United States National Residue Program Quarterly Report (Apr-June 2015)

Science Staff
Office of Public Health Science
Food Safety and Inspection Service
U.S. Department of Agriculture

Contact:
Naser Abdelmajid
naser.abdelmajid@fsis.usda.gov
(202) 690-6492

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Introduction

Background

The USDA Food Safety and Inspection Service (FSIS) administers the United States National Residue Program (hereafter, NRP) for meat, poultry, and egg products. The NRP is an interagency program between the FSIS, Food and Drug Administration and the Environmental Protection Agency that was established to identify, rank, and test for chemical residues in FSIS regulated products.

The NRP is designed to: (1) provide a structured process for identifying and evaluating chemical compounds of concern in food animals; (2) analyze chemical compounds of concern; (3) report results; and, (4) identify the need for regulatory follow-up subsequent to the identification of violative levels of chemical residues.

FSIS administers this regulatory program under the Federal Meat Inspection Act (FMIA) (21 U.S.C. 601 et seq.), the Poultry Products Inspection Act (PPIA) (21 U.S.C. 453 et seq.), and the Egg Products Inspection Act (EPIA) (21 U.S.C. 1031 et seq.). The NRP is designed to protect the health and welfare of consumers by regulating the meat, poultry, and egg products produced in federally inspected establishments and to prevent the distribution in commerce of any such products that are adulterated or misbranded.

FSIS has administered the NRP by collecting meat, poultry, and egg product samples and analyzing the samples for specific chemical compounds at FSIS laboratories. The program has analyzed meat and poultry samples since 1967. The program began sampling egg products in 1995.

Beginning in August 2012, FSIS implemented several new multi-residue chemical methods for both of the domestic sampling programs. By incorporating the multi-residue method, the agency discontinued the use of testing production classes for single chemical or chemical classes ("pairing").

The new methods allows for the analysis of hundreds of chemicals in a single sample. These changes are detailed in the July 6, 2012 Federal Register Notice. (http://www.fsis.usda.gov/wps/wcm/connect/96433e1b-d3b6-42b0-93a8-f0beee77e520/2012-0012.pdf?MOD=AJPERES)

A violation occurs when an FSIS laboratory detects a chemical compound in excess of an established tolerance or action level. When a violation is identified, FSIS informs the establishment electronically and the producer via certified letter. Under best practices, the establishment also should notify the producer that an animal from that business had a violative chemical level.

FSIS shares the violation data with the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA), which establish violative levels for chemical residues. The FDA has on-farm jurisdiction and works with cooperating State agencies to investigate producers linked to residue violations and enforce legal action if conditions leading to the residue violations are not corrected.

The NRP sampling plans focus on chemical residues in domestic meat, poultry, and egg products. The domestic sampling plan includes scheduled sampling (headquarters-directed) and inspector-generated (targeted) sampling. Scheduled sampling plans involve random tissue sampling from food animals that have passed ante-mortem inspection.

Domestic Scheduled Sampling

Under the current scheduled sampling program, FSIS inspectors test twelve production classes (beef cows, bob veal calves, dairy cows, lamb, steers, heifers, goats, sheep, market hogs, sows, young chickens, and young turkeys) representing 96 percent of domestic meat and poultry consumption.

Domestic Inspector-generated Sampling

Inspector-generated sampling is conducted by the Office of Field Operations' in-plant personnel (IPP), overseen by the Public Health Veterinarians (PHVs). Currently, IPP inspector-generated sampling targets individual suspect animals, suspect populations of animals, and special sampling for bob veal calves per 9 CFR 310.21 (c) and (d).

When an inspector-generated sample is collected, the carcass is held pending the results of laboratory testing. If a carcass is found to contain violative levels of residues, FSIS condemns the carcass.

Port-of-Entry Reinspection Sampling

Under the import reinspection plan, imported meat, poultry, and egg products are sampled by FSIS inspectors through the Port-of-Entry Reinspection Program. This program is a chemical residue-monitoring program conducted to verify the equivalence of inspection systems in exporting countries.

All imported products are subject to reinspection and one or more types of inspection (TOI). These procedures ensure that every lot of product is inspected before it enters the United States. Chemical residue sampling is included in the reinspection of imported products.

Reporting of Residue Sampling

FSIS has changed NRP reporting from a *calendar* year to a *fiscal* year reporting period in order to: coincide with agency planning; provide results in a timely manner; and increase program transparency for stakeholders. In addition to publishing chemical residue results in a timely manner, this quarterly report compliments the weekly residue violative tables from the Residue Repeat Violator Lists (http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry.

Note: Some tables in this report provide results based on the number of unique violative carcasses, while other tables provide results as individual chemical in carcasses regardless of number of violative results per carcass. Multiple chemical residue violations may be associated with the same carcass.

Purpose of Quarterly Report

The Quarterly Report summarizes the chemical residue results for the domestic (Scheduled and Inspector-generated) and import sampling programs analyzed in April-June 2015, respectively. The FSIS continues to publish National Residue Program Data (also known as the Red Book) on an annual basis, as the final analysis of the NRP.

The report here is divided into tables and an appendix. The tables summarize the current third quarter (April-June 2015) by month, whereas the appendix will include previous three quarters' (July 2014-March 2015) results for a quick comparison with current quarter report.

Comments are welcome. Please submit your comment to Naser Abdelmajid at Naser.abdelmajid@fsis.usda.gov

Note: Results are based on sample collection date.

Tables

Table 1: NRP Domestic Scheduled Sampling Program Results by Month, Apr-June 2015

During the third quarter of FY 2015, **1,711** samples were collected from beef cows, bob veal calves, dairy cows, steers, heifers, lamb, goats, sheep, market hogs, sows, young chickens, young turkeys, and older breeder turkey. Tissues analyzed include muscle, kidney, and liver. The program identified four chemical residues at violative level.

Sample Collection Month	Number of Samples / (FSIS Lab Chemical Analytes)	Number of Violative Carcasses/(Number of Lab Confirmed Violative Samples)	Violative Chemical Residues
Apr.	615/ (62,265)	1 / (2) Market Hogs	2 (Sulfamethazine)
May	521 / (53,421)	1 / (2) beef cows 1 / (1) mature Sheep	1 (Sulfamethazine)
June	575 / (60,241)	N/A	
Total	1,711 / (175,927)	3 / (5)	

Note: Results are based on sample collection date.

Table 2: NRP Domestic Inspector-Generated (In-plant) Screening Program (KISTM Test) by Month, Carcass Class Apr–June 2015

The numbers in parentheses represents the number of in-plant screen positives that were sent to FSIS labs.

Carcass Class	Apr.	May.	June.	Total
Beef Cows	1,443	1,195	1,261	3,899
	(32)	(31)	(33)	(96)
Boars/Stags	15 (1)	12 (0)	8 (0)	35 (1)
Bob Veal	1,597	1,021	1,537	4,155
	(26)	(22)	(23)	(71)
Bulls	154	128	147	429
	(7)	(2)	(4)	(13)
Dairy Cows	8,251	7,753	7,624	23,628
	(202)	(161)	(154)	(517)
Formula Fed Veal	48	50	36	134
	(1)	(1)	(0)	(2)
Goats	42	51	63	156
	(0)	(1)	(1)	(2)
Heavy Calves	85	45	43	173
	(16)	(4)	(1)	(21)

Note: Results are based on sample collection date.

Table 2 (cont.): NRP Domestic Inspector-Generated (in-plant) Screening Program (KISTM Test) by Month, Carcass Class Apr–June 2015

The numbers in parentheses represents the number of in-plant screen positives that was sent to FSIS labs.

Carcass Class	Apr.	May.	June.	Total
Heifers	291	263	258	812
	(9)	(4)	(2)	(15)
Lambs	47	83	91	221
	(0)	(2)	(0)	(2)
Market Hogs	1,404	1,255	1,317	3,976
	(10)	(7)	(11)	(28)
Mature Sheep	23	37	26	86
	(0)	(0)	(0)	(0)
Non Formula Fed Veal	15 (2)	8 (0)	5 (0)	28 (2)
Roaster Pigs	144	134	168	446
	(0)	(0)	(4)	(4)
Sows	815	707	613	2,135
	(8)	(5)	(6)	(19)
Steers	845	820	786	2,451
	(11)	(12)	(8)	(31)
TOTAL	15,219	13,562	13,983	42,764
	(325)	(252)	(247)	(824)

Note: Results are based on sample collection date.

Table 3: NRP Domestic Inspector-Generated (In-plant) Screening Program (KISTM Test) Results by Month, Apr–June 2015

824 in-plant screen positive values were identified from over 42,000 in-plant tests. Of these positive samples, 316 were lab-confirmed violative samples. Several of the violative tissue samples were associated with the same carcass.

Sample Collection Month	Number of In-plant Screen Tests	Number of Positive In-plant Screens Sent to Labs	Number of Positive In- plant Screens Tested in FSIS Labs (FSIS Lab Chemical Analytes screened for)	Number of Carcasses with Violative Samples	Number of Lab- confirmed Violative Samples	Three Most Commonly Reported Chemical Violations (Number of Violative Samples for 3 Most Reported Violations)	Total Number of Violative Chemical Residues
Apr.	15,219	325	319 / (21,515)	69	87	Penicillin (22) Ceftiofur (19) Sulfamethzine (12)	14
May	13,562	252	246 / (16,331)	67	81	Ceftiofur (21) Penicillin (20) Sulfadimethoxine (8)	15
June	13,983	247	237 / (15,758)	55	73	Ceftiofur (23) Sulfamethzine (12) Penicillin (10)	15
Total	42,764	824	802 / (53,604)	191	241	Ceftiofur (63) Penicillin (52) Sulfamethzine (30)	19

Note: Results are based on sample collection date.

Table 4: Distribution of NRP Residue Violations Inspector-Generated (in-plant) Screening Program (KISTM Test) Results by Carcass Class and Month Apr–June 2015

Violations reported for inspector-generated samples by production class. Samples include in-plant screened samples (KIS™ Test). The number of laboratory confirmed violations appear in **parentheses**. Results include multiple violative tissues associated with the same sample.

Carcass Class	Apr.	May	June	Total
Beef Cows	9 (11)	8 (9)	5 (7)	22 (27)
Boars/Stags				
Bob Veal	5 (7)	11 (12)	11 (13)	27 (32)
Bulls	3 (5)			3 (5)
Dairy Cows	39 (42)	39 (48)	34 (42)	112 (132)
Formula Fed Veal		1 (1)		1 (1)
Goats			1 (3)	1 (3)
Heavy Calves	6 (11)	1 (1)		7 (12)

Note: Results are based on sample collection date.

Table 4 (cont.): Distribution of NRP Residue Violations Inspector-Generated (in-plant) Screening Program (KISTM Test) Results by Carcass Class and Month Apr–June 2015

Violations reported for inspector-generated samples by production class. Samples include in-plant screened samples (KIS™ Test). The number of laboratory confirmed violations appear in **parentheses**. Results include multiple violative tissues associated with the same sample.

Carcass Class	Apr.	May	June	Total
Heifers	1 (1)	2 (3)		3 (4)
Lambs				
Market Hogs	1 (1)		1 (2)	2 (3)
Mature Sheep				
Non Formula Fed Veal				
Roaster Pigs				
Sows	2 (3)	3 (3)	1 (1)	6 (7)
Steers	3 (6)	2 (4)	2 (5)	7 (15)
TOTAL	69 (87)	67 (81)	55 (73)	191 (241)

Note: Results are based on sample collection date.

Table 5: Distribution of NRP Residue Violations Inspector-Generated (In-plant) Screening Program (KISTM Test) Results by Carcass class and Chemical Residue Apr–June 2015

Violations reported for inspector-generated sampling for each production by specific chemical residue. The results include inplant screened samples (KIS™ Test) sent to lab. Results include multiple violative tissues samples associated with the same Carcass.

Note: The three most commonly reported chemical violations are highlighted.

Compound	Beef Cows	Bob Veal	Bulls	Dairy Cows	Formula - Fed Veal	Goats	Heavy Calves	Heifers	Market Hogs	Sows	Steers	Total
Ampicillin	-	-	-	7	-	-	-	-	-	-	-	7
Apramycin	-	-	-	-	1	-	-	-	-	-	-	1
Ciprofloxacin	1	-	1	-	-	-	-	-	-	-	1	3
Ceftiofur	7	5	2	46	-	1	-	1	-	-	1	<mark>63</mark>
Florfenicol	1	1	2	1	-	-	4	-	-	-	6	14
Flunixin	1	1	-	11	-	-	1	-	-	-	2	16
Gentamycin Sulfate	-	-	-	-	-	-	-	1	-	1	-	2
Lincomycin	-	-	-	1	-	1	-	-	-	-	-	2
Neomycin	-	12	-	-	-	-	-	-	-	-	-	12
Oxytetracycline	2	-	-	2	-	-	-	-	-	-	-	4

Note: Results are based on sample collection date.

Table 5 (cont.): Distribution of NRP Residue Violations Inspector-Generated (In-plant) Screening Program (KISTM Test) Results by Carcass class and Chemical Residue Apr–June 2015

Violations reported for inspector-generated sampling for each production by specific chemical residue. The results include in-plant screened positive samples (KIS™ Test) tested in FSIS labs. Results include multiple violative tissues samples associated with the same carcass.

Compound	Beef Cows	Bob Veal	Bulls	Dairy Cows	Formula - Fed Veal	Goats	Heavy	Heifers	Market Hogs	Sows	Steers	Total
Penicillin	8	2	-	32	-	-	2	-	1	6	1	<mark>52</mark>
Spectinomycin	-	-	-	-	-	1	-	-	-	-	-	1
Sulfadiazine	-	1	-	-	-	-	-	-	-	-	-	1
Sulfadimethoxine	-	1	-	16	-	-	-	-	-	-	-	17
Sulfamethazine	3	6	-	10	-	-	5	-	2	-	4	<mark>30</mark>
Sulfamethoxazole	-	4	-	-	-	-	-	-	-	-	-	4
Sulfamethoxypyridazine	-	-	-	1	-	-	-	-	-	-	-	1
Tilmicosin	3	-	-	4	-	-	-	2	-	-	-	9
Tylosin	1	-	-	1	-	-	-	-	-	-	-	2
Total	27	32	5	132	1	3	12	4	3	7	15	241

Note: Results are based on sample collection date.

Table 6a: NRP Import Sample Collected by Country Apr-June 2015

No violative import sample was found in 884 tested import samples. See Table 10 for details.

Country	Apr.	May	June	Total
Canada	130	112	60	302
Mexico	112	55	50	217
Australia	19	28	16	63
Chile	21	11	20	52
Nicaragua	7	14	16	37
Uruguay	15	13	3	31
Other**	91	45	46	182
Total	395	278	211	884

^{**} The following additional countries eligible to export meat and egg product to the United States did not produce a violation: Brazil, Costa Rica, Denmark, Honduras, Hungary, Republic of Ireland, Israel, Italy, Japan, Republic of Korea, Netherland, New Northern Ireland, Poland, and.

Table 6b: NRP Import Collected Samples by Species Apr-June 2015

Species	Apr.	May	June	Total
Beef	129	145	106	380
Chicken	84	21	18	123
Goat	10	1	2	13
Lamb	6	4	6	16
Mutton	2	4	-	6
Pork	141	70	54	265
Turkey	17	23	19	59
Veal	6	10	6	22
Total	395	278	211	884

Table 7: NRP Import Sample Analysis by Species Apr-June 2015

The number of samples analyses under the import reinspection program by production class.

Species	Apr.	May	June	Total
Beef	359	316	256	931
Chicken	246	42	50	338
Goat	30	12	2	44
Lamb	21	14	21	56
Mutton	7	14	-	21
Pork	418	189	156	763
Turkey	33	55	32	120
Veal	17	32	17	66
Total	1,131	674	534	2,339

Note: Multiple import residue results may be associated with the same sample.

Table 8: NRP Import Sample Analysis by Chemical Residue Apr-June 2015

The number of import analyses based on samples collected and analyzed during the import reinspection program tested for different chemical residues.

Chemical Residue	Apr.	May	June	Total
Arsenic	141	101	62	304
Avermectins	99	82	49	230
Beta Agonists	179	87	77	343
Cadmium	1	-	-	1
Canceled-Avermectin	1	-	-	1
Clothianidin	-	1	-	1
Doramectin	-	1	-	1
Fluoroquninolones	179	88	77	344
Hormones	202	102	96	400
Ivermectin	1	1	2	4
Lead	1	-	-	1
Manganese	12	7	3	22
Molybdenum	3	-	1	4
Pesticides	99	69	68	236
Strontium	1	-	-	1
Sulfas	191	123	90	404
Trace Elements	21	12	9	42
Total	1,131	674	534	2,339

Note: Multiple import residue results may be associated with the same sample. No violative results were found.

Table 9: NRP Import Sample Analyses by Species and Chemical Residue Apr-June 2015

Number of import reinspection program analyses arranged by product class tested for chemical residue.

Chemical Residue	Beef	Chicken	Goat	Lamb	Mutton	Pork	Turkey	Veal	Total
Arsenic	124	47	6	8	3	91	21	4	304
Avermectins	119	-	6	8	3	90	-	4	230
Beta Agonists	120	61	6	8	3	116	17	12	343
Cadmium	1	-	-	-	-	-	-	-	1
Canceled-Avermectin	-	-	-	-	-	1	_	-	1
Clothianidin	-	-	-	-	-	1	-	-	1
Doramectin	1	-	-	-	-	1	-	-	1
Fluoroquninolones	121	61	6	8	3	116	17	12	344
Hormones	177	61	6	8	3	116	17	12	400
Ivermectin	4	-	-	-	-	-	-	-	4
Lead	-	-	-	-	-	-	1	-	1
Manganese	9	4	-	-	-	3	6	-	22
Molybdenum	1	2	-	-	-	_	1	-	4
Pesticides	96	35	8	8	3	69	9	8	236
Strontium	-	-	-	-	-	-	1	-	1
Sulfas	150	61	6	8	3	139	25	12	404
Trace Elements	8	6	-	-	-	21	5	2	42
Total	931	338	44	56	21	763	120	66	2,339

Note: Multiple import residue results may be associated with the same sample.

Table 10: NRP Import Sample Analyses by Chemical Residue Results Apr-June 2015

Number of import reinspection program analyses arranged by results of chemical residue based on 884 samples. Multiple import residue analyses results may be associated with the same sample.

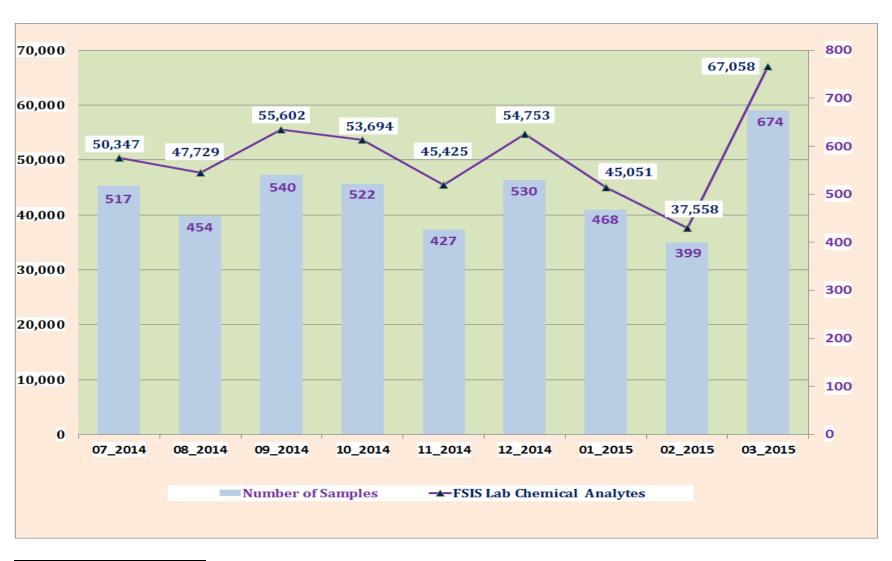
Note: No Import sampling chemical violations were found.

Chemical Residue	Residue Detected - Not-Violative	Residue Not Detected	Total
Arsenic	4	300	304
Avermectins	-	230	230
Beta Agonists	-	343	343
Cadmium	-	1	1
Canceled-Avermectin	-	1	1
Clothianidin	-	1	1
Doramectin	1	-	1
Fluoroquninolones	-	344	344
Hormones	-	400	400
Ivermectin	4	-	4
Lead	-	1	1
Manganese	-	22	22
Molybdenum	-	4	4
Pesticides	-	236	236
Strontium	-	1	1
Sulfas	-	404	404
Trace Elements	-	42	42
Total	9	2,330	2,339

Appendix

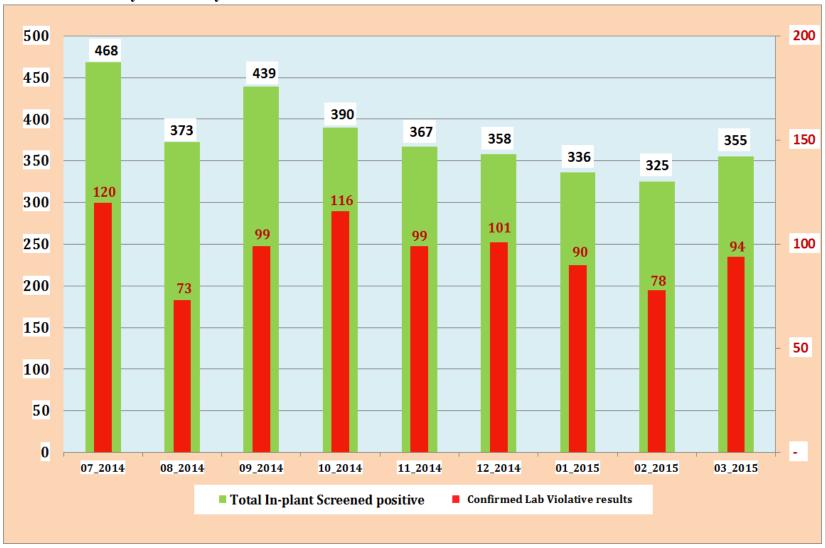
Summary of NRP Domestic Sample Data (Scheduled and Inspector-generated: KIS™ Test) (July 2014 - Mar 2015)

Figure A: Distribution of NRP Domestic Scheduled Samples by month, Includes FSIS Lab Chemical Analytes by Month July 2014—Mar. 2015



¹ Number of residue domestic scheduled sample in **PURPLE**.

Figure B ²: Distribution of NRP Inspector Generated (In-plant) Positive Screenings (KISTM Test) and Confirmed Lab Violative Results by Month July 2014–Mar. 2015



² Number of confirmed violative samples in **RED**. Multiple violative samples results may be associated with the same carcass sample.

 $\begin{tabular}{l} Table 11: Distribution of NRP Inspector Generated Program (In-plant) Screenings (KIS^{TM} Test) Residue Violative Samples \\ July 2014-Mar. 2015 \end{tabular}$

Residue Name	July 2014	Aug. 2014	Sept. 2014	Oct. 2014	Nov. 2014	Dec. 2014	Jan. 2015	Feb. 2015	Mar. 2015	Total
Amikacin	-	-	-	1	-	-	-	-	-	1
Ampicillin	2	1	1	1	1	-	3	2	1	12
Cefazolin	-	1	-	-	-	-	-	-	-	1
Ciprofloxacin	3	2	1	1	-	-	1	4	4	16
Desethylene ciprofloxacin	-	-	-	-	-	-	-	-	2	2
Desfuroylceftiofur	27	9	33	20	17	26	30	20	25	207
Dihydrostreptomycin	-	-	-	-	-	-	-	1	-	1
Enrofloxacin	-	-	-	-	-	-	-	1	2	3
Florfenicol	5	4	5	10	17	6	3	1	1	52
Flunixin	8	4	9	8	7	9	8	4	5	62
Gamithromycin	-	-	-	-	-	1	-	-	-	1
Gentamycin Sulfate	3	2	2	4	8	2	1	-	1	23
Lincomycin	-	-	1	-	-	-	-	2	3	6
Neomycin	9	6	9	6	2	6	6	3	4	51
Oxyphenylbutazone	-	-	1	-	-	-	-	-	-	1

Table 11 (cont.): Distribution of NRP Inspector Generated Program (In-plant) Screenings (KIS $^{\rm TM}$ Test) Residue Violative Samples July 2014—Mar. 2015

Residue Name	July 2014	Aug. 2014	Sept. 2014	Oct. 2014	Nov. 2014	Dec. 2014	Jan. 2015	Feb. 2015	Mar. 2015	Total
Oxytetracycline	1	3	1	1	-	5	-	1	3	15
Penicillin	24	24	20	24	17	24	17	17	18	185
Salbutamol	-	-	-	-	-	-	-	-	1	1
Spectinomycin	-	-	-	-	-	-	-	2	-	2
Sulfadiazine	-	1	-	-	-	-	-	-	1	2
Sulfadimethoxine	17	7	5	8	14	5	4	8	4	72
Sulfadoxine	1	-	-	2	-	-	1	2	-	6
Sulfamethazine	15	7	6	27	8	7	10	7	7	94
Sulfamethoxazole	-	-	-	-	1	-	1	2	6	10
Tilmicosin	4	2	4	3	6	5	4	-	5	33
Tulathromycin	1	-	1	-	-	3	1	-	-	6
Tylosin	-	-	-	-	1	1	-	1	1	4
Zeranol	-	-	-	-	-	1	-	-	-	1
Total	120	73	99	116	99	101	90	78	94	870

Table 12: Distribution of NRP Inspector Generated Program (In-plant) Screenings (KIS $^{\rm TM}$ Test) Residue Violative Samples by Animal Class, July 2014—Mar. 2015

Compound	Beef Cow	Bob Veal	Bull	Dairy Cow	Goat	Heavy Calves	Heifer	Lamb	Market Swine	Mature Sheep	Non Formula- fed Veal	Roaster Swine	Sow	Steer	Total
Amikacin	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Ampicillin	-	-	-	12	ı	-	-	-	-	-	-	-	-	-	12
Cefazolin	-	-	-	1	ı	-	-	-	-	-	-	-	-	-	1
Ciprofloxacin	1	4	1	4	ı	4	-	-	-	-	-	-	-	2	16
Desethylene ciprofloxacin	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
Desfuroylceftiofur	14	15	-	167	ı	1	1	-	-	1	-	-	-	8	207
Dihydrostreptomycin	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Enrofloxacin	-	3	-	-	ı	-	-	-	-	-	-	-	-	-	3
Florfenicol	16	-	3	8	-	8	-	-	-	-	9	-	-	8	52
Flunixin	8	3	1	37	ı	6	2	-	-	-	1	-	1	3	62
Gamithromycin	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Gentamycin Sulfate	1	1	1	13	-	1	1	-	-	-	1	1	-	3	23
Lincomycin	-	-	-	2	2	2	-	-	-	-	-	-	-	-	6
Neomycin	1	46	-	2	-	1	-	-	-	-	-	-	-	1	51
Oxyphenylbutazone	-	-	ı	1	ı	-	-	-	-	-	-	-	-	-	1

Table 12: Distribution of NRP Inspector Generated Program (In-plant) Screenings (KIS $^{\rm TM}$ Test) Residue Violative Samples by Animal Class, July 2014—Mar. 2015

Compound	Beef Cow	Bob Veal	Bull	Dairy Cow	Goat	Heavy Calves	Heifer	Lamb	Market Swine	Mature Sheep	Non Formula- fed Veal	Roaster Swine	Sow	Steer	Total
Oxytetracycline	7	1	1	6	-	-	-	-	-	-	-	-	-	-	15
Penicillin	16	2	4	130	-	1	3	-	-	-	2	-	22	5	185
Salbutamol	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Spectinomycin	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
Sulfadiazine	-	1	-	1	-	-	-	-	-	-	-	-	-	-	2
Sulfadimethoxine	4	1	-	53	-	1	1	2	-	-	6	1	-	3	72
Sulfadoxine	-	-	-	6	-	-	-	-	-	-	-	-	-	-	6
Sulfamethazine	12	16	3	14	-	7	-	1	8	-	24	-	3	6	94
Sulfamethoxazole	-	10	-	-	-	-	-	-	-	-	-	-	-	-	10
Tilmicosin	9	-	1	10	-	4	4	-	-	-	-	-	-	5	33
Tulathromycin	-	6	-	-	-	-	-	-	-	-	-	-	-	-	6
Tylosin	1	2	-	-	-	-	-	-	-	-	-	1	-	-	4
Zeranol	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Total	90	115	15	468	4	36	12	3	9	1	43	3	27	44	870