UNITED STATES
National Residue Program for Meat, Poultry, and Egg Products

2013 RESIDUE SAMPLE RESULTS[1]

United States Department of Agriculture
Food Safety and Inspection Service
Office of Public Health Science

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[1] Covers January-September 2013 only

Acronyms

CSI- Consumer Safety Inspector

COLLGEN – Collector-Generated Samples sent directly to the laboratory

DW – FSIS Data Warehouse

FAST – Fast Antimicrobial Screening Test

FSIS – Food Safety and Inspection Service

IPP – Inspection Program Personnel

KIS™ Test – Kidney Inhibition Swab Test

MRM – Multi Residue methods

NRP – National Residue Programmer

ND – Non-detect

OPHS – Office of Public Health Science

PHIS – Public Health Information System

PHV – Public Health Veterinarian

PPB – parts per billion

PPM – parts per million

SAT – Surveillance Advisory Team

STATE – State or Government Agency Testing

SHOW – Show Animals

U.S NRP – U.S**.** National Residue Program

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Executive Summary

2013 United States National Residue Program Data

Administered by the Food Safety and Inspection Program (FSIS), the United States National Residue Program for meat, poultry, and egg products (hereafter the U.S. NRP) is an interagency program that examines food samples for the presence of several different chemical compounds, classes, including veterinary drugs, pesticides, and metals. In collaboration with its federal partners, FSIS selected the chemical compounds based on their potential public health concern. All samples were analyzed at one of three FSIS International Organization for Standardization (ISO) 17025-accredited laboratories: the Eastern Laboratory (EL) in Athens, GA; the Midwestern Laboratory (MWL) in St. Louis, MO; or the Western Laboratory (WL) in Alameda, CA.

The U.S. NRP domestic sampling program is comprised of both scheduled sampling and inspector-generated sampling. The former program is designed as a surveillance program while the latter exists to test suspect animals or carcasses that OFO inspection personnel suspect may have levels of chemical residues above established tolerances. By having both a surveillance and targeted program, FSIS can more effectively monitor the level of chemical hazards in regulated products. FSIS recently modified the number of samples allocated to the scheduled sampling program to accommodate enhanced laboratory methodology that allows for the analysis of dozens of chemical residue compounds per sample. Beginning in January 2013, FSIS reduced the total number of scheduled samples from approximately 20,000 to about 6,400 samples to accommodate the more effective and efficient testing regime.

From January to September 2013 (the nine-month reporting period reflects the change from calendar-year to fiscal year reporting period) FSIS identified **1,284** residue tissue violations (19 under the domestic scheduled sampling program and 1,265 under the inspector-generated program) in **1,068 unique** violative carcasses (15 under the domestic scheduled sampling program and 1,053 under the inspector-generated program). For comparison, in CY 2012 there were 1,201 residue tissue violations identified in 953 violative carcasses and in CY 2011 there were 1,072 residue tissue violations identified in 1,045 violative carcass. Note: A single carcass may have multiple tissue violations. **Note: Oct-Dec 2013 residue results will be reported in the FY 2014 FSIS residue sample results**

Under the domestic scheduled sampling program, FSIS collected **4,583** residue samples (4,436 from U.S. federal plants and 147 from U.S. state plants), from which **19** violative analytes were reported from **15** samples. These 15 samples account for 9 unique carcasses violations, which is less than 1 % of the samples collected.

For comparison, in CY 2012 FSIS collected 5,838 residue samples, from which 17 violative analytes were reported from 12 samples. Similarly in CY 2011, FSIS collected 20,313 residue samples, from which 27 violative analytes were reported from 21 samples.

Analysis of the Jan-Sept 2013 domestic scheduled samples showed that the drug violations identified were Flunixin, Penicillin, Piperonyl Butoxide, Sulfadimethoxine, Sulfamethazine, Sulfamethoxazole, Tulathromycin, and Tilmicosin. Additionally, this sampling program identified 23 samples (again, less than 1%) with non-violative positive residue levels, i.e. a sample where the residue level is detected below the established tolerance. For comparison, in CY 2012 there were 26 such samples and in CY 2011 155 such samples respectively.

Under the inspector-generated sampling program, FSIS IPP collected **170,560** sample for KIS™ testing in the field and submitted 3,968 samples (3,967 KIS™ test, and 1 FAST) for laboratory confirmation. A total of **1,253** residue tissue violations in **1,045** carcasses were identified. For comparison, in CY 2012 there were 1,166 residue tissue violations in 928 violative carcasses and in CY 2011 there were 1,289 residue tissue violations in 1,010 violative carcasses.

Additional violative results in 2013 (**12** residue tissue violations in **8** carcasses) were identified through other projects associated with inspector-generated sampling programs. This includes samples sent directly to lab, samples from show animals, and samples from the U.S. States testing programs.

Analysis of the Jan-Sep 2013 inspector-generated program samples violations showed that the predominant drug violations were Ceftiofur, which accounted for (319 out of 1,265 or 25% of violative samples), followed by Penicillin (282 or 22%), and Neomycin (214 or 17%) respectively. For comparison, in CY 2012 the top three violative levels were Penicillin, Neomycin, and Ceftiofur and in CY 2011, the top three violative levels were Penicillin, Neomycin, and Sulfadimethoxine. This sampling program also identified **1,099** samples with non-violative positive residue levels. For comparison, in CY 2012 and CY 2011 the numbers were 1,352 and 1,810 respectively.

In addition, FSIS plans and administers an import reinspection program as part of the NRP. After U.S. Customs and Border Protections and USDA/APHIS requirements are met, shipments imported into the United States must be reinspected by FSIS at an approved import inspection facility. FSIS inspectors carry out reinspection in official import plants. Of the 817 samples analyzed in 2013, **four** violative residue samples were detected (3 from Brazil and 1 from Nicaragua).

FSIS continually strives to improve methods for reporting the NRP data. These reports and previous year's residue sample results are publicly available on the FSIS website. http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry

Introduction

FSIS administers the U.S. National Residue Program (U.S. NRP) as a risk-based testing program. This program focuses on chemical residues in domestic meat, poultry, and egg products. The U.S. NRP domestic sampling program is comprised of scheduled sampling and inspector-generated sampling from food animals that have passed ante-mortem inspection. This approach allows for the detection of residues or contaminants in food at concentrations that could adversely affect human health. The levels at which violations occur (e.g., those above an established tolerance) are based on toxicological studies evaluating the potential human health risk from exposure to these residues or contaminants as determined by FDA (under 21 CFR Part 556) and EPA (under 41CFR Part 180).

All U.S. NRP samples were analyzed at one of three FSIS laboratories: the Eastern Laboratory (EL) in Athens, GA; the Midwestern Laboratory (MWL) in St. Louis, MO; or the Western Laboratory (WL) in Alameda, CA. All of them are accredited under International Organization for Standardization (ISO) 17025.

In 2012, FSIS made the decision to harmonize the U.S NRP with other Agency sampling programs and shifted the 12-month cycle to a fiscal period. To accomplish this, FY2013 FSIS chemical residue results represent the period from January 2013 through September 2013, allowing for 2012 to be the last full calendar report cycle and 2014 to be the first complete fiscal reporting cycle. Thus FY2014 is the first full fiscal year (Oct 2013 through Sept 2014) of residue sampling results.

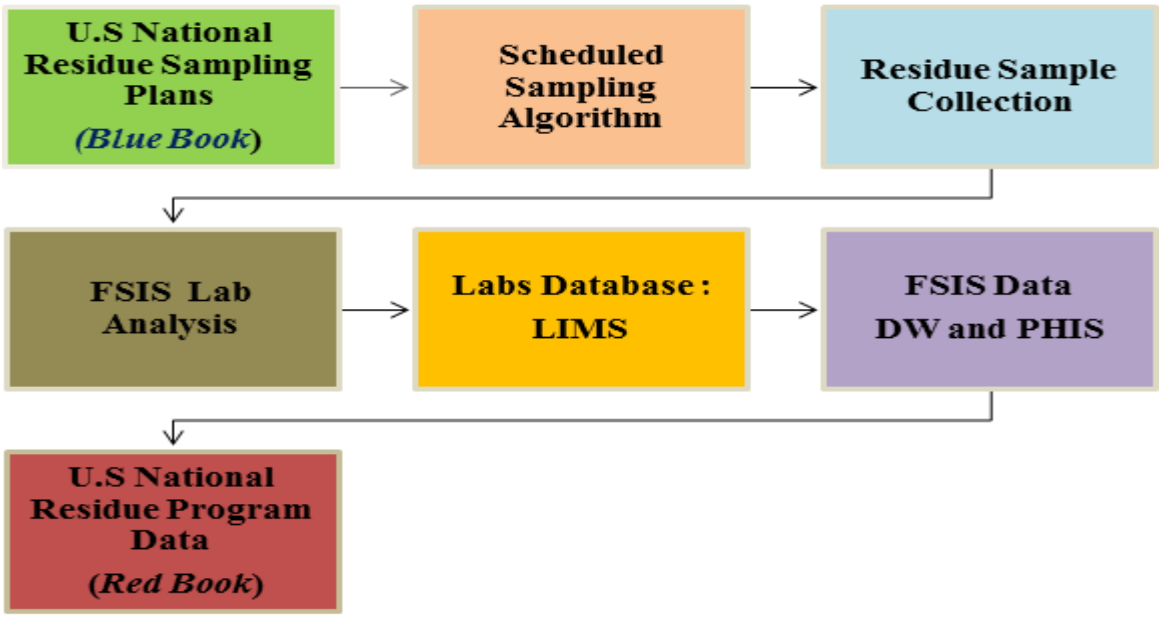
In July 2012, FSIS issued a Federal Register notice to announce restructuring of the U.S. NRP with respect to how sampling of chemical compounds in slaughter classes and egg product classes is scheduled. Beginning in August 2012, FSIS implemented two new multi-residue chemical methods. Because these methods are capable of evaluating several classes of veterinary drugs, FSIS discontinued testing slaughter class for single chemical or chemical classes i.e. "paired sampling." These changes are detailed in the July 2012 Federal Register Notice: (http://www.fsis.usda.gov/wps/wcm/connect/96433e1b-d3b6-42b0-93a8-f0beee77e520/2012-0012.pdf?MOD=AJPERES)

Under the scheduled sampling program in Jan-Sep 2013, FSIS tested nine slaughter classes (beef cows, bob veal, dairy cows, heifers , steers, market hogs, sows, young chickens, and young turkeys) representing 95% of domestic meat and poultry slaughter production.

Tier-1 Domestic Scheduled Sampling

Tier-1 constitutes the domestic scheduled sampling portion of the U.S. NRP and serves as a baseline for chemical residue exposure levels. While the traditional program required random sample collection from each slaughter subclass regulated, under the new program tier-1 sampling includes only the major animal classes.

Figure 1. National Residue Program: Domestic Scheduled Sampling



Note: The residue sample results of establishments with violations also are reported in the Residue Violation Information System (RVIS). These results are provided in PDF and Excel spreadsheet format, and contain information to help establishments; Livestock Markets and inspection program personnel identify producers with a history of residue violations. For more information please refer to:
http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry

Tier-2 Targeted sampling

Tier-2 sampling constitutes the inspector-generated sampling program administered by FSIS Inspection Program Personnel (IPP) (Public Health Veterinarians (PHV), and Consumer Safety Inspectors (CSI), at the establishment level. When IPP suspect evidence of disease or use of a drug, they hold the carcass and collect samples to test for violative levels of chemical residues. If the in-plant screen test result is negative, the carcass is released. If the in-plant screen test result is positive, muscle, liver, and kidney samples are collected and sent for laboratory confirmation, and the carcass is held at the establishment pending the results of laboratory confirmation testing. The PHV will condemn carcasses confirmed to contain violative levels of residues. Additionally, tier-2 sampling may also include any exploratory testing, usually for a limited number of samples collected over a short period of time in order for FSIS to gather information on a particular chemical residue in a given animal class.

FSIS inspection program personnel (IPP) conduct inspector-generated sampling when they suspect that animals may have violative levels of chemical residues. Currently, inspector-generated sampling targets individual suspect animals and suspect populations of animals and animals condemned for specific pathologies listed in FSIS Directive 10,800.1, Rev 1. When Public Health Veterinarians (PHVs) detect evidence of a disease that may have been treated or suspect the use of a drug, they retain the carcass and test samples from those carcasses to screen for the presence of chemical residues. If the in-plant test is negative for antimicrobial residues, the carcass is released to the establishment. If the in-plant test is positive, the carcass is held pending the results of laboratory testing. The PHV condemns carcasses of animals found to contain violative levels of residues in the muscle or if an unapproved drug is detected in any tissue.

In the FY 2013 NRP, IPP completed in-plant residue screens using the Kidney Inhibition Swab test (KIS™ test). The screen positive samples were submitted to the FSIS Midwestern Laboratory and analyzed by the lab to identify, quantify and confirm the contaminants. The lab used multi-residue screening method to test in-plant screen positives.

- **Sampling for individual suspect animals**

Under the direction of the PHV, IPP are to conduct a KIS™ test on any carcass that based on herd history or ante-mortem or post-mortem findings inspection findings may contain a violative drug residue. IPP are to follow the instructions provided in Directive 10,800.1, Rev 1, chapter three for circumstances warranting a KIS ™ test and Chapter Four for performing KIS™ tests and documenting the task in PHIS. The PHV selects a carcass for sampling based on the criteria outlined in FSIS Directive 10,800.1, Rev 1 (i.e., animal with disease signs and symptoms, producer history, or as a follow-up to results from random scheduled sampling). Usually, the sample is screened in the plant by the IPP and the screen-result verified when necessary by a PHV. Other samples are sent directly to the laboratory for analysis. For example, if the IPP suspects the misuse of a veterinary drug in an animal, she/he can perform the relevant in-plant screening test. If the result of a screening test is positive, the carcass is held (if it is not already condemned for other pathology or conditions that would make it unfit for human consumption), and the liver, kidney, and muscle samples from the carcass are then sent to an FSIS laboratory for analysis and confirmation.

- **Sampling for suspect animal populations**

Sampling for suspect animal populations is directed by an FSIS regulation (9 CFR 310.21) and Directive 10,800.1, Rev 1. This is outlined for healthy appearing bob veal calves and show animals.

- **Targeted Sampling**

  FSIS implements targeted sampling plans (exploratory assessments) to respond to information about misuse of animal drugs and/or exposure to environmental chemicals provided by other agencies (such as FDA and EPA), as well as in response to Tier 1 analytical results. These plans may or may not be conducted over a twelve month period. FSIS may conduct studies to develop information on the frequency and concentration at which some residues like trace metals and industrial components may be inadvertently be present in animals. The tier 2 could be designed to distinguish components of livestock, poultry and egg products in which residue problems exist, to measure the extent of problems, and to evaluate the impact of actions taken to reduce the occurrence of residues in the food animal population.

  The sample request forms appear as a directed task on the PHIS. The sampling task provides information to the IPP on when to collect the sample (collection window) and which slaughter production class to sample. The establishment holds or controls livestock carcasses selected for testing pending the test results. For directed residue testing of poultry, the IPP recommend to the establishment that the establishments hold the specific poultry carcasses selected for residue testing pending the test results.

Tier-3 Targeted Flock/Herd Sampling

The Tier 3 sampling plan is similar in structure to the exploratory assessment program in Tier 2, with the exception that Tier 3 will encompass targeted testing at a herd or flock level. A targeted testing program designed for livestock or flocks originating from the same farm or geographic region may be necessary on occasion to determine the level of exposure to a chemical or chemicals.

For instance, producers may administer some veterinary drugs to a herd or a flock (for example, growth promotants or antibiotics given in the feed) in a way that involves misuse. In addition, livestock and birds may be exposed unintentionally to an environmental contaminant. Therefore, a targeted testing program designed for herds or flocks originating from the same farm or region may be necessary on occasion to determine the level of a chemical or chemicals to which the livestock or the birds in the flock have been exposed. Tier 3 will provide a vehicle for developing information that will support future policy development within the NRP.

Definitions of FSIS Animal Production Classes

Bovine

- Beef cows are mature, female cattle bred for muscle development, ordinarily having given birth to one or more calves.
- Bulls are mature, uncastrated male cattle.
- Calves/veal: The agency is currently engaging in rulemaking to define "veal." For sampling purposes under the NRP, veal calves are defined as immature cattle (including dairy breeds) lacking a functional rumen and intended for meat production. They are recognized as a separate class from suckling calves because of their handling, housing, and proximity to slaughter.
- Dairy cows are mature, female cattle bred for milk production, ordinarily having given birth to one or more calves.
- Heifers are young, female cattle more than 1 year old that have not yet given birth to a calf.
- Steers are male cattle castrated before sexual maturity.

Porcine

- Boars are mature swine showing male sexual characteristics.
- Market hogs are swine, usually marketed near 6 months of age and 200 to 300 pounds live weight.
- Roaster pigs are animals of both sexes and any age that are marketed with the carcass unsplit and with the head on.
- Sows are mature, female swine, ordinarily having given birth to one or more litters.
- Stags are male swine castrated after they have reached sexual maturity.

Poultry

- Ducks are birds of both sexes and any age.
- Egg products include yolks, whites, or whole eggs after breaking; eggs are processed as dried, frozen, or liquid.
- Geese are birds of both sexes and any age.
- Mature chickens are adult female birds, usually more than 10 months of age.
- Mature turkeys are birds of both sexes and usually more than 15 months of age.
- Young chickens include broilers/fryers birds of both sexes that are usually less than 10 weeks of age. Roasters are birds of both sexes, usually less than 12 weeks of age; capons are surgically castrated male birds usually less than 8 months of age.
- Young turkeys include fryer/roaster birds that are of both sexes and usually less than 12 weeks of age.
- Other poultry include ratites (e.g., ostriches, emus, and rheas), guineas, squabs (young, unfledged pigeons), adult pigeons, pheasants, grouse, partridge, quail, etc.

Other Livestock

- Goats are animals of both sexes and any age.
- Lambs are sheep younger than 14 months and having a break joint in at least one leg.
- Rabbits are any of several lagomorph mammals of both sexes and any age.

Summary of Domestic Residue Sampling Program

Table 1. 2013 Number of Scheduled Residue Samples Tested by Slaughter Class

Slaughter Class	Domestic Scheduled Sampling Tier-1 U.S. Federal Plants	Domestic Scheduled Sampling Tier-1 U.S. State Plants	Inspector-generated Sampling Tier-2 Suspect Animals FAST & KIS™
Beef Cows	573	31	13,598
Boars/Stags			113
Bob Veal	457	3	37,100
Bulls			1,923
Dairy Cows	566	15	74,856
Formula-Fed Veal			541
Goats			409
Heavy Calves			894
Heifers	303	14	2,960
Lambs			985
Market Hogs	550	25	15,365
Mature Sheep			330
Non-Formula-Fed Veal			224
Roaster Pigs			1,425
Sows	566	24	10,110
Steers	297	13	9,727
Young Chickens	561	20	
Young Turkeys	563	2	
Total	**4,436**	**147**	**170,560***

* An additional 132 inspector-generated samples were collected and sent to FSIS labs for analysis. These samples are associated with project names COLLGEN, SHOW, and STATE samples.

Domestic Residue Scheduled Sampling Program

This section reports the summary results from the FSIS Domestic Scheduled Sampling Plan. The summary results are associated with specific slaughter class. All data reported in the following tables were collected from the FSIS Data Warehouse and PHIS databases.

Table 2a identifies the methods/chemical classes and slaughter classes for which the methods are validated.

Table 2b identifies the chemical residue by Class/Method

Table 3 summarizes the number of domestic scheduled samples that were analyzed by slaughter class.

Table 4 summarizes the number of domestic scheduled samples by analytes completed for the identified slaughter class.

Table 5 summarizes violation results by slaughter class.

Note: Residue detected results with "**8888**" indicate instances when residues were detected, but were not quantitated.

Table 2a. 2013 List of Slaughter Class by Chemical Class (Analyses Performed) (Tier 1)

Beginning August 2012, FSIS implemented a multi-residue method to evaluate multiple classes of veterinary drug in a single sample.

Slaughter Class by Compound Class Jan-Sep 2013									
Methods/Classes	**Beef Cows**	**Bob veal**	**Dairy cows**	**Heifers**	**Steers**	**Market hogs**	**Sows**	**Young chickens**	**Young turkeys**
Multi-class	√	√	√	√	√	√	√	√	√
Aminoglycoside	√	√	√	√	√	√	√	√	√
Pesticides	√	√	√	√	√	√	√	√	√
Metals	√	√	√	√	√	√	√	√	√
***beta*-Agonists**	√	√	√	√	√				
Avermectins	√	√	√	√	√	√	√		
Carbadox						√			
Nitrofurans			√			√	√		
Arsenic	√	√	√	√	√	√	√	√	√

Table 2b. 2013 List of Chemical residues by Class/Method

Multi-Residue Method Analytes[4]			
2-Quinoxaline Carboxylic Acid (QCA)	Dicloxacillin	Penicillin G	Sulfamethazine
Amoxicillin	Difloxacin	Phenylbutazone	Sulfamethizole
Ampicillin	Enrofloxacin	Pirlimycin	Sulfamethoxazole
Beta/Dexamethasone	Erythromycin A	Prednisone	Sulfamethoxypyridazine
Cefazolin	Florfenicol	Ractopamine	Sulfanitran
Chloramphenicol	Flunixin	Salbutamol	Sulfapyridine
Chlortetracycline	Gamithromycin	Sarafloxacin	Sulfaquinoxaline
Cimaterol	Lincomycin	Sulfachloropyridazine	Sulfathiazole
Ciprofloxacin	Melengestrol Acetate	Sulfadiazine	Tetracyline
Clindamycin	Naficillin	Sulfadimethoxine	Tilmicosin
Cloxacillin	Norfloxacin	Sulfadoxine	Tulathromycin A
Danofloxacin	Oxacillin	Sulfaethoxypyridazine	Tylosin
DCCD	Oxyphenylbutazone	Sulfamerazine	Zeranol (B-Zearalanol)
Desethylene Ciprofloxacin	Oxytetracline	Penicillin G	

Metals Method Analytes[5]		
Iron	Barium	Selenium
Zinc	Chromium	Manganese
Copper	Vanadium	Molybdenum
Nickel	Strontium	Thallium
Aluminum	Lead	Cobalt
Boron	Cadmium	

[4] As of September 2013. Methods on the FSIS website are presented as current to date – older versions of methods are removed from the website once replaced by more current versions of the methods.

[5] Ibid

*Continued…***Table 2b. 2013 List of Chemical residues by Class/Method**

PESTICIDE METHOD - ANALYTES[6]			
3-Hydroxycarbofuran	Clofentezine	Heptachlor epoxide, cis	Oxychlordane
Acephate	Cypermethrin	Heptachlor epoxide, trans	Permethrin (cis & trans)
Alachlor	Deltamethrin	Imazalil	Piperonyl butoxide
Aldrin	Dichlorvos (DDVP)	Imidacloprid	Pronamide
Azinphos methyl	Dieldrin	Indoxacarb	Propanil
Bifenthrin	Difenoconazole	L-Cyhalothrin	Propiconazole
Boscalid	Diflubenzuron	Linuron	Pyridaben
Carbaryl	Diuron	Metalaxyl	Simazine
Carbofuran	Endosulfan I	Methomyl	Tebufenozide
Carfentrazone ethyl	Endosulfan II	Methoxyfenozide	Tefluthrin
Chlordane cis	Endosulfan sulfate	Mirex	Tetrachlorvinphos
Chlordane trans	Ethofumesate	Myclobutanil	Tetraconazole
Chlorpyrifos	Fipronil	Nonachlor trans	Thiabendazole
Chlorpyrifos methyl	Heptachlor	Norflurazon	Thiamethoxam

[6] As of September 2013. Methods on the FSIS website are presented as current to date – older versions of methods are removed from the website once replaced by more current versions of the methods.

Table 3. 2013[7] Status of Total Number of Domestic Scheduled Samples Analyzed by Slaughter Class – and Summary Results

Slaughter Class	Number of Non-Detect Samples	Number of Non-Violative Positives	Number of Lab-Confirmed Violative Samples	Total Samples
Beef Cows	601	3	-	604
Bob Veal	448	2	10	460
Dairy Cows	579	1	1	581
Heifers	311	5	1	317
Steers	302	7	1	310
Market Hogs	571	3	1	575
Sows	587	2	1	590
Young Chickens	581	-	-	581
Young Turkeys	565	-	-	565
TOTAL	**4,545**	**23**	**15**	**4,583**

Table 4. 2013 Domestic Scheduled Sampling Results

Slaughter Class	Number of Non-Detect Analytes	Number of Non-Violative Positives Analytes	Number of Lab Confirmed Violative Analytes	Number of Detect (Non Regulated Analytes)	Number of Non-Detect (Non Regulated Analytes)	Total Number of Analyses Performed
Beef Cows	58,590	3	-	14	869	59,476
Bob Veal	44,493	2	13	-	877	45,385
Dairy Cows	56,847	1	1	9	881	57,739
Heifers	31,226	5	1	38	439	31,709
Steers	30,472	7	1	30	411	30,921
Market Hogs	56,131	3	1	24	842	57,001
Sows	57,101	2	2	5	955	58,065
Young Chickens	42,958	-	-	8	1,028	43,994
Young Turkeys	40,913	-	-	7	1,176	42,096
TOTAL	**418,731**	**23**	**19**	**135**	**7,478**	**426,386**

Note: Multiple violative and/or non-violative results may be associated with a single sample (carcass). **Data Source:** FSIS Data Warehouse and PHIS databases.

[7] 2013 Jan-Sept only – add a footnote per earlier comment

Table 5. 2013 Domestic Scheduled Sampling Plan Violations

Slaughter Class	Tissue	Compound	Concentration (ppm)	Tolerance Level Value
Bob Veal	Muscle	Piperonyl Butoxide	0.156	0.1
Bob Veal	Muscle	Piperonyl Butoxide	0.112	0.1
Bob Veal	Muscle	Piperonyl Butoxide	0.5848	0.1
Bob Veal	Kidney	Sulfadimethoxine	*	Not approved for use in Veal
Bob Veal	Liver	Sulfadimethoxine	0.185	Not approved for use in Veal
	Muscle	Sulfadimethoxine	0.132	Not approved for use in Veal
Bob Veal	Liver	Sulfamethazine	13.7	0.1
	Muscle	Sulfamethazine	13.23	0.1
Bob Veal	Kidney	Sulfamethoxazole	*	Not approved for use in Veal
Heifer	Muscle	Piperonyl Butoxide	0.1303	0.1
Bob Veal	Muscle	Penicillin	0.054	0.05
	Kidney	Penicillin	0.222	0.05
Bob Veal	Muscle	Tulathromycin	*	5.5
Bob Veal	Liver	Tilmicosin	2.044	1.2
Dairy Cow	Liver	Flunixin	0.846	0.125
Steers	Muscle	Piperonyl Butoxide	0.2514	0.1
Sow	Liver	Sulfamethazine	1.34	0.1
	Muscle	Sulfamethazine	0.802	0.1
Market Hogs	Muscle	Piperonyl Butoxide	0.1558	0.1

* Violative residue results were detected but not quantified.

Summary of Domestic Inspector-Generated Sampling Program

PHVs, and CSIs under the guidance of a PHV, conduct inspector-generated residue sampling when an animal is suspected to have undergone drug treatment and possibly contains violative levels of chemical residues. The PHVs and CSIs also are encouraged to collect samples for residue testing by the FSIS labs when a chemical contamination is suspected. Sample screening is performed using either the FAST or the KIS™ test. If FAST supplies or KIS™ test kits are not available, the PHV submits the sample to the FSIS laboratory for testing. FSIS began incorporating the KIS™ test in all dual slaughter plants in August 2011. Since CY2012, the agency gradually phased in the KIS™ test as the in-plant screening test, replacing FAST. However during this phase out period, some IPP continued to use the remaining FAST supplies.

Table 6 summarizes the total number in-plants screens tests using the FAST or the KIS™ test, which includes the number of in-plants screens with negative results, and number of positive screens sent to FSIS labs for conformation

Table 7 summarizes the total number of samples analyzed and the number of carcasses with violations for each slaughter class.

Tables 8 summarizes the results for specific compounds that were detected (violative) within the slaughter class across inspector-generated projects names (i.e., collector-generated or COLLGEN, FAST, and KIS™ test, etc.) respectively.

Tables 9–10 summarize the results for specific chemical compounds that were detected (violative) within several inspector-generated project codes and within slaughter class across inspector-generated program respectively.

Tables 11–13 summarize the inspector-generated sampling results for non-violative positive residue samples for a specific compounds that were detected (non-violative) within the slaughter class (i.e., collector-generated-COLLGEN-, FAST, and KIS™ test,…etc.).

Tables 12–13 summarize the results for specific chemical compounds that were detected (non-violative) within several inspector generated project codes and within slaughter class across inspector-generated program respectively.

Note: Data in this document were table was obtained from the FSIS Data Warehouse and PHIS databases.

2013 Domestic Residue Scheduled Sampling: Inspector-Generated Sampling

Table 6. 2013 In-plant Screen Results (by Test Type)

Slaughter Class	FAST			KIS™ test			TOTAL		
	Number of In-plant (screened) Negative Samples	Number of In-plant (screened) Positive Samples	Total	Number of In-plant (screened) Negative Samples	Number of In-plant (screened) Positive Samples	Total	Number of In-plant (screened) Negative Samples	Number of In-plant (screened) Positive Samples	Total
Beef Cows	-	-	-	13,245	**353**	13,598	13,245	**353**	13,598
Boars/Stags	-	-	-	112	**1**	113	112	**1**	113
Bob Veal	-	-	-	36,218	**882**	37,100	36,218	**882**	37,100
Bulls	-	-	-	1,841	**82**	1,923	1,841	**82**	1,923
Dairy Cows	-	-	-	72,910	**1946**	74,856	72,910	**1946**	74,856
Formula-Fed Veal	-	-	-	522	**19**	541	522	**19**	541
Goats	2	**0**	2	396	**11**	407	398	**11**	409
Heavy Calves	1	**1**	2	816	**76**	892	817	**77**	894
Heifers	-	-	-	2,891	**69**	2,960	2,891	**69**	2,960
Lambs	17	**0**	17	960	**8**	968	977	**8**	985
Market Hogs	4	**0**	4	15,237	**124**	15,361	15,241	**124**	15,365
Mature Sheep	-	-	-	328	**2**	330	328	**2**	330
Non-Formula-Fed Veal	-	-	-	215	**9**	224	215	**9**	224
Roaster Pigs	-	-	-	1,423	**2**	1,425	1,423	**2**	1,425
Sows	-	-	-	9,906	**204**	10,110	9,906	**204**	10,110
Steers	-	-	-	9,548	**179**	9,727	9,548	**179**	9,727
Total	**24**	**1**	**25**	**166,568**	**3,967**	**170,535**	**166,592**	**3,968**	**170,560**

Note: Samples that are FAST and/or KIS™ test positive in the plant are further analyzed for flunixin and phenylbutazone in the laboratory

Table 7. 2013 Number of Violative Residue Carcasses in inspector generated sampling, by Project Code

Slaughter Class	COLLGEN		FAST		KIS ™ test		SHOW		STATE	
	Number of Samples	**Number of Carcasses With Confirmed Lab Violations**	* Number of In-plant (screened) Positive Samples	**Number of Carcasses With Confirmed Lab Violations**	* Number of In-plant (screened) Positive Samples	**Number of Carcasses With Confirmed Lab Violations**	Number of Samples	**Number of Carcasses With Confirmed Lab Violations**	Number of Samples	**Number of Carcasses With Confirmed Lab Violations**
Beef Cows	2	-	-	-	353	**74**	-	-	1	-
Boars/Stags	-	-	-	-	1	-	-	-	-	-
Bob Veal	-	-	-	-	882	**343**	-	-	1	**1**
Bulls	2	**1**	-	-	82	**15**	-	-	-	
Dairy Cows	8	**1**	-	-	1946	**461**	1	-	8	**1**
Formula-Fed Veal	-	-	-	-	19	**2**	-	-	-	-
Goats	2	-	0	0	11	**1**	2	-	-	-
Heavy Calves	1	-	1	0	76	**13**		-	2	-
Heifers	7	-	-	-	69	**14**	2	-	1	-
Lambs	4	-	0	0	8	-	7	**1**	-	-
Market Hogs	19	-	0	0	124	**10**	19	**2**	7	-
Mature Sheep	19	-	-	-	2	-		-	1	-
Non-Formula-Fed Veal	2	-	-	-	9	**2**	-	-	-	-
Roaster Pigs	-	-	-	-	2	-	-	-	-	-
Sows	-	-	-	-	204	**85**	-	-	2	**1**
Steers	11	-	-	-	179	**25**	9	-	5	-
Other**	5	-	-	-	-	-	-	-	-	-
Total	**64**	**2**	1	**0**	3,967	**1,045**	40	**3**	28	**3**

* Cattle samples that are FAST and/or KIS™ test positive in the plant are further analyzed for flunixin in the laboratory

** Other represents samples submitted without identification of product class.

Table 8. 2013 Number of Violative Residue Carcasses in inspector generated sampling, by Project Code

Slaughter Class	Project Code				
	KIS™ Test	COLLGEN	SHOW	STATE	Total
Beef Cows	96	-	-	-	**96**
Bob Veal	403	-	-	2	**405**
Bulls	22	1	-	-	**23**
Dairy Cows	536	1	-	1	**538**
Formula-Fed Veal	2	-	-	-	**2**
Goats	1	-	-	-	**1**
Heavy Calves	21	-	-	-	**21**
Heifers	23	-	-	-	**23**
Lamb	-	-	1	-	**1**
Market Hogs	12	-	4	-	**16**
Non-Formula-Fed Veal	2	-	-	-	**2**
Sows	99	-	-	2	**101**
Steers	36	-	-	-	**36**
TOTAL	**1,253**	**2**	**5**	**5**	**1,265**

Note: Multiple violative residue results may be associated with the same sample (carcass).

Table 9. Number of Violative Residue Carcasses in inspector generated sampling, by Project Code

Chemical Residue detected	Project code				Total
	KIS ™ Test	COLLGEN	SHOW	STATE	
Ampicillin	14	-	-	-	**14**
Cefazolin	7	-	-	-	**7**
Ciprofloxacin	11	-	-	-	**11**
Ceftiofur	318	-	-	1	**319**
Dihydrostreptomycin	17	-	-	-	**17**
Doramectin	1	-	-	-	**1**
Enrofloxacin	4	-	-	-	**4**
Florfenicol	46	-	-	-	**46**
Flunixin	77	-	-	1	**78**
Gamithromycin	2	-	-	-	**2**
Gentamycin Sulfate	35	1	-	-	**36**
Lincomycin	2	-	-	-	**2**
Neomycin	214	-	-	-	**214**
Oxyphenylbutazone	1	-	-	-	**1**

Note: Multiple violative residue results may be associated with the same sample (carcass).

Table 9. Number of Violative Residue Carcasses in inspector generated sampling, by Project Code (*continued*)

Chemical Residue detected	Project code				Total
	KIS ™ Test	COLLGEN	SHOW	STATE	
Oxytetracycline	7	-	-	-	**7**
Penicillin	278	-	2	2	**282**
Phenylbutazone	1	-	-	-	**1**
Piperonyl Butoxide	-	-	1	-	**1**
Salbutamol	1	-	-	-	**1**
Sulfadiazine	7	-	-	-	**7**
Sulfadimethoxine	49	1	-	-	**50**
Sulfadoxine	2	-	-	-	**2**
Sulfamethazine	58	-	2	-	**60**
Sulfamethoxazole	19	-	-	-	**19**
Tetracycline	8	-	-	-	**8**
Tilmicosin	60	-	-	-	**60**
Tulathromycin	10	-	-	-	**10**
Tylosin	1	-	-	1	**2**
Zeranol	3	-	-	-	**3**
Total	**1,253**	**2**	**5**	**5**	**1,265**

Table 10. 2013 Number of Residue Violations results in inspector generated sampling by Chemical Residue and Slaughter Class

Chemical Residue detected	Beef Cows	Bob Veal	Bulls	Dairy Cow	Formula-Fed Veal	Goats	Heavy Calf	Heifer	Lamb	Market Swine	Non Formula - Fed Veal	Sows	Steers	Total
Ampicillin	-	2	-	11	-	-	-	-	-	-	-	1	-	**14**
Cefazolin	1	2	-	4	-	-	-	-	-	-	-	-	-	**7**
Ciprofloxacin	-	3	1	5	-	-	1	1	-	-	-	-	-	**11**
Ceftiofur	13	49	2	238	-	-	4	4	-	-	-	1	8	**319**
Dihydrostreptomycin	-	8	-	9	-	-	-	-	-	-	-	-	-	**17**
Doramectin	1	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Enrofloxacin	-	4	-	-	-	-	-	-	-	-	-	-	-	**4**
Florfenicol	16	3	4	11	-	-	3	2	-	-	-	-	7	**46**
Flunixin	1	17	5	43	1	-	3	3	-	-	-	-	5	**78**
Gamithromycin	-	2	-	-	-	-	-	-	-	-	-	-	-	**2**
Gentamycin Sulfate	9	7	2	12	-	-	1	1	-	-	1	1	2	**36**
Lincomycin	-	2	-	-	-	-	-	-	-	-	-	-	-	**2**
Neomycin	1	204	1	5	1	-	-	2	-	-	-	-	-	**214**
Oxyphenylbutazone	-	-	1	-	-	-	-	-	-	-	-	-	-	**1**

Table 10. 2013 Number of Residue Violations results in inspector generated sampling by Chemical Residue and Slaughter Class *(Continued)*

Chemical Residue detected	Beef Cows	Bob Veal	Bulls	Dairy Cow	Formula-Fed Veal	Goats	Heavy Calf	Heifer	Lamb	Market Swine	Non Formula-Fed Veal	Sows	Steers	Total
Oxytetracycline	2	2	2	1	-	-	-	-	-	-	-	-	-	**7**
Penicillin	20	11	2	137	-	-	1	4	-	10	-	92	5	**282**
Phenylbutazone	-	-	-	1	-	-	-	-	-	-	-	-	-	**1**
Piperonyl Butoxide	-	-	-	-	-	-	-	-	1	-	-	-	-	**1**
Salbutamol	-	-	-	1	-	-	-	-	-	-	-	-	-	**1**
Sulfadiazine	-	6	-	1	-	-	-	-	-	-	-	-	-	**7**
Sulfadimethoxine	8	3	-	31	-	1	3	3	-	-	-	-	1	**50**
Sulfadoxine	-	-	-	2	-	-	-	-	-	-	-	-	-	**2**
Sulfamethazine	9	23	1	11	-	-	3	-	-	6	1	3	3	**60**
Sulfamethoxazole	-	19	-	-	-	-	-	-	-	-	-	-	-	**19**
Tetracycline	-	4	-	4	-	-	-	-	-	-	-	-	-	**8**
Tilmicosin	15	23	2	10	-	-	2	3	-	-	-	-	5	**60**
Tulathromycin	-	10	-	-	-	-	-	-	-	-	-	-	-	**10**
Tylosin	-	1	-	1	-	-	-	-	-	-	-	-	-	**2**
Zeranol	-	-	-	-	-	-	-	-	-	-	-	3	-	**3**
TOTAL	**96**	**405**	**23**	**538**	**2**	**1**	**21**	**23**	**1**	**16**	**2**	**101**	**36**	**1,265**

Table 11. 2013 Number of Positive Non-Violative Residue in Inspector generated Sampling by Slaughter Class and Project Code

Slaughter Class	Project Code					Total
	FAST	KIS™ Test	COLLGEN	SHOW	STATE	
Beef Cows	-	104	-	-	-	**104**
Bob veal	-	374	-	-	1	**375**
Bulls	-	35	-	-	-	**35**
Dairy Cows	-	406	-	-	-	**406**
Formula-fed Veal	-	2	-	-	-	**2**
Goats	-	5	-	-	-	**5**
Heavy Calves	-	17	-	-	-	**17**
Heifers	-	24	-	-	-	**24**
Lambs	1	1	-	1	-	**3**
Market Hogs	-	19	1	3	-	**23**
Non Formula-Fed Veal	-	2	2	-	-	**4**
Sows	-	24	-	-	-	**24**
Steers	-	77	-	-	-	**77**
TOTAL	**1**	**1,090**	**3**	**4**	**1**	**1,099**

Note: Note: Multiple Positive non-violative residue results may be associated with the same sample (carcass).

Table 12. 2013 Number of Positive Non-Violative Residue in Inspector generated Sampling by Chemical Residue and Project Code

Chemical Residue detected	Project Code					Total
	FAST	KIS ™ Test	COLLGEN	SHOW	STATE	
Ampicillin	-	12	-	-	-	**12**
Chlortetracycline	1	7	-	-	-	**8**
Cloxacillin	-	3	-	-	-	**3**
Danofloxacin	-	8	-	-	-	**8**
Desethylene ciprofloxacin	-	3	-	-	-	**3**
Ceftiofur	-	106	-	-	1	**107**
Dexamethasone	-	13	-	-	-	**13**
Dihydrostreptomycin	-	5	-	-	-	**5**
Enrofloxacin	-	8	-	-	-	**8**
Florfenicol	-	21	-	-	-	**21**
Flunixin	-	35	-	-	-	**35**
Gamithromycin	-	13	1	-	-	**14**
Lincomycin	-	16	-	3	-	**19**
Neomycin	-	190	-	-	-	**190**
Oxytetracycline	-	269	-	-	-	**269**
Penicillin	-	101	-	-	-	**101**

Note: Multiple positive non-violative residue results may be associated with the same sample (carcass).

Table 12. 2013 Number of Positive Non-Violative Residue in Inspector generated Sampling by Chemical Residue and Project Code *(Continued)*

Chemical Residue detected	Project Code					Total
	FAST	KIS ™ Test	COLLGEN	SHOW	STATE	
Piperonyl Butoxide	-	-	-	1	-	**1**
Pirlimycin	-	5	-	-	-	**5**
Ractopamine	-	5	1	-	-	**6**
Spectinomycin	-	45	-	-	-	**45**
Sulfadimethoxine	-	13	-	-	-	**13**
Sulfamethazine	-	6	-	-	-	**6**
Tetracycline	-	55	-	-	-	**55**
Tilmicosin	-	28	-	-	-	**28**
Tulathromycin	-	114	1	-	-	**115**
Tylosin	-	3	-	-	-	**3**
Unidentified Microbial Inhibitor (UMI)	-	6	-	-	-	**6**
Total	**1**	**1,090**	**3**	**4**	**1**	**1,099**

Note: Multiple positive non-violative residue results may be associated with the same sample (carcass).

Table 13. 2013 Number of Positive but Non-Violative Residue Results by Chemical Residue and Slaughter Class

Chemical Residue detected	Beef Cows	Bob Veal	Bulls	Dairy Cow	Formula-fed Veal	Goats	Heavy Calf	Heifer	Lamb	Market Swine	Non Formula - Fed Veal	Sows	Steers	Total
Ampicillin	-	-	-	12	-	-	-	-	-	-	-	-	-	**12**
Chlortetracycline	-	3	-	-	-	-	1	1	1	-	-	-	2	**8**
Cloxacillin	-	2	-	1	-	-	-	-	-	-	-	-	-	**3**
Danofloxacin	-	-	1	2	-	-	-	1	-	-	-	-	4	**8**
Desethylene ciprofloxacin	-	1	-	1	-	-	-	1	-	-	-	-	-	**3**
Ceftiofur	7	29	-	67	-	-	-	-	-	1	-	-	3	**107**
Dexamethasone	2	-	-	9	-	-	-	1	-	-	-	-	1	**13**
Dihydrostreptomycin	-	1	-	4	-	-	-	-	-	-	-	-	-	**5**
Enrofloxacin	-	-	1	3	-	-	1	1	-	-	-	2	-	**8**
Florfenicol	6	-	-	5	-	-	-	4	-	-	-	-	6	**21**
Flunixin	2	-	1	25	-	-	1	1	-	-	-	3	2	**35**
Gamithromycin	2	-	2	7	-	-	-	1	-	-	1	-	1	**14**
Lincomycin	-	-	-	-	-	-	-	-	-	12	-	7	-	**19**
Neomycin	2	151	-	13	2	-	6	1	-	-	-	-	15	**190**
Oxytetracycline	41	148	10	58	-	-	2	-	-	1	1	4	4	**269**
Penicillin	9	8	-	81	-	-	-	1	-	-	-	-	2	**101**

Note: Multiple positive non violative residue results may be associated with the same sample (carcass).

Table 13. 2013 Number of Positive but Non-Violative Residue Results by Chemical Residue and Slaughter Class

Chemical Residue	Beef Cows	Bob Veal	Bulls	Dairy Cow	Formula-fed Veal	Goats	Heavy Calf	Heifer	Lamb	Market Swine	Non Formula -Fed Veal	Sows	Steers	Total
Piperonyl Butoxide	-	-	-	-	-	-	-	-	1	-	-	-	-	**1**
Pirlimycin	1	2	-	2	-	-	-	-	-	-	-	-	-	**5**
Ractopamine	-	-	-	-	-	-	-	1	-	3	-	-	2	**6**
Spectinomycin	1	15	1	26	-	-	-	-	-	1	-	-	1	**45**
Sulfadimethoxine	2	-	1	9	-	-	-	-	-	-	-	-	1	**13**
Sulfamethazine	1	-	1	1	-	-	-	1	-	1	-	-	1	**6**
Tetracycline	-	13	-	41	-	-	-	-	-	-	-	-	1	**55**
Tilmicosin	2	1	2	11	-	-	-	-	-	4	-	8	-	**28**
Tulathromycin	26	-	15	27	-	-	6	8	-	-	2	-	31	**115**
Tylosin	-	1	-	1	-	-	-	1	-	-	-	-	-	**3**
UMI	-	-	-	-	-	5	-	-	1	-	-	-	-	**6**
TOTAL	**104**	**375**	**34**	**406**	**2**	**5**	**17**	**24**	**3**	**23**	**4**	**24**	**77**	**1,099**

Note: Multiple positive non violative residue results may be associated with the same sample (carcass).

Import Reinspection Sampling Program

Imported meat, poultry, and egg products are sampled through the port-of-entry Import Reinspection Sampling Plan, a chemical residue monitoring program conducted to verify the equivalence of inspection systems in exporting countries to the United States standards. All imported products are subject to reinspection, and one or more types of inspection (TOI) are conducted on every lot of product before it enters the U. S. Chemical residue sampling is included in the reinspection of imported products.

Note: An import lot is a group of products defined statistically and/or scientifically by production segments and certified from one country, one establishment. A lot consists entirely of the same species, process category, and product standard of identity (sub-category). A single lot can contain shipping cartons with varying sizes of immediate containers.

The following three levels of chemical residue reinspection include:
• Normal sampling: random sampling from a lot;
• Increased sampling: above-normal sampling resulting from an Agency management decision; and
• Intensified sampling: additional samples when import product does not meet US standards

The import-sampling program will be structured using the Tier 1 and 2 frameworks. It also intends to screen a subset of these samples for unknown compounds in the FSIS Food Emergency Response Network (FERN) laboratory.

Between Jan-Sep, 2013, FSIS collected 817 import residue samples (993 residue analytes results) from 25 export countries. Four violations were detected (3 from Brazil samples, and 1 from Nicaragua). For more information, refer to the list of tables below.

Information for countries wanting to import to the United States can be found at:

Importing products to the United States

Information on US products eligible for export can be found at:

Export Library

Import Residue Reinspection Sampling Program

Table 14. 2013 Number of NRP Import Samples Analyzed, by Exporting Country and Production Class

Country	Production Class								Total
	Beef	Chicken	Goat	Lamb	Mutton	Pork	Turkey	Veal	
Argentina	6	-	-	-	-	-	-	-	**6**
Australia	50	-	4	7	3	-	-	8	**72**
Brazil	54	-	-	-	-	-	-	-	**54**
Canada	53	47	-	2	-	33	10	67	**212**
Chile	-	11	-	-	-	13	9	-	**33**
Costa Rica	82	-	-	-	-	-	-	1	**83**
Croatia	-	-	-	-	-	1	-	-	**1**
Denmark	-	-	-	-	-	18	-	-	**18**
Finland	-	-	-	-	-	7	-	-	**7**
Honduras	43	-	-	-	-	-	-	-	**43**
Hungary	-	-	-	-	-	1	-	-	**1**
Iceland	-	-	-	4	-	-	-	-	**4**
Ireland	-	-	-	-	-	10	-	-	**10**
Israel	-	3	-	-	-	-	5	-	**8**
Japan	8	-	-	-	-	-	-	-	**8**
Mexico	37	-	7	-	-	10	2	-	**56**
Netherlands	-	-	-	-	-	13	-	-	**13**
New Zealand	42	-	-	4	1	-	-	16	**63**
Nicaragua	51	-	-	-	-	-	-	-	**51**
Northern Ireland	-	-	-	-	-	8	-	-	**8**
Poland	-	-	-	-	-	7	-	-	**7**
San Marino	-	-	-	-	-	1	-	-	**1**
Spain	-	-	-	-	-	6	-	-	**6**
United Kingdom	-	-	-	-	-	8	-	-	**8**
Uruguay	44	-	-	-	-	-	-	-	**44**
TOTAL	**470**	**61**	**11**	**17**	**4**	**136**	**26**	**92**	**817**

Table 15. 2013 Import Testing Results by Exported Countries

Country	Detected Not Violative-Passed	Detected Violative-Failed	Discarded[6]	Not Detected-Passed	Total
Argentina	-	-	-	6	**6**
Australia	-	-	-	86	**86**
Brazil	3	**3**	6	43	**55**
Canada	3	-	1	257	**261**
Chile	-	-	-	49	**49**
Costa Rica	-	-	1	100	**101**
Croatia	-	-	-	1	**1**
Denmark	-	-	-	22	**22**
Finland	-	-	-	9	**9**
Honduras	5	-	2	51	**58**
Hungary	-	-	-	1	**1**
Iceland	-	-	-	4	**4**
Ireland	-	-	-	12	**12**
Israel	-	-	-	8	**8**
Japan	-	-	-	8	**8**
Mexico	-	-	-	66	**66**
Netherlands	-	-	-	13	**13**
New Zealand	-	-	1	76	**77**
Nicaragua	-	**1**	2	63	**66**
Northern Ireland	-	-	-	10	**10**
Poland	-	-	-	8	**8**
San Marino	-	-	-	1	**1**
Spain	-	-	1	6	**7**
United Kingdom	-	-	-	10	**10**
Uruguay	-	-	1	53	**54**
Total	**11**	**4**	**15**	**963**	**993**

Note: Multiple residue results may be associated with the same sample (carcass).

[6] Discard refer to samples that was not tested for ariety of reasons, such as missing info, sent to the wrong lab, Courier issues, lab equipment issues, etc.

Table 16. 2013 Import Testing Results by Chemical Compound and Production Class.

Chemical Compound	Beef	Chicken	Goat	Lamb	Mutton	Pork	Turkey	Veal	Total
Aminoglycosides	74	29	-	-	-	22	7	8	**140**
Arsenicals	2	20	-	-	-	36	10	-	**68**
Avermectins	216	-	11	17	4	1	-	19	**268**
beta Agonists	94	-	-	-	-	70	-	65	**229**
MRM	116	40	-	-	-	28	15	11	**210**
Pesticides	69	1	-	-	-	-	-	-	**70**
Sulfonamides	3	-	-	-	-	3	2	-	**8**
Total	**574**	**90**	**11**	**17**	**4**	**160**	**34**	**103**	**993**

Note: Multiple residue results may be associated with the same sample (carcass).

Table 17. 2013 Residue Results under the Import Reinspection Program, by Chemical Compound.

Chemical Compound	Detected Not Violative / Passed	Detected Violative / Failed	Discarded	Not Detected / Passed	Total
Aminoglycosides	1	-	-	139	**140**
Arsenicals	-	-	-	68	**68**
Avermectins	4	4	2	258	**268**
beta-Agonists	1	-	9	219	**229**
MRM	4	-	-	206	**210**
Pesticides	1	-	4	65	**70**
Sulfonamides	-	-	-	8	**8**
Total	**11**	**4**	**15**	**963**	**993**

Note: Multiple residue results may be associated with the same sample (carcass).

Table 18. 2013 Number OF Samples Analyzed under the Import Reinspection Program, by Production Class and Residue Result

Production Class	Detected Not Violative-Passed	Detected Violative-Failed	Discarded	Not Detected - Passed	Total
Beef	11	4	13	546	**574**
Chicken	-	-	-	90	**90**
Goat	-	-	-	11	**11**
Lamb	-	-	-	17	**17**
Mutton	-	-	-	4	**4**
Pork	-	-	1	159	**160**
Turkey	-	-	-	34	**34**
Veal	-	-	1	102	**103**
Total	**11**	**4**	**15**	**963**	**993**

Note: Multiple residue results may be associated with the same sample (carcass)..

Table 19. 2013 Number of Samples Analyzed under the Import Reinspection Program, by Production Class and Product Type.

Production Class	Fresh/Frozen	Processed	Total
Beef	513	61	**574**
Chicken	87	3	**90**
Goat	11	-	**11**
Lamb	17	-	**17**
Mutton	4	-	**4**
Pork	156	4	**160**
Turkey	28	6	**34**
Veal	103	-	**103**
Total	**919**	**74**	**993**

Note: Multiple residue results may be associated with the same sample (carcass).

Table 20. 2013 Samples Analyzed under the Import Reinspection Program by Chemical Residue and Product Type

Chemical Residue/Method	Fresh/ Frozen	Processed	Total
Aminoglycosides	139	1	**140**
Arsenicals	62	6	**68**
Avermectins	216	52	**268**
beta-Agonists	222	7	**229**
MRM	210	-	**210**
Pesticides	70	-	**70**
Sulfonamides	-	8	**8**
Total	**919**	**74**	**993**

Note: Multiple analytes results may be associated with one sample.

Table 21. 2013 Number of Samples Analyzed under the Import Reinspection Program by Product Type

Product Type	Detected Not Violative / Passed	Detected Violative / Failed	Discarded	Not Detected / Passed	Total
Fresh/Frozen	8	1	8	902	**919**
Processed	3	3	7	61	**74**
Total	**11**	**4**	**15**	**963**	**993**

Note: Multiple analytes results may be associated with one sample.

Appendix I

NRP Positive Non-Violative and Positive Violative Residue Samples Results

In addition to the publication of the 2013 United States National Residue Program samples results, FSIS will post the detailed positive non-violative, and positive violative residue results associated with the NRP sampling program in a spreadsheet format on the FSIS website: http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry/red-books/red-book.

This sheet includes detailed information regarding samples taken by FSIS in both the "scheduled" sampling and the "inspector-generated" sampling. FSIS plans to publish this detailed results on an ongoing basis. The purpose is to provide the residue testing results, and to increase program transparency for all stakeholders. The detailed results include :sample collection and reviewed date, the project code, the animal class, tissue type, chemical residue name, concentration value, sample results (whether positive non-violative or postive violative), chemcial concentration values (if any) and the CFR reference per chemical listed in the data sheet.

Appendix II

Statistical Table

Scheduled Sampling is done to provide some assurance of detection of a violation that affects a given percentage of the samples population.

Prior to 2012, FSIS tested 230 to 300 samples from each production class/residue compound class pairing to obtain results that were statistically meaningful. The testing sample sizes of 230 or 300 ensured FSIS a 90 percent or 95 percent probability, respectively, of detecting chemical residue violations if the violation rate is equal to or greater than 1 percent in the population being sampled.

Starting 2012, FSIS stated in its residue sampling plan that sample size selected/tested would increase its goal to about 800 samples for each of the nine major production class tested under tier-I. By increasing the number of samples taken, it would increase its statistical probability of finding a violation to at even lower true violation rates.

Table III provides the calculated number of samples required to ensure detection of a violation that affects a given percentage of the sampled population. Statistically, for a binomial distribution with sample size "n" and violation rate "v", if v is the true violation rate in the population and n is the number of samples, the probability, p, of finding at least one violation among the n samples (assuming random sampling) is $p = 1-(1-v)^n$.

For example,

Based on a <u>1% true violation rate assumption</u>:

- The probability of detecting at least one violation with 230 samples is 0.90. This means that If no violations were found in 230 samples, then we are 90% confident that that the true population violation rate is less than 1%. On the other hand, if at least one violation were found in 230 samples, then we are 90% confident that the true population violation rate is at least 1%.

- The probability of detecting at least one violation with 300 samples is 0.95. This means that If no violations were found in 300 samples, then we are 95% confident that that the true population violation rate is less than 1%. On the other hand, if at least one violation were found in 300 samples, then we are 95% confident that the true population violation rate is at least 1%.

- The probability of detecting at least one violation with 460 samples is 0.99. This means that If no violations were found in 460 samples, then we are 99% confident that that the true population violation rate is less than 1%. On the other hand, if at least one violation were found in 460 samples, then we are 99% confident that the true population violation rate is at least 1%.

- The probability of detecting at least one violation with 800 samples is 0.9997. This means that If no violations were found in 800 samples, then we are 99.97 % confident that that the true population violation rate is less than 1%. On the other hand, if at least one violation were found in 800 samples, then we are 99.97% confident that the true population violation rate is at least 1%.

<u>Using 800 samples</u>

- The probability of detecting at least one violation with 800 samples is 0.90. This means that If no violations were found in 800 samples, then we are 90 % confident that that the true population violation rate is less than **0.29 %**. On the other hand, if at least one violation were found in 800 samples, then we are 90% confident that the true population violation rate is at least **0.29** %.

- The probability of detecting at least one violation with 800 samples is 0.95. This means that If no violations were found in 800 samples, then we are 95 % confident that that the true population violation rate is less than **0.37 %.** On the other hand, if at least one violation were found in 800 samples, then we are 95 % confident that the true population violation rate is at least **0.37 %.**

- The probability of detecting at least one violation with 800 samples is 0.99. This means that If no violations were found in 800 samples, then we are 99 % confident that that the true population violation rate is less than **0.57 %.** On the other hand, if at least one violation were found in 800 samples, then we are 99 % confident that the true population violation rate is at least **0.57 %.**

Table A II. Statistical Table - 2013 U.S. National Residue Program

Percentage % Violative in the population (v)	Probability (p) of detecting at least one violation in (n) samples					
	0.90	**0.95**	**0.990**	**0.999**	**0.9997**	**0.9999**
	Sample Size required "***n***"					
10	22	29	44	66	77	87
5	45	59	90	135	158	180
1	230	300	459	688	807	916
0.57	403	525	806	1,208	1,419	1,611
0.50	460	598	919	1,378	1,618	1,837
0.37	620	808	1,242	1,864	2,188	2,485
0.29	793	1,032	1,586	2,379	2,793	3,171
0.10	2,302	2,995	4,,603	6,904	8,108	9,206
0.05	4,605	5,990	9,208	13,812	16,219	18,416

The procedure to calculate the required sample size needed:

$p = 1 - (1 - v)^n$ ← Probability of detecting at least one violation in n sample of binomial distribution with violation rate v

$1 - p = (1 - v)^n$ ← Subtract one from both side of the equation. This gives the probability of detecting No violations in n samples

$\log(1 - p) = \log(1 - v)^n$ ← Apply logarithmic function to both side of the equation

$\log(1 - p) = n * \log(1 - v)$ ← A logarithmic function property

$n = \frac{\log(1 - p)}{\log(1 - v)}$ ← Sample size based on violation rate (v) and probability of detecting (p)

Appendix III

Table A III. U.S. NRP – Domestic Scheduled Sampling Program

Year	Number of Samples	Number of Lab-Confirmed Violative Samples	Number of Lab-Confirmed Non-Violative Positive Samples	Number of Distinct Violative Chemical Residues
CY 2011	**20,313**	**27**	**155**	**7**
CY 2012	**5,838**	**14**	**26**	**9**
*** FY2013**	**4,583**	**19**	**23**	**8**

* **Note:** FY 2013 -covers Jan-Sept, 2013 only.

Appendix IV

Table A IV. U.S. NRP – Import Re-inspection Sampling Program

Year	Number of Samples	Number of Lab Confirmed Violative Samples	Violative Residue
CY 2011	**2,883**	**16**	**Avermectins**
CY 2012	**1,299**	**0**	**N/A**
*** FY2013**	**817**	**4**	**Avermectins**

* Note: FY 2013 -covers Jan-Sept, 2013 only-.

Appendix V

Table A V. NRP – Domestic Inspector Generated Sampling Program (*include FAST & KIS™ Test*)

Year	Number of Samples / (Include In-plant FAST and KIS™ Screens Tests)	Number of Samples Tested in FSIS Labs / (include in-plant screens positive)	Number of Lab-Confirmed Violative Samples / (Number of violative Carcasses)	Number of Lab Confirmed Non-Violative Positive Samples	Number of Distinct Violative Chemical Residues
CY 2011	187,136 / (**186,790**)	5,564 / (**5,218**)	1,333 / (**1,045**)	1,883	21
CY 2012	214,864 / **(214,654)**	5,398 / (**5,188**)	1,182 / **(939)**	1,363	28
***FY2013**	170,692 / **(170,560)**	4,100 / (**3,968**)	1,265 / **(1,053)**	1,099	29

* Note: FY 2013 -covers Jan-Sept, 2013 only.

Table A V. U.S NRP Domestic Inspector Generated Sampling Program -Lab confirmed residue results

(Multiple Results may be associated with same carcass sample)

Year	# of Lab confirmed violative Samples	Top Three Violative Chemical Residue
CY2011	**1,333**	Penicillin Neomycin Flunixin
CY2012	**1,182**	Penicillin Neomycin Ceftiofur
***FY2013**	**1,265**	Ceftiofur Penicillin Neomycin

Year	# of Lab confirmed Non-violative Positive Samples	Top Three Positive Non-violative Chemical Residue
CY2011	**1,883**	Neomycin Tetracycline Tulathromycin
CY2012	**1,363**	Oxytetracycline Neomycin Tetracycline
***FY2013**	**1,099**	Oxytetracycline Neomycin Ceftiofur