and Inspection Service:

**RPPESP Phase I**  
**(May 2015 – November 2015)**

Food Safety and Inspection Service:

## Raw Pork Products Exploratory Sampling Program (RPPESP)

### Purpose of Phase I or “shakedown” phase:

- To inform the sampling design of the baseline study by:
  - Collecting data on the presence of *Salmonella*, other pathogens, and indicator organisms in various pork products to help inform risk assessment and policy decisions
  - Determine what microbiological hazards may be of concern in pork products
  - Testing sample collection methods and logistics (i.e. supplies, shipping, etc.)

# Food Safety and Inspection Service:

## Phase I – Study Design

- **Raw Pork Products Exploratory Study Project (RPPESP) - Phase I**
  - **Duration:** May 2015 – November 2015 (1200 samples collected)
  - **Project Codes and Products:**
    - **EXP\_PK\_ICT01:** Intact Cuts (Including bone-in and boneless)
    - **EXP\_PK\_IOT01:** Intact Other
    - **EXP\_PK\_NCT01:** Non-intact Cuts (Including bone-in and boneless)
    - **EXP\_PK\_NOT01:** Non-intact Other
    - **EXP\_PK\_COM01:** Comminuted (Ground; Other Comminuted; Advanced Meat Recovery; Mechanically Separated; and Sausage, patties, or other formed products)
  - **Microbiological targets included:**
    - All samples were analyzed for *Salmonella* (**1200 samples**)
    - **Subset of 200** samples also analyzed for: *Campylobacter*, *Toxoplasma gondii*, *Yersinia enterocolitica*, Methicillin-Resistant *Staphylococcus aureus*, Shiga toxin-producing *E. coli* and four indicator bacteria (Aerobic Plate Count (APC), *Enterobacteriaceae*, coliforms, and generic *E. coli*)

## Food Safety and Inspection Service:

### Phase I – Product Groups Sampled

- Raw pork products collected from federal establishments producing 1,000 lbs or more a day of:
  - **Comminuted** (ground pork, sausage, AMR, etc.)
  - **Intact cuts** (tray ready cuts from primals, etc. that have not been needle/blade tenderized, injected, etc.)
  - **Intact other** (feet, neck bones, cutlets, etc. that have not been needle/blade tenderized, injected, etc.)
  - **Non-intact cuts** (cuts from primals, etc. that have been needle/blade tenderized, injected, etc.)
  - **Non-intact other** (feet, neck bones, cutlets, etc. that have been needle/blade tenderized, injected, etc.)

# Food Safety and Inspection Service:

## Phase I – Salmonella Results

Pork Project Code	Pork Product Type	Phase I Salmonella % Positive by Project Code (May 2015 – Nov 2015)
EXP_PK_COM01	Comminuted	21.0% (136/649)
EXP_PK_ICT01	Intact Cuts	11.9% (38/320)
EXP_PK_IOT01	Intact Other	18.7% (17/91)
EXP_PK_NCT01	Non-Intact Cuts	5.0% (3/60)
EXP_PK_NOT01	Non-Intact Other	7.5% (6/80)
Total		16.7% (200/1,200)

The data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.



# Food Safety and Inspection Service:

## Phase I Salmonella % Positive by Primal Part

Pork Project	Jowls	Shoulder	Belly	Loin	Ham (leg)	Total
	Positive / Analyzed	Positive/ Analyzed				
	% Positive	% Positive	% Positive	% Positive	% Positive	% Positive
Intact Cuts	7/16 43.8%	11/70 15.7%	4/16 25.0%	12/190 6.3%	4/28 14.3%	38/320 11.9%
Intact Other	1/5 20.0%	8/33 24.2%	2/15 13.3%	1/21 4.8%	5/17 29.4%	17/91 18.7%
Non-intact Cuts	0/1 0.0%	0/6 0.0%	0/4 0.0%	3/46 6.5%	0/3 0.0%	3/60 5.0%
Non-intact Other	0/5 0.0%	3/25 12.0%	1/9 11.1%	0/28 0.0%	2/13 15.4%	6/80 7.5%
<b>Total</b>	8/27 29.6%	11/134 8.2%	7/44 15.9%	16/285 5.6%	11/61 18.0%	64 /551 11.6%

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.



## Food Safety and Inspection Service:

### Phase I - Indicator Bacteria Geometric Mean (MPN/g) by Pork Product

Indicator Bacteria	Comminuted	Intact Cuts	Intact Other	Non-Intact Cuts	Non-Intact Other
<b>APC</b>	13,890	4,398	6,755	3,152	12,985
<b><i>Enterobacteriaceae</i></b>	578	336	714	281	363
<b>Coliforms</b>	154	83	185	83	75
<b>generic <i>E.coli</i></b>	43	31	50	36	37

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.



# Food Safety and Inspection Service:

## Additional Analytes

Pork Project Code	Product Type	Total Samples	Campylobacter		MRSA	
			Positives	% Positive	Positives	% Positive
EXP_PK_COM01	Comminuted	112	1	0.9%	6	5.4%
EXP_PK_ICT01	Intact Cuts	53	1	1.9%	3	5.7%
EXP_PK_IOT01	Intact Other	28	0	0.0%	0	0.0%
EXP_PK_NCT01	Non-Intact Cuts	1	0	0.0%	0	0.0%
EXP_PK_NOT01	Non-Intact Other	6	0	0.0%	0	0.0%
Total		200	2	1.0%	9	4.5%

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.

# Food Safety and Inspection Service:

## Additional Analytes - Continued

Pork Project Code	Product Type	Total Samples	<i>Toxoplasma gondii</i>		Yersinia enterocolitica	
			Positives	% Positive	Positives	% Positive
EXP_PK_COM01	Comminuted	112	2	1.8%	1	0.9%
EXP_PK_ICT01	Intact Cuts	53	0	0.0%	2	3.8%
EXP_PK_IOT01	Intact Other	28	0	0.0%	0	0.0%
EXP_PK_NCT01	Non-Intact Cuts	1	0	0.0%	0	0.0%
EXP_PK_NOT01	Non-Intact Other	6	0	0.0%	0	0.0%
<b>Total</b>		<b>200</b>	<b>2</b>	<b>1.0%</b>	<b>3</b>	<b>1.5%</b>

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.



# Food Safety and Inspection Service: Additional Analytes - STECs

Pork Project Code	Product Type	Total Samples	<i>E. coli</i> O157:H7		Non-O157 STECS	
			Positives	% Positive	Positives	% Positive
EXP_PK_COM01	Comminuted	112	0	0.0%	6	5.4%
EXP_PK_ICT01	Intact Cuts	53	0	0.0%	4	7.6%
EXP_PK_IOT01	Intact Other	28	0	0.0%	0	0.0%
EXP_PK_NCT01	Non-Intact Cuts	1	0	0.0%	0	0.0%
EXP_PK_NOT01	Non-Intact Other	6	0	0.0%	0	0.0%
Total		200	0	0.0%	10	5.0%

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.



# Food Safety and Inspection Service: Phase I – STEC serogroups detected

## Distribution of STECs by serogroup:

Products	Pos/Total (% Pos)	O26	O45	O103	O111	O121	O145	O157:H7
Comminuted	6/112 (5.4%)	1	5	1	1	1	3	0
Intact Cuts	4/53 (7.6%)	2	3	3	1	3	3	0
Overall Total	10/165 (6.1%)	3	8	4	2	4	6	0

This data represents samples collected from May through November 2015 and was pulled from the FSIS LIMS database on March 16, 2016.

Food Safety and Inspection Service:

# Transitional Exploratory Sampling (January 2016 – May 2017)

## Food Safety and Inspection Service:

### Transitional Exploratory Sampling

- FSIS needed time to analyze the data obtained during the first phase of sampling before the baseline study could be designed and implemented
- After the first phase of sampling was completed, FSIS implemented a transitional exploratory sampling phase from **January 2016 through May 2017**
- Transitional sampling continued to be assigned and collected under Phase I project codes for the same product types
- The differences between Phase I sampling and transitional sampling include:
  - Phase I samples were **analyzed by a third party** contract laboratory
  - Transitional samples were **analyzed by FSIS**
  - Phase I samples included a sub-set of samples (200) that **included analytes in addition to *Salmonella***
  - Transitional samples were analyzed for ***Salmonella* only**
  - Data obtained from Phase I **was utilized to design the baseline study**
  - Data obtained from transitional sampling **was not utilized to design the baseline study**; however, FSIS will use this information to inform pork *Salmonella* policies



# Food Safety and Inspection Service: Transitional Exploratory Sampling Results

Pork Project Code	Pork Product Type	Transitional <i>Salmonella</i> % Positive by Project Code (Jan 2016 – May 2017)
EXP_PK_COM01	Comminuted	23.0% (460/1,997)
EXP_PK_ICT01	Intact Cuts	14.4% (202/1,403)
EXP_PK_IOT01	Intact Other	23.9% (168/703)
EXP_PK_NCT01	Non-Intact Cuts	9.7% (38/393)
EXP_PK_NOT01	Non-Intact Other	14.2% (47/330)
Total		19.0 % (915/4,826)

The data represents samples collected from January 2016 through May 2017 and was pulled from the FSIS data warehouse on June 29, 2017.