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

FY 2017 RESIDUE SAMPLE RESULTS[1]

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

[1] Cover October 1, 2016 through September 30, 2017

Table of Content

Preface

The 2017 Food Safety and Inspection Service (FSIS) National Residue Program Data publication (the 'Red Book'), explains FSIS' chemical residue sampling plans and presents National Residue Program (NRP) testing results by fiscal year. [For those reading this electronically, this document has been commonly known as the "Red Book" because the covers of the printed versions are red.] In addition, the following appendices are included for the convenience of the reader: Appendix I, NRP Positive Non-Violative and Positive Violative Residue Samples Results; Appendix II, Statistical Table; Appendix III, FY 2017 List of Chemical Residues by Class/Method ; Appendix IV, Summary of Scheduled Sampling Data from 2014 to 2017; Appendix V, Summary of Import Re-inspection Sampling Data from 2014 to 2017; and Appendix VI, Inspector Generated Sampling Data from 2014 to 2017 (includes KIS™ test).

Acknowledgements

We would like to extend our gratitude to the thousands of FSIS field inspection personnel who collected and submitted the residue samples and to all the laboratory staff who prepared, analyzed and documented the results of the residue samples. We would like to acknowledge the Office of Data Integration and Food Protection (ODIFP) members for providing the data.

Contacts and Comments

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Executive Summary

The United States National Residue Program (NRP) is comprised of the following programs:

- Domestic Sampling Plan
  - Scheduled
  - Inspector-generated
- Import Reinspection Sampling Plan

During FY 2017, FSIS detected **703 residue** violative samples, **22** from **7,029** Domestic Scheduled Sampling Program and **681** from **177,238** samples under the Inspector-generated Sampling Program. Additionally, FSIS detected **24** residue violative samples under the Import Reinspection Sampling Program out of **2,720** import samples analyzed.

By comparison, in FY 2016, there were **758** residue violative samples (**25** from **7,067** domestic scheduled sampling program and **732** from **182,313** samples under the Inspector-generated sampling program). A violative sample is a residue sample exceeding an acceptable or tolerable level set by the Food and Drug Administration (FDA) and/or the Environmental Protection Agency (EPA). Additionally, in FY2016, FSIS detected **22** residue violative samples under the Import Reinspection Sampling Program out of **2,676** import samples analyzed

For more info, refer to **Appendix IV**, and **Appendix VI** respectively

Domestic Scheduled Sampling

In FY 2017, under the Domestic Scheduled Sampling program,**7,029** residue samples were collected; specifically **6,643,** samples were collected by FSIS inspection program personnel (IPP) from U.S. Federal plants and **386** samples were collected from U.S. State inspected plants, of which **25** violative residues were reported from **22** samples, which is less than 1 % of the total samples collected under the Domestic Scheduled Sampling program. In FY 2016, FSIS IPP collected 7,067 residue samples, from which **29** violative residues were reported from **26** samples (less than 1%).

During FY 2017, three Carbadox, one Dichlorodiphenyltrichloroethane (DDT), two Florfenicol, two Flunixin, one MGA, one Meloxicam, one Nitrofurazone, one Penicillin, four Piperonyl Butoxide, five Ractopamine, one Salbutamol, and three Sulfamethazine violative analytes were reported in the Domestic Scheduled Sampling Program.

In some cases, chemical residues were detected in samples at levels below the set tolerance levels (non-violative levels). In FY 2017, **15** samples (less than 1% of **7,029** samples collected) were considered non-violative. By comparison, in FY 2016 the number of non-violative samples was similar, at **24** non-violative positives (less than 1%).

In FY 2017, FSIS collected 200 routine residue samples of Siluriformes fish that were tested for dyes (malachite green and gentian violet), nitrofurans, veterinary drugs, metals, and pesticides residues. Three of these samples had violative residue levels, specifically (two samples were violative for dyes, and one sample was violative for pesticide.

.***Inspector-generated Sampling***

In FY 2017, under the Inspector-generated sampling program, FSIS IPP screened **177,138** samples using the Kidney Inhibition Swab (KIS™) test. Subsequently, **4,162** KIS™ test screened positive samples were submitted to FSIS field laboratories for further analysis. **843** KIS™ test residue violations analytes were confirmed in **681** KIS™ test samples (Note: multiple residue violations may be found in the same samples).

For comparison, in FY 2016, FSIS IPP submitted **3,649** (from **182,184** KIS™ test) samples for laboratory confirmation. Of the **3,649** KIS™ submitted, **883** KIS™ residue violations were confirmed in **724** samples.

In addition, under the Inspector-generated Sampling Program, a total of 100 Non KIS™ samples from show animals, state testing and collector-generated sampling programs respectively were sent directly to FSIS labs, for residue analysis. For FY 2017, under these sampling programs **no** residue violations were reported. For comparison, in FY 2016, a total of 129 Non-KIS™ samples were tested, and eight violations were found.

In FY 2017, the Inspector-generated Sampling Program showed that the predominant **violative** residues were Ceftiofur (**225**), Penicillin (**181**) and Sulfadimethoxine (**87**), which accounts for 27%, 21%, and 10% of total violative residues, respectively. In FY 2016, the top violative residues were Ceftiofur, Penicillin, and Sulfamethazine.

In FY 2017, **714** samples with **non-violative** positives were observed in the Inspector-generated Sampling Program, which was down, when compared to the **728** reported in FY 2016.

Import Reinspection Sampling

Of the **2,720** import samples analyzed, under the FY 2017 Import Reinspection Sampling Program, **24** samples had residues exceeding an action level of tolerance set by FDA and/or EPA. These violative samples originated from Bangladesh (6), Brazil (1), China (5), Thailand (1), and Vietnam (11). In comparison, in FY 2016, there were **22** samples with violative residues were detected out of **2,676** import samples analyzed and violations were found in product originating from Nicaragua (**2**) and Uruguay (**20)**.

These reports and previous years' residue sample results are publicly available on the FSIS website at:

http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry

Acronyms

CSI- Consumer Safety Inspector

DW – FSIS Data Warehouse

EPA- Environmental Protection Agency

FDA- Food and Drug Administration

FSIS – Food Safety and Inspection Service

HACCP – Hazard Critical Control Point

IPP – Inspection Program Personnel

KIS™ Test – Kidney Inhibition Swab Test

MRM – Multi Residue methods

ND – Non-detect

NRP- National Residue Program

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

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

“ * ”**: A numerical entry that indicate instances when chemical residues results were detected, but were not quantitated**.**

Introduction

The U.S. National Residue Program (NRP) for Meat, Poultry, and Egg Products, administered by the U.S. Department of Agriculture's (USDA), Food Safety and Inspection Service (FSIS), is an interagency program designed to identify, rank, and analyze for chemical contaminants in meat, poultry, and egg products. FSIS publishes the NRP Residue Sampling Plans (traditionally known as the Blue Book) each year to provide information on the process of sampling meat, poultry, and egg products for chemical contaminants of public health concern.

Background

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 an important component of FSIS mission to protect the health and welfare of the consumers by regulating the meat, poultry, and egg products produced in federally inspected plants and to prevent the distribution in commerce of any such products that are adulterated or misbranded.

The NRP requires the cooperation and collaboration of several agencies for its successful design and implementation. FSIS, along with the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) are the primary Federal agencies managing this program. The FDA, under the Federal Food, Drug, and Cosmetic Act (FFDCA), establishes tolerances for veterinary drugs and action levels for food additives and environmental contaminants. The EPA, under the FFDCA, the Federal insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA) establishes tolerances for registered pesticides. Title 21 Code of Federal Regulations (CFR) includes tolerance levels established by FDA; and Title 40 CFR includes tolerance levels established by EPA.

The Surveillance Advisory Team (SAT) meets annually to evaluate chemical compounds for inclusion in the NRP scheduled sampling plans. The SAT includes representatives from FSIS, FDA, EPA, USDA's Agricultural Research Service (ARS), and the USDA's Agricultural Marketing Service (AMS), as well as HHS' Centers for Disease Control and Prevention (CDC). The SAT consists of experts in veterinary medicine, toxicology, chemistry, and public health who provide professional advice, as well as information on veterinary drug and pesticide use in animal husbandry. SAT discussions are used to decide which compounds represent a public health concern and warrant inclusion in the NRP scheduled sampling plans. In addition, the SAT may propose, based on professional judgment and reliable field information, the initiation of exploratory assessments for directed sampling on a production class or region of the country. These agencies work together to create the annual sampling plan, based on the following: prior NRP findings of chemical residues in meat, poultry, and egg products; FDA veterinary drug inventories completed during on-farm visits and investigation information; and pesticides and environmental contaminants of current importance to EPA.

Chemical compounds analyzed in the program include approved and unapproved veterinary drugs, pesticides, and environmental compounds. The NRP is designed to: (1) provide a structured process for identifying and evaluating chemical compounds used in food animals; (2) analyze chemical compounds of concern; (3) collect, analyze, and report results; and (4) identify the need for regulatory follow-up subsequent to the identification of violative levels of chemical residues.

Actions Taken on Violations

FSIS has administered the NRP by collecting and analyzing meat, poultry, and egg product samples for specific chemical compounds at FSIS laboratories since 1967 for meat and poultry, and beginning in 1995 for egg products. A violation occurs when an FSIS laboratory detects a chemical compound level in excess of an established tolerance or action level as well as if the residue detected has no approved tolerance. Once the laboratory analysis is complete, FSIS enters the detailed residue violation information into the Agency's Residue Violator Tracking (RVT) database and shares the information with FDA. FSIS provides establishment and the designated FSIS Inspection Program Personnel (IPP) with the analysis results and also notifies the producer via certified letter. Under best practices, the establishment also should notify the producer that an animal from that business has been identified as having a residue violation. In addition, FSIS shares the violation data with EPA and FDA, where the latter Agency has on-farm jurisdiction. FDA and cooperating State agencies investigate producers linked to residue violations and, if conditions leading to residue violations are not corrected, can enforce legal action.

To notify the public and the industry of repeated residue violations by the same producer, FSIS posts a weekly Residue Repeat Violators List on its Web site that identifies producers with more than one violation on a rolling 12-month period. In addition, the list provides helpful information to the AMS-School Lunch Program purchase clearance processors and producers who are working to avoid illegal levels of residues, serves as a deterrent for violators, and enables FSIS and FDA to make better use of resources (list for processors and producers). Because FSIS updates are posted weekly, FDA may not have investigated each violation at the time of publication.

FSIS Laboratory Analytical Methods

In January 1997, FSIS implemented the Hazard Analysis and Critical Control Point (HACCP) inspection system in all federally inspected plants. The HACCP regulation (HACCP GPO CFR) requires FSIS-inspected slaughter and processing plants to identify all food safety hazards (including drug residues, chemical contaminants, and pesticides) that are reasonably likely to occur before, during, and after the food animal or product enters the slaughter establishment. The regulation also requires plants to identify preventive measures to control these hazards. FSIS takes regulatory action against plants that do not have an effective chemical residue control program in place. Minimizing food safety hazards from farm-to-fork protects consumers from the public health risks associated with chemical contaminants in food.

With greater public concern about the risks of chemical contaminants, focus has increased on strengthening the identification, prioritization, and testing for chemical hazards in meat, poultry, and egg products in the United States. The sampling plan for residues in FSIS-regulated products includes strengthening the focus of public health-based sampling. This approach includes broader screens for veterinary drugs, pesticides, and heavy metals, as well as conducting more analyses per sample.

FSIS uses analytical methods to detect, identify, and quantify residues that may be present in meat, poultry, and processed egg products. The Agency utilizes these methods for monitoring and for surveillance activities to determine product adulteration and for evaluations of human health risk. The Agency uses available methodologies to take appropriate regulatory action against adulterated products in a manner consistent with the reliability of the analytical data. The FSIS Analytical Chemistry Laboratory Guidebook lists the analytical methods used by the agency.

FSIS uses novel multi-residue methods for the detection and conformation of veterinary drugs, pesticides, and environmental contaminants. The veterinary drug method screens and confirms for over 80 analytes. The pesticide method screens and confirms for over 100 pesticides. The metal method screens for 17 metals (including lead and cadmium).

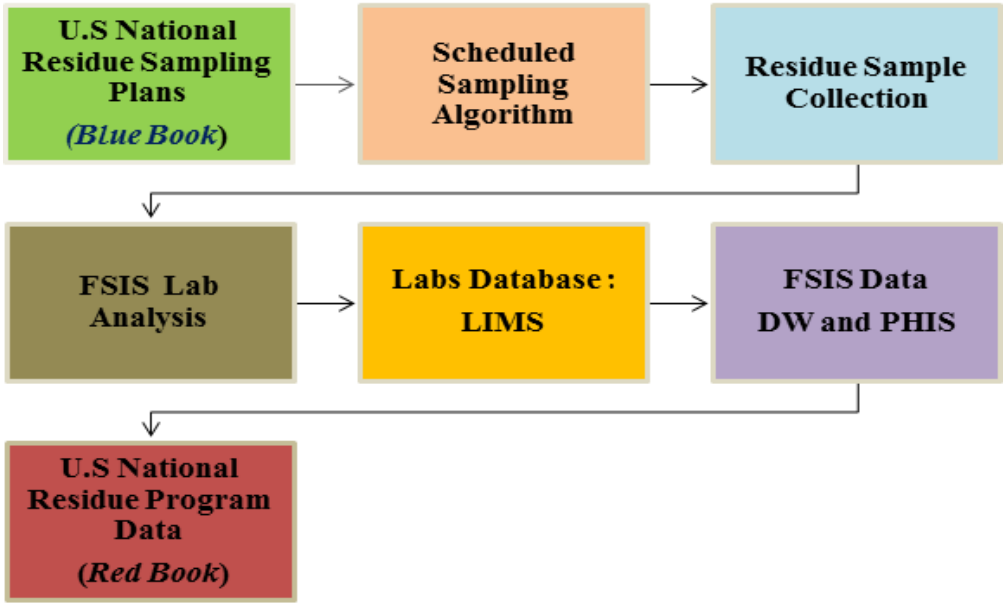

Figure 1. National Residue Program: The figure illustrates the intricate steps of the NRP. The NRP begins with interagency planning (Blue Book) of sampling program, which is followed by collection and analysis of samples reported (Red Book).

Overview of the Sampling Plans

Since 2012, the NRP is implemented on the United States Government fiscal year basis (from October 1 through September 30).The NRP consists of three separate, but interrelated, chemical residue testing programs: scheduled sampling (Tier 1), targeted sampling at the production or compound class level (Tier 2), and targeted sampling at the herd/flock or compound class level (Tier 3). This basic structure has been in existence since 1967. These testing programs provide data for FSIS to detect chemical residues of public health concern and have been modified annually in response to emerging chemical residue concerns and improved testing methodologies.

The **FY 2017** NRP Residue Sampling Plan focuses on chemical residues in domestic meat, poultry, and egg products and the import reinspection of meat, poultry, and egg products. The domestic sampling plan includes scheduled sampling and inspector-generated sampling. The import reinspection sampling plan encompasses normal sampling, increased sampling, and intensified sampling. Directive 10,800.1, Rev 1 provides further details on domestic sampling procedures.

On December 2, 2015, FSIS published the final rule, "Mandatory Inspection of Fish of the Order Siluriformes and Products Derived From Such Fish." The 2008 Farm Bill amended the Federal Meat Inspection Act (FMIA) to make all fish of the order Siluriformes amendable to the FMIA and, therefore, subject to FSIS inspection. FSIS provided a12-month transitional period for the inspection of Siluriformes fish, with residue testing done based on parameters set forth in the final rule.

Domestic Sampling Plan

1. Tier 1

The Tier 1 sampling plan is the scheduled sampling of specified slaughter subclasses at the time of slaughter, after they have passed antemortem inspection. Carcasses are randomly selected for sampling. The number of samples scheduled each year is based on the probability of detecting at least one violation (Appendix II). Data collected from Tier 1 sampling serves as a baseline level for chemical residue exposure. Sampling tasks are assigned each month through the Public Health Information System (PHIS). The sampling task provides information to the Inspection Program Personnel (IPP) on when to collect the sample (collection window) and which production class to sample. The establishment holds or controls livestock carcasses selected for testing pending the results of analysis. For directed testing of poultry, the IPP recommends to the establishment that the establishment holds the specific poultry carcasses selected for residue testing pending the analysis results.

Tier 1 sampling results also can be used to identify producers or other entities marketing animals with violative levels of residues. Thus, the Tier 1 sampling plan not only gathers information, but also assists in deterring practice that lead to violative residues. Tier 1 samples are collected from randomly selected U.S Federal and States plants.

In FY 2017, the Tier 1 sampling plan consisted of random samples collected from each of the following production classes: beef cows, bob veal, dairy cows, steers/ heifers, market hogs, sows, young chickens, and young turkeys. These production classes represent 95 percent of domestic meat and poultry consumption.

2. Tier 2

a. Inspector-Generated Sampling

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, 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 administration of a drug, they retain the carcass and analyze samples from those carcasses using an in-plant method to screen for the presence of chemical residues. IPP complete in-plant residue screen tests using the Kidney Inhibition Swab test (KIS™ test). If the in-plant test is negative for antimicrobial residues included in the screen, the carcass is released to the establishment. If there are screen positive results, the carcass is held pending the confirmation results of FSIS laboratory testing. The PHV condemns carcasses and parts animals found to contain violative levels of residues.

i. Sampling of 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, circumstances warranting a KIS ™ test and 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 analysis. If the result of a screening analysis 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. If IPP suspects that there is misuse of drugs that are not detected by the KIS™, the samples are sent directly to the laboratory for appropriate analysis. These samples are reported under the **Collector-Generated** program.

ii. Sampling of Suspect Animal Populations

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

iii. Sampling of Show Animals

Show animals such as cattle, hogs, sheep, and goats presented for inspection, from a single fair or livestock show have an equal chance of being selected for analytical testing, per FSIS Directive 10,800.1.When show animals appear healthy, the PHV selects animals at random from the entire lot for testing. When the animals appear unhealthy or suspect for antibiotic residues, IPP tag the animals and administrate a KIS™ test.

iv. Sampling of Animals from State-Inspected Slaughter Establishments

These are State inspected establishments that are, "at least equal to," to the federal establishments and historically State inspectors collect and submit samples of kidney, liver and muscle from animals suspected of having violative residues directly to an FSIS laboratory.

b. Targeted Sampling

FSIS implements targeted sampling plans (exploratory assessments) in response to information (obtained by FDA and EPA and provided to FSIS) about misuse of animal drugs and/or exposure to environmental chemicals, as well as in response to Tier 1 analytical results. The duration of these sampling plans vary based on the situation. 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 present in animals. These sampling plans could be designed to distinguish components of meat, 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.

Sampling tasks are assigned through PHIS. The sampling task provides instructions to the IPP on when to collect the sample (collection window) and which slaughter production class to collect from. The establishment holds or controls livestock carcasses selected for testing pending the test results. For directed residue testing of poultry, the IPP recommends to the establishment that the plants hold the specific poultry carcasses selected for residue testing pending the test results.

In FY 2017, targeted sampling included old breeder turkeys, and sheep, goats from randomly selected U.S federal plants.

3. Tier 3

The Tier 3 sampling plan is similar in structure to the targeted sampling (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 livestock 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.

In FY 2017, no Tier 3 sampling was performed.

Import Reinspection Sampling Plan

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[2] of product before it enters the U. S. Chemical residue sampling is included in the reinspection of imported products. There are three levels of chemical residue reinspection that include:

- normal sampling: random sampling from a lot;
- increased sampling: above-normal sampling resulting from an Agency management decision; and
- intensified sampling: additional samples taken when a previous sample for a TOI that failed to meet U. S. requirements.

The data obtained from laboratory analyses are entered into PHIS, an FSIS database designed to generate reinspection assignments, receive and store results, and compile histories for the performance of foreign plants certified by the inspection system in the exporting country.

The import reinspection sampling program is structured using the Tier 1 and Tier 2 criteria used to develop the domestic plan. In FY 2017, FSIS collected approximately **2,720** import samples.

2017 Residue Sampling for Siluriformes Fish

On December 2, 2015, FSIS published the final rule, "Mandatory Inspection of Fish of the Order Siluriformes and Products Derived From Such Fish." The 2008 Farm Bill amended the Federal Meat Inspection Act (FMIA) to make all fish of the order Siluriformes amendable to the FMIA and, therefore, subject to FSIS inspection. FSIS provided a 12-month transitional period results for the inspection of Siluriformes fish, residue testing was performed during the transitional period which is ended Sep 1, 2017 based on parameters set forth in the final rule.

During FY2017, FSIS scheduled routine testing of Siluriformes for dyes (malachite green and gentian violet), nitorfurans, and veterinary drugs, metals, and pesticides residues.

Policy and Procedures for Holding or Controlling Product under NRP

As of February 2013, the Agency requires official plants and importers of record to hold or maintain control of lots of product tested for adulterants until acceptable results become available. FSIS stated that this policy would applies to domestic livestock carcasses subject to FSIS testing for residues. FSIS explained that it will not hold poultry carcasses pending test results for residues due to historically low residue problems and the large lot size. This was outlined in a published Federal Register Notice 76 FRN 19955.

The Hold and Test policy also applies to normal and increased import reinspection sampling. Additionally, for intensified import sampling, the lot must be retained pending laboratory results.

[2] 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.

Domestic Scheduled Sampling Program

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

Table 1 identifies the animal classes and methods/chemical classes which are in the FY 2017 NRP

Table 2 summarizes the number of Domestic Scheduled samples and Inspector-generated samples tested by animal class.

Table 3 summarizes the number of residue Domestic Scheduled samples analyzed by animal class, including summary results.

Table 4 summarizes the number of residue Domestic Scheduled samples tested per chemical method by animal class.

Table 5 summarizes Domestic Scheduled Sampling -number of chemical analyses tested per chemical method by animal class.

Table 6 summarizes domestic scheduled sampling violation results by animal class.

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

Summary of Domestic Residue Sampling Program

Table 1. FY 2017 Tier I and II List of Animal Class by Method/Chemical Class (Analyses Performed)

Animal Category	Animal Class	Chemical Class Oct 2016- Sep 2017									
		Aminoglycosides	**Arsenic**	**Avermectins**	**βeta-Agonists**	**Carbadox**	**Hormones**	**Metals**	**MRM**	**Nitrofurans**	**Pesticides**
Bovine	Beef Cows	√	√	√	√	--	√	√	√	--	√
	Bob Veal	√	√	√	√	--	√	√	√	--	√
	Bulls	√	√	√	--	--	--	--	√	--	√
	Dairy Cows	√	√	√	√	--	√	√	√	--	√
	Formula-Fed Veal	√	--	--	√	--	--	--	√	--	--
	Heavy Calves	√	--	--	√	--	--	--	√	--	--
	Heifers	√	√	√	√	--	√	√	√	--	√
	Non-Formula-Fed Veal	√	--	--	√	--	--	--	√	--	--
	Steers	√	√	√	√	--	√	√	√	--	√
Porcine	Market Swine	√	√	√	√	--	--	√	√	--	√
	Roaster Swine	√	--	--	--	√	--	--	√	--	√
	Sows	√			--	--	--		√	--	√

Summary of Domestic Residue Sampling Program

Table 1. FY 2017 Tier I and II List of Animal Class by Method/Chemical Class (Analyses Performed) (*cont.*)

Animal Category	Animal Class	Chemical Class Oct 2016- Sep 2017									
		Aminoglycosides	**Arsenic**	**Avermectins**	**βeta-Agonists**	**Carbadox**	**Hormones**	**Metals**	**MRM**	**Nitrofurans**	**Pesticides**
Poultry	Mature Turkeys	--	--	--	--	--	--	√	√	--	√
	Young Chickens	√	√	--	--	--	--	√	√	√	√
	Young Turkeys	√	√	--	--	--	--	√	√	√	√
Minor Species	Goats	√	√	√	--	--	--	--	--	--	√
	Sheep	√	--	--	--	--	--	--	√	--	√

Table 2. FY 2017 Number of Scheduled Residue Samples Tested, by Animal Class

Animal Category	Animal Class	Domestic Scheduled Sampling		Inspector-generated Sampling Tier-2 Suspect Animals	
		Tier-1 & Tier- 2** U.S. Federal Plants	Tier-1 U.S. State Plants	KIS™ Test	Non- KIS™ Samples *
Bovine	Beef Cows	718	68	14,371	6
	Bob Veal	370	2	23,176	1
	Bulls**	149	--	1,484	2
	Dairy Cows	797	39	100,275	15
	Formula-Fed Veal	38	--	373	--
	Heavy Calves **	38	--	235	--
	Heifers	349	55	2,665	6
	Non-Formula-Fed Veal**	33	--	116	--
	Steers	391	66	8,146	12
Porcine	Boars/Stags	--	--	119	--
	Market Swine	733	78	16,098	34
	Roaster Swine **	216	--	1551	--
	Sows	623	48	6,534	4
Poultry	Mature Turkeys**	38	--	--	--
	Young Chickens	719	20	--	--
	Young Turkeys	930	10	--	--
	Goats **	338	--	613	9
Minor Species	Lambs/Sheep **	163	--	1,382	11
	Total	**6,643**	**386**	**177,138**	**100**

* An additional **100 Non- KIS™ test** samples were collected and directly sent to FSIS labs for analysis.

** Animal Classes associated with NRP Tier 2 domestic sampling

Table 3. FY 2017 NRP Domestic Scheduled Samples Analyzed by Animal Class – and Summary Results

Animal Category	Animal Class	Number of Non-Detect Samples	Number of Non-Violative Positives Samples	Number of Violative Samples	Total Samples
Bovine	Beef Cows	775	6	5	**786**
	Bob Veal	369	--	3	**372**
	Bulls	149	--	--	**149**
	Dairy Cows	832	2	2	**836**
	Formula Fed Veal	37	--	1	**38**
	Heavy Calves	38	--	--	**38**
	Heifers	402	1	1	**404**
	Non- Formula Fed Veal	33	--	--	**33**
	Steers	451	2	4	**457**
Porcine	Market Swine	808	2	1	**811**
	Roaster Swine	212	1	3	**216**
	Sows	670	--	1	**671**
Poultry	Mature Turkeys	38	--	--	**38**
	Young Chickens	738	--	1	**739**
	Young Turkeys	940	--	--	**940**
Minor Species	Goats	337	1	--	**338**
	Sheep	163	--	--	**163**
	Total	**6,992**	**15**	**22**	**7,029**

Note: The results include Tier 1 and Tier 2 animal classes
Data Source: FSIS Data Warehouse and PHIS databases.

Table 4. FY 2017 NRP Residue Scheduled Samples -Number of Residue Samples Tested Per Chemical Method per Animal Class

Animal Class (# Samples Collected)	Number of Chemical Analytes per Chemical Method									
	Aminoglycosides	**Arsenic**	**Avermectins**	**βeta-Agonists**	**Carbadox**	**Hormones**	**Metals**	**MRM**	**Nitrofurans**	**Pesticides**
Beef Cows (786)	786	433	433	268	-	404	106	783	-	352
Bob Veal (372)	372	227	227	101	-	216	95	371	-	145
Bulls (149)	149	106	106	43	-	96	21	149	-	43
Dairy Cows (836)	836	453	453	291	-	428	124	832	-	381
Formula Fed Veal (38)	38	28	28	10	-	24	12	38	-	10
Heavy Calves (38)	38	31	31	7	-	31	11	38	-	6
Heifers (404)	404	231	231	117	-	216	94	403	-	173
Non- Formula Fed Veal (33)	33	27	27	6	-	27	9	33	-	6
Steers (457)	457	267	267	141	-	253	108	457	-	190
Market Swine (811)	811	441	442	270	-	-	113	805	2	369
Roaster Swine (216)	216	-	-	3	213	-	-	216	-	2
Sows (671)	671	381	382	214	-	-	119	670	-	289
Mature Turkeys (38)	18	-	-	-	-	-	6	32	17	31
Young Chickens (739)	738	390	-	-	-	-	136	739	347	347
Young Turkeys (940)	940	483	-	1	-	-	131	939	455	456
Goats (338)	338	190	193	1	-	-	-	337	-	148
Sheep (163)	163	99	100	1	-	-	-	163	-	64
Total (7,029)	**7,008**	**3,787**	**2,920**	**1,474**	**213**	**1,695**	**1,085**	**7,005**	**821**	**3,012**

Table 5. FY 2017 NRP Residue Scheduled Samples - Number of Chemical Analytes Tested Per Chemical Method per Animal Class

Animal Class (# Samples Collected)	Number of Chemical Analytes per Chemical Method										
	Aminoglycosides	Arsenic	Avermectins	βeta-Agonists	Carbadox	Hormones	Metals	MRM	Nitrofurans	Pesticides	Total
Beef Cows (786)	7,860	433	2,162	1,623	-	2,020	1,791	69,452	-	29,035	114,376
Bob Veal (372)	3,720	227	1,135	612	-	1,080	1,640	32,981	-	11,734	53,129
Bulls (149)	1,490	106	530	258	-	480	352	13,175	-	3,783	20,174
Dairy Cows (836)	8,360	453	2,261	1,752	-	2,140	2,090	73,787	-	31,456	122,299
Formula Fed Veal (38)	380	28	140	60	-	120	205	3,358	-	880	5,171
Heavy Calves (38)	380	31	155	42	-	155	190	3,368	-	528	4,849
Heifers (404)	4,040	231	1,155	702	-	1,079	1,585	35,843	-	13,919	58,554
Non- Formula Fed Veal (33)	330	27	135	36	-	135	152	2,923	-	528	4,266
Steers (457)	4,570	267	1,334	860	-	1,265	1,820	40,581	-	15,569	66,266
Market Swine (811)	8,110	441	2,206	1,626	-	-	1,986	77,507	10	30,245	122,131
Roaster Swine (216)	2,160	-	-	30	213	-	-	21,992	-	175	24,570
Sows (671)	6,710	381	1,906	1,320	-	-	2,065	64,442	-	23,686	100,510
Mature Turkeys (38)	180	-	-	-	-	-	100	2,991	85	2,636	5,992
Young Chickens (739)	7,380	390	-	-	-	-	2,403	68,918	1,733	28,897	109,721
Young Turkeys (940)	9,398	483	-	6	-	-	2,328	87,633	2,283	37,895	140,026
Goats (338)	3,380	190	954	12	-	-	-	30,579	-	12,390	47,505
Sheep (163)	1,630	99	496	6	-	-	-	14,165	-	5,103	21,499
Total (7,029)	**70,078**	**3,787**	**14,569**	**8,945**	**213**	**8,474**	**18,707**	**643,695**	**4,111**	**248,459**	**1,021,038**

Note: Multiple analytes may be associated with the same sample. Not all samples are tested for all chemical method. Number of samples per chemical method is indicated in Table 4

Data Source: FSIS Data Warehouse and PHIS databases.

Table 6. FY 2017 Domestic Scheduled Sampling Plan Violations

Animal	Tissue	Compound	Concentration	Units	Tolerance Level Value	Authority (CFR Citation)
Beef Cow	Muscle	DDT and Metabolites	***	--	--	CPG 575.100
Beef Cow	Muscle	Salbutamol	***	PPM	0	21CFR 530.410
Beef Cow	Muscle	Piperonyl Butoxide	0.157193	PPM	.1	40 CFR 180.127
Beef Cow	Muscle	Piperonyl Butoxide	0.1139	PPM	.1	40 CFR 180.127
Beef Cow	Muscle	Piperonyl Butoxide	0.3949	PPM	.1	40 CFR 180.127
Bob Veal	Muscle	Sulfamethazine	0.497	PPM	.1	21 CFR 556.670
Bob Veal	Liver	Florfenicol	3.9	PPM	0	21 CFR 556.283
	Muscle	Florfenicol	1.36	PPM	0	21 CFR 556.283
Bob Veal	Muscle	Flunixin	***	PPM	0	21 CFR 522.970e2(iii)
	Muscle	Flunixin	0.147	PPM	0	21 CFR 522.970e2(iii)
Dairy Cow	Muscle	Meloxicam	***	--	--	21 CFR530.30
Dairy Cow	Muscle	Sulfamethazine	0.587	PPM	.1	21 CFR 556.670
Formula-fed Veal	Muscle	Penicillin	0.069	PPM	.05	21 CFR 556.510
Heifer	Muscle	Melengestrol Acetate	1.0	PPM	0	21 CFR 556.380
Market Swine	Muscle	Sulfamethazine	0.230	PPM	.1	21 CFR 556.670
Roaster Swine	Liver	Carbadox	***	PPM	.03	21 CFR 556.100
Roaster Swine	Liver	Carbadox	***	PPM	.03	21 CFR 556.100
Roaster Swine	Liver	Carbadox	***	PPM	.03	21 CFR 556.100
Steer	Liver	Ractopamine	0.0934	PPM	.09	21 CFR 556.570
	Muscle	Ractopamine	0.03082	PPM	.03	21 CFR 556.570
Steer	Liver	Ractopamine	0.0931	PPM	.09	21 CFR 556.570
Steer	Liver	Ractopamine	0.0913	PPM	.09	21 CFR 556.570
Steer	Liver	Ractopamine	0.167226	PPM	.09	21 CFR 556.570
Sows	Muscle	Piperonyl Butoxide	0.11462	PPM	.1	40 CFR 180.127
Young Chicken	Muscle	Nitrofurazone	***	--	--	21 CFR 530.410

Note:
*****:** Violative residue results were residue were detected but not quantified
Not Approved- Residue detected is not approved for the animal class

Data Source: FSIS Data Warehouse and PHIS databases.

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 may possibly contains violative levels of chemical residues. The PHVs and CSIs also are encouraged to test samples for residue testing at the FSIS labs when a chemical contamination is suspected. Samples are screened using the KIS™ test. If KIS™ test kits are not available; the PHV submits the sample to the FSIS laboratory for testing.

Table 7 summarizes the total number in-plants screens tests using the KIS™ test, which includes the number of in-plants screens with negative results, number of positive screens sent to FSIS labs for conformation, and the number of carcasses with violations for each animal class.

Table 8 summarizes the total number of samples analyzed and the number of carcasses with violations for each animal class under additional inspector-generated program projects. The samples were sent to the FSIS laboratory for analyses.

Table 9 summarize the results for specific chemical compounds that were detected **(violative**) within inspector-generated sampling projects across animal class.

Table 10 summarize the results for specific chemical compounds that were detected (**non-violative**) within inspector-generated sampling projects across animal class.

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

Table 7. FY 2017 Tier II Inspector Generated Sampling (KIS ™) Test

Animal Category	Animal Class	KIS ™ Test			
		Total Number of In-plant Samples	Number of In-plant Negative Samples	Number of In-plant Positive Samples	Number of Samples With Confirmed Lab Violations
Bovine	Beef Cows	14,371	13,964	407	**61**
	Bob Veal	23,176	22,950	226	**70**
	Bulls	1,484	1,429	55	**10**
	Dairy Cows	100,275	97,472	2,803	**480**
	Formula-Fed Veal	373	362	11	**0**
	Heavy Calves	235	216	19	**3**
	Heifers	2665	2,596	69	**3**
	Non-Formula-Fed Veal	116	115	1	**1**
	Steers	8,146	7,938	208	**21**
Porcine	Boars/Stags	119	118	1	**0**
	Market Swine	16,098	15,880	218	**4**
	Roaster Swine	1,551	1,542	9	**2**
	Sows	6,534	6,432	102	**20**
Minor Species	Goats	613	598	15	**4**
	Lambs	1,179	1,167	12	**0**
	Sheep	203	197	6	**2**
	Total	**177,138**	**172,976**	**4,162**	**** 681**

**** 843** KIS ™ test violative analytes in **681** lab confirmed KIS ™ test violative carcasses**.** Multiple violative analytes in different tissue types may be associated with a single carcass

Data Source: FSIS Data Warehouse and PHIS databases.

Table 8. FY 2017 Tier II Inspector-Generated Sampling (Non- KIS™ Samples)

Animal Category	Animal Class	Collecter Generated	Show Animal	U.S State-Inspected
		Number of Samples	Number of Samples	Number of Samples
Bovine	Beef Cows	6		--
	Bob Veal	1		--
	Bulls	2		--
	Dairy Cows	13		2
	Formula-Fed Veal	--		--
	Heavy Calves	--		--
	Heifers	4	2	--
	Non-Formula-Fed Veal	--		--
	Steers	4	7	1
Porcine	Boars/Stags	--		--
	Market Swine	13	20	1
	Roaster Swine	--		--
	Sows	4		--
Minor Species	Goats	2	7	--
	Lambs	--		--
	Sheep	2	9	--
	Total	**51**	**45**	**4**

Note: No residue violations were found in the above 100 Non- KIS™ Samples

Data Source: FSIS Data Warehouse and PHIS databases.

Table 9. FY 2017 Number of Residue Violations results in Inspector Generated Sampling by Chemical Residue and Animal Class (include both KIS ™ and Non- KIS™ tests Samples)

Chemical Residue	Beef Cows	Bob Veal	Bulls	Dairy Cow	Goat	Heavy Calves	Heifer	Market Swine	Non Formula Fed Veal	Roaster Swine	Sheep	Sows	Steer	Total
Ampicillin	--	1	--	28	--	--	--	--	--	--	--	--	--	**29**
Cefazolin	--	--	--	1	--	--	--	--	--	--	--	--	--	**1**
Ciprofloxacin	3	4	1	5	--	--	--	--	--	--	--	--	2	**15**
Clindamycin	1	--	--	--	--	--	--	--	--	--	--	--	--	**1**
Desethylene ciprofloxacin	--	1	--	--	--	--	--	--	--	--	--	--	--	**1**
Desfuroylceftiofur	7	7	1	200	--	--	1	--	1	--	--	--	8	**225**
Dihydrostreptomycin	1	1	--	6	--	--	--	--	--	--	--	--	--	**8**
Doxycycline	--	--	--	1	--	--	--	--	--	--	--	--	--	**1**
Enrofloxacin	--	2	--	--	--	--	--	--	--	--	--	--	--	**2**
Florfenicol	10	1	6	10	--	2	--	--	--	--	--	--	3	**32**
Flunixin	7	6	4	56	--	--	--	--	--	--	--	--	6	**79**
Gentamycin Sulfate	2	--	--	9	--	--	1	--	--	--	--	--	--	**12**
Ketoprofen	--	--	--	4	--	--	--	--	--	--	--	--	--	**4**
Lincomycin	--	--	--	6	--	--	--	--	--	--	--	--	--	**6**
Meloxicam	1	--	--	10	--	--	--	--	--	--	--	--	1	**12**

Note: Multiple violative analytes in different tissue types may be associated with a single sample carcass
Data Source: FSIS Data Warehouse and PHIS databases.

Table 9. FY 2017 Number of Residue Violations results in Inspector Generated Sampling by Chemical Residue and Animal Class (includes both KIS ™ and Non- KIS™ tests Samples) (*cont.*)

Chemical Residue		Beef Cows	Bob Veal	Bulls	Dairy Cow	Formula Fed Veal	Heavy Calves	Heifer	Market Swine	Non Formula Fed Veal	Roaster Swine	Sheep	Sows	Steer	Total
Neomycin		1	27	-	2	-	-	-	-	-	-	-	-	-	**30**
Oxytetracycline		7	1	-	3	4	-	-	-	-	-	-	-	2	**17**
Penicillin		27	11	1	119	-	-	1	1	-	1	1	18	1	**181**
Sulfadiazine		-	3	-	-	-	-	-	-	-	-	-	-	-	**3**
Sulfadimethoxine		3	10	-	70	-	-	-	1	-	-	1	-	2	**87**
Sulfadoxine		-	-	-	4	-	-	-	-	-	-	-	-	-	**4**
Sulfamethazine		9	2	4	21	-	2	1	2	-	1	-	2	5	**49**
Sulfamethoxazole		-	5	-	-	-	-	-	-	-	-	-	-	-	**5**
Sulfamethoxypyridazine		-	-	-	1	-	-	-	-	-	-	-	-	-	**1**
Sulfathiazole		-	-	-	3	-	-	-	-	-	-	-	-	-	**3**
Tetracycline		-	1	-	2	-	-	-	-	-	-	-	-	-	**3**
Tildipirosin		-	1	-	-	-	-	-	-	-	-	-	-	-	**1**
Tilmicosin		8	3	4	10	-	1	-	-	-	-	-	-	3	**29**
Tylosin		-	2	-	-	-	-	-	-	-	-	-	-	-	**2**
TOTAL		**87**	**89**	**21**	**571**	**4**	**5**	**4**	**4**	**1**	**2**	**2**	**20**	**33**	**843**

Note: Multiple violative analytes in different tissue types may be associated with a single sample carcass

Data Source: FSIS Data Warehouse and PHIS databases.

Table 10. FY 2017 Number of Non-Violative results in Inspector Generated Sampling by Chemical Residue and Animal Class (includes both KIS ™ and Non- KIS™ tests Samples)

Chemical Residue	Beef Cows	Bob Veal	Bulls	Dairy Cows	Heavy Calves	Heifers	Market Swine	Roaster Swine	Sows	Steer	Total
Ampicillin	--	--	--	3	--	--	--	--	--	--	**3**
Chlortetracycline	--	--	--	--	--	--	1	--	--	--	**1**
Cloxacillin	--	--	--	1	--	--	--	--	--	--	**1**
Desfuroylceftiofur	--	1	--	28	--	1	--	--	--	2	**32**
Dihydro Streptomycin	--	--	--	1	--	--	--	--	--	--	**1**
Dihydrostreptomycin	--	--	--	1	--	--	--	--	--	--	**1**
Doramectin	--	--	--	--	--	--	--	--	--	1	**1**
Enrofloxacin	2	--	1	3	--	--	--	--	2	1	**9**
Eprinomectin	--	--	--	16	--	--	--	--	--	1	**17**
Florfenicol	3	--	--	5	--	--	--	--	--	1	**9**
Flunixin	1	--	--	34	--	--	--	--	--	--	**35**
Gamithromycin	2	--	3	6	--	--	--	--	--	3	**14**
Lincomycin	--	--	--	--	--	--	8	--	--	--	**8**

Note: Multiple violative analytes in different tissue types may be associated with a single sample carcass
Data Source: FSIS Data Warehouse and PHIS databases.

Table 10. FY 2017 Number of Non--Violative results in Inspector Generated Sampling by Chemical Residue and Animal Class (includes both KIS ™ and Non- KIS™ tests Samples) (*cont.*)

Chemical Residue	Beef Cows	Bob Veal	Bulls	Dairy Cows	Heavy Calves	Heifers	Market Swine	Roaster Swine	Sows	Steer	Total
Neomycin	--	27	--	5	2	--	--	--	--	--	**34**
Oxytetracycline	35	23	8	56	1	2	1	--	3	12	**141**
Penicillin	6	7	1	71	--	1	--	--	--	2	**88**
Pirlimycin	2	--	--	8	--	--	--	--	--	--	**10**
Ractopamine	--	--	--	--	--	--	1	--	--	1	**2**
Spectinomycin	--	3	--	22	--	1	--	--	--	--	**26**
Sulfadimethoxine	--	--	--	21	--	--	--	--	--	--	**21**
Sulfamethazine	--	2	1	5	1	--	--	--	1	2	**12**
Tetracycline	--	6	--	30	--	--	--	--	--	--	**36**
Tildipirosin	2	--	2	5	--	--	--	--	--	7	**16**
Tilmicosin	1	--	2	5	--	--	1	1	2	2	**14**
Tulathromycin	31	13	12	45	1	20	4	--	3	53	**182**
TOTAL	**85**	**82**	**30**	**371**	**5**	**25**	**16**	**1**	**11**	**88**	**714**

Note: Multiple violative analytes in different tissue types may be associated with a single carcass

Data Source: FSIS Data Warehouse and PHIS databases.

Import Residue Reinspection Sampling Program

In FY 2017, FSIS collected 2,720 import residue samples and analyzed for 260,357 residue analytes from 31 export countries. Twenty Two violations were detected (11 from Vietnam, (6) from Bangladesh, (5) from China and (1) from Brazil. For more information, refer to the list of tables below.

Table 11 summarizes the – import number of residue samples tested per chemical method by Production Class and Product Type

Table 12 summarizes the number of import residue samples by inspection level, per exporting country and production type

Table 13 summarizes the number of import residue samples analyzed, by exporting country and Production Type

Table 14 summarizes the number of import residue samples analyzed, number of chemical analyates tested per exporting country and production type

Table 15 summarize number of samples and chemical residues under the import residue sample program, by exporting country

Table 16a summarize import residue sample program (Violative) results, by exporting country chemical residues and production class

Table 16b summarize import residue sample program (Non-Violative) results, by exporting country chemical residues and production class

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

Table 11. FY 2017 NRP Import Residue Samples - Number of Residue Samples Tested Per Chemical Method by Production Class and Product Type

Methods	Number of Samples Tested													
	Beef		Chicken		Goat	Lamb	Mutton	Pork		Siluriformes	Turkey		Veal	
	Fresh	Processed	Fresh	Processed	Fresh	Fresh	Fresh	Fresh	Processed	Fresh	Fresh	Processed	Fresh	Total
Aminoglycosides	300	2	75	-	35	48	12	162	1	-	38	-	160	**833**
Arsenic	153	67	40	24	19	39	11	83	47	-	19	12	73	**587**
Avermectins	153	67	1	-	19	39	11	83	44	-	-	-	73	**490**
Beta Agonist	135	-	1	-	12	8	1	74	-	-	-	-	52	**283**
Dyes	-	-	-	-	-	-	-	-	-	209	-	-	-	**209**
Hormones	187	-	-	-	-	-	-	-	-	-	-	-	-	**187**
MRM	300	35	75	-	35	48	12	162	34	213	38	10	159	**1121**
Metals	122	15	22	10	-	-	-	39	31	209	7	11	63	**529**
Nitrofurans	-	-	-	-	-	-	-	-	-	224	-	-	-	**224**
Pesticides	373	-	43	-	31	44	12	113	-	224	20	-	90	**950**

Data Source: FSIS Data Warehouse and PHIS databases.

Table 12. FY 2017 Number of Import Residue Samples by Inspection Level, per Exporting Country and Production Type

Country	Normal		Increased	Intensified	Total
	Raw	Processed	Raw	Raw	
Australia	127	4	-	-	**131**
Bangladesh	20	-	-	-	**20**
Brazil	300	33	-	-	**333**
Canada	468	92	-	-	**560**
Chile	122	-	-	-	**122**
China	74	2	-	-	**76**
Costa Rica	34	-	-	-	**34**
Denmark	16	7	-	-	**23**
Dominican Republic	2	-	-	-	**2**
Finland	1	-	-	-	**1**
France	14	-	-	-	**14**
Germany	-	3	-	-	**3**
Guyana	-	-	2	-	**2**
Hungary	-	3	-	-	**3**
Iceland	3	-	-	-	**3**
Ireland	21	-	-	-	**21**
Israel	-	27	-	-	**27**
Italy	8	20	-	-	**28**
Japan	38	-	-	-	**38**
Korea, Republic Of	-	2	-	-	**2**
Lithuania	-	25	-	-	**25**
Mexico	79	9	-	-	**88**
Netherlands	315	3	-	-	**318**
New Zealand	119	19	-	-	**138**
Nicaragua	38	-	-	-	**38**
Northern Ireland	13	-	-	-	**13**
Pakistan	5	-	1	-	**6**
Poland	10	18	-	-	**28**
Spain	19	4	-	-	**23**
Thailand	4	-	1	-	**5**
United Kingdom	39	-	-	-	**39**
Uruguay	84	23	100	23	**230**
Vietnam	326	-	-	-	**326**
Total	**2,299**	**294**	**104**	**23**	**2,720**

Data Source: FSIS Data Warehouse and PHIS databases.

Table 13. FY 2017 Number of Import Residue Samples Analyzed, by Exporting Country and Production Type

Country	Production Type												
	Beef		Pork		Veal	Lamb Mutton	Goat	Silurif-ormes	Chicken		Turkey		
	Raw	Processed	Raw	Processed	Raw	Raw	Raw	Raw	Raw	Processed	Raw	Processed	Total
Australia	54	4	-	-	11	19	43	-	-	-	-	-	**131**
Bangladesh	-	-	-	-	-	-	-	20	-	-	-	-	**20**
Brazil	265	33	35	-	-	-	-	-	-	-	-	-	**333**
Canada	134	29	115	32	61	25	-	-	87	25	46	6	**560**
Chile	-	-	25	-	-	24	-	-	54	-	19	-	**122**
China	-	-	-	-	-	-	-	74	-	2	-	-	**76**
Costa Rica	34	-	-	-	-	-	-	-	-	-	-	-	**34**
Denmark	-	-	16	7	-	-	-	-	-	-	-	-	**23**
Dominican Republic	-	-	-	-	-	-	-	2	-	-	-	-	**2**
Finland	-	-	1	-	-	-	-	-	-	-	-	-	**1**
France	-	-	-	-	14	-	-	-	-	-	-	-	**14**
Germany	-	-	-	3	-	-	-	-	-	-	-	-	**3**
Guyana	-	-	-	-	-	-	-	2	-	-	-	-	**2**
Hungary	-	-	-	3	-	-	-	-	-	-	-	-	**3**
Iceland	-	-	-	-	-	3	-	-	-	-	-	-	**3**
Ireland	13	-	8	-	-	-	-	-	-	-	-	-	**21**

Table 13. FY 2017 Number of Import Residue Samples Analyzed, by Exporting Country and Production Type (*Cont.*)

Country	Production Type												
	Beef		Pork		Veal	Lamb/ Mutton	Silurifor-mes	Goat	Chicken		Turkey		
	Raw	Processed	Raw	Proce ss-ed	Raw	Raw	Raw	Raw	Raw	Process-ed	Raw	Proc-essed	Total
Israel	-	-	-	-	-	-	-	-	-	4	-	23	**27**
Italy	-	-	8	20	-	-	-	-	-	-	-	-	**28**
Japan	38	-	-	-	-	-	-	-	-	-	-	-	**38**
Korea, Republic	-	-	-	-	-	-	-	-	-	2	-	-	**2**
Lithuania	-	7	-	18	-	-	-	-	-	-	-	-	**25**
Mexico	61	-	14	4	-	1	-	3	-	1	-	4	**88**
Netherlands	105	-	12	3	198	-	-	-	-	-	-	-	**318**
New Zealand	30	19	-	-	26	44	-	19	-	-	-	-	**138**
Nicaragua	38	-	-	-	-	-	-	-	-	-	-	-	**38**
Northern Ireland	-	-	13	-	-	-	-	-	-	-	-	-	**13**
Pakistan	-	-	-	-	-	-	6	-	-	-	-	-	**6**
Poland	-	-	10	18	-	-	-	-	-	-	-	-	**28**
Spain	-	-	19	4	-	-	-	-	-	-	-	-	**23**
Thailand	-	-	-	-	-	-	5	-	-	-	-	-	**5**
United Kingdom	-	-	39	-	-	-	-	-	-	-	-	-	**39**
Uruguay	207	23	-	-	-	-	-	-	-	-	-	-	**230**
Vietnam	-	-	-	-	-	-	326	-	-	-	-	-	**326**
Total	**979**	**115**	**315**	**112**	**310**	**116**	**435**	**65**	**141**	**34**	**65**	**33**	**2,720**

Data Source: FSIS Data Warehouse and PHIS databases.

Table 14. FY 2017 Number of Chemical Analytes Tested Per Exporting Country and Production Type

Country	Production Type												
	Beef		Pork		Veal	Lamb Mutton	Goat	Siluriformes	Chicken		Turkey		
	Raw	Processed	Raw	Processed	Raw	Raw	Raw	Raw	Raw	Processed	Raw	Processed	Total
Australia	4,619	30	-	-	1,258	2,356	5,166	-	-	-	-	-	**13,429**
Bangladesh	-	-	-	-	-		-	3,108	-	-	-	-	**3,108**
Brazil	21,238	328	3,703	-	-		-	-	-	-	-	-	**25,269**
Canada	11,161	145	13,212	256	6,569		-	-	9,053	121	5,357	39	**49,193**
Chile	-	-	2,832	-	-	3,232	-	-	6,070	-	1,882	-	**14,016**
China	-	-	-	-	-		-	9,335	-	18	-	-	**9,353**
Costa Rica	2,548	-	-	-	-		-	-	-	-	-	-	**2,548**
Denmark	-	-	1,921	49	-		-	-	-	-	-	-	**1,970**
Dominican Republic	-	-	-	-	-		-	248	-	-	-	-	**248**
Finland	-	-	113	-	-		-	-	-	-	-	-	**113**
France	-	-	-	-	1,422		-	-	-	-	-	-	**1,422**
Germany	-	-	-	39	-		-	-	-	-	-	-	**39**
Guyana	-	-	-	-	-		-	248	-	-	-	-	**248**
Hungary	-	-	-	23	-		-	-	-	-	-	-	**23**
Iceland	-	-	-	-	-		-	-	-	-	-	-	**378**
Ireland	1,063	-	782	-	-		-	-	-	-	-	-	**1,845**

Table 14. FY 2017 Number of Chemical Analytes Tested Per Exporting Countries and Production Type (*Cont.*)

Country	Production Type												
	Beef		Pork		Veal	Lamb/ Mutton	Siluriformes	Goat	Chicken		Turkey		
	Raw	Process-ed	Raw	Processed	Raw	Raw	Raw	Raw	Raw	Processed	Raw	Process-ed	Total
Israel	-	-	-	-	-		-	-	-	36	-	139	**175**
Italy	-	-	900	151	-		-	-	-	-	-	-	**1,051**
Japan	3,023	-	-	-	-		-	-	-	-	-	-	**3,023**
Korea, Republic Of	-	-	-	-	-		-	-	-	2	-	-	**2**
Lithuania	-	48	-	145	-		-	-	-	-	-	-	**193**
Mexico	4,387	-	1,532	19	-		-	369	-	17	-	51	**6,488**
Netherlands	7,900	-	1,350	25	18,037		-	-	-	-	-	-	**27,312**
New Zealand	2,681	256	-	-	2,479	5,692	-	2,574	-	-	-	-	**13,682**
Nicaragua	2,834	-	-	-	-		-	-	-	-	-	-	**2,834**
Northern Ireland	-	-	1,614	-	-		-	-	-	-	-	-	**1,614**
Pakistan	-	-	-	-	-		789	-	-	-	-	-	**789**
Poland	-	-	1,004	133	-		-	-	-	-	-	-	**1,137**
Spain	-	-	2,394	25	-		-	-	-	-	-	-	**2,419**
Thailand	-	-	-	-	-		693	-	-	-	-	-	**693**
United Kingdom	-	-	3,996	-	-		-	-	-	-	-	-	**3,996**
Uruguay	25,305	124	-	-	-		-	-	-	-	-	-	**25,429**
Vietnam	-	-	-	-	-		46,318	-	-	-	-	-	**46,318**
Total	**86,759**	**931**	**35,353**	**865**	**29,765**	**15,051**	**60,739**	**8,109**	**15,123**	**194**	**7,239**	**229**	**260,357**

Note: Multiple violative analytes in different tissue types may be associated with a single product sample
Data Source: FSIS Data Warehouse and PHIS databases.

Table 15. FY 2017 Number of Samples and Chemical Residues under the Import Residue Sample Program, by Exporting Country

Country	Number of Samples	Samples with Detected Non-Violative	Samples with Residue Detected Violative	Chemical Residues Analysis*
Australia	131	--	--	13,429
Bangladesh	20		6 (Siluriformes)	3,108
Brazil	333	7	1 (Beef)	25,269
Canada	560	--	--	49,193
Chile	122	--	--	14,016
China	76	--	5 (Siluriformes)	9,353
Costa Rica	34	--	--	2,548
Denmark	23	--	--	1,970
Dominican Republic	2	--	--	248
Finland	1	--	--	113
France	14	--	--	1,422
Germany	3	--	--	39
Guyana	2	--	--	248
Hungary	3	--	--	23
Iceland	3	--	--	378
Ireland	21	--	--	1,845
Israel	27	--	--	175
Italy	28	--	--	1,051
Japan	38	--	--	3,023
Korea, Republic Of	2	--	--	2
Lithuania	25	--	--	193
Mexico	88	--	--	6,488
Netherlands	318	--	--	27,312
New Zealand	138	--	--	13,682
Nicaragua	38	--	--	2,834
Northern Ireland	13	--	--	1,614
Pakistan	6	--	--	789
Poland	28	1	--	1,137
Spain	23	--	--	2,419
Thailand	5	--	1 (Siluriformes)	693
United Kingdom	39	--	--	3,996
Uruguay	230	--	--	25,429

Country	Number of Samples	Samples with Detected Non-Violative	Samples with Residue Detected Violative	Chemical Residues Analysis*
Vietnam	**326**	**--**	**11 (Siluriformes)**	**46,318**
TOTAL	**2,720**	**8**	**24**	**260,357**

Note: * Multiple violative analytes in different tissue types may be associated with a single product sample.

Data Source: FSIS Data Warehouse and PHIS databases.

Table 16a- FY 2017 Import Residue Sample Program (Violative) Results, by Exporting Countries, Chemical Residues and Production Class

Country	Chemical Residue	Siluriformes	Beef
		Residue Detected Violative	Residue Detected Violative
Bangladesh	Crystal Violet	2	--
	Leucocrystal Violet	1	--
	Leucomalachite Green	2	--
	Profenofos	1	--
Brazil	Doramectin	--	1
China	Crystal Violet	3	--
	Leucocrystal Violet	1	--
	Leucomalachite Green	1	--
Thailand	Furazolidone	1	--
Vietnam	Chlorpyrifos	2	--
	Crystal Violet	6	--
	Fipronil desulfinyl	1	--
	Leucomalachite Green	2	--
Total		**23**	**1**

Note: Multiple violative analytes in different tissue types may be associated with a single product sample. **Data Source:** FSIS Data Warehouse and PHIS databases.

Table 16b- FY 2017 Import Residue Sample Program (Non-Violative) Results, by Exporting Countries, Chemical Residues and Production Class

Country	Chemical Residue	Pork	Beef
		Residue Detected Non-Violative	Residue Detected Non-Violative
Brazil	Ivermectin	--	5
	Moxidectin	--	2
Poland	Sulfaethoxypyridazine	1	--
Total		**1**	**7**

Note: Multiple violative analytes in different tissue types may be associated with a single product sample. **Data Source:** FSIS Data Warehouse and PHIS databases.

Appendix I

NRP Non-Violative Positive and Violative Residue Samples Results

In addition to the publication of the FY 2017 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:

https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/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 sample population.

Prior to FY 2012, FSIS tested 230 or 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 at least one chemical residue violation if the violation rate is equal to or greater than one percent in the population being sampled. Starting in FY 2012, FSIS stated in its residue sampling plan that the sample size selected/tested would increase to about 800 samples for each of the nine major production class tested under Tier 1.

The statistical table provides the calculated number of samples required to ensure detection of at least one violation that affects a given percentage of the sampled population. Statistically, for a binomial distribution with sample size "*n*" and violation rate "*v*" (in decimal), 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, if the true violation rate is 1% the probability of detecting at least one violation with sample sizes of 230,300,390,460, and 800 are 90%, 95%, 98%, 99%,and 99.97% respectively.

In the table below the probability of detecting at least one violation with a sample size of 800 is italicized and bolded.

Statistical Table – FY 2017 U.S. National Residue Program

Percentage % Violative in the population (v)	Number of samples required to detect at least one violation in (n) samples with a probability (p)				
	0.90	0.95	0.98	0.99	0.9997
	Sample Size required "n"				
10	22	29	37	44	77
5	45	59	76	90	158
1	230	300	389	459	***807***
0.57	403	525	684	***806***	1,419
0.50	460	598	***780***	919	1,618
0.37	620	***808***	1,055	1,242	2,188
0.29	***793***	1,032	1,347	1,586	2,793
0.10	2,302	2,995	3,910	4,603	8,108

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

List of Chemical Residues by Class/Method

i. Veterinary Drugs

For FY 2017 domestic sampling, FSIS has scheduled the following classes of veterinary drug analytes:

Multi-residue method

2-Aminosulfone Albendazole	DCCD	Gamithromycin	Oxytetracycline	Sulfamethoxypyridazine
2-Amino-Flubendazole	Desethylene Ciprofloxacin	Haloperidol	Penicillin G	Sulfanitran
2-Quinoxaline Carboxylic Acid (QCA)	Diclofenac	Ipronidazole	Phenylbutazone	Sulfapyridine
Abamectin	Dicloxacillin	Ipronidazole - OH	Pirlimycin	Sulfaquinoxaline
Acepromazine	Difloxacin	Ketamine	Prednisone	Sulfathiazole
Albendazole	Dimetridazole	Ketoprofen	Ractopamine	Tetracycline
Amoxicillin	Dimetridazole - OH	Levamisole	Ronidazole	Thiabendazole
Ampicillin	Dipyrone	Lincomycin	Salbutamol	Tildipirosin
Azaperone	Doramectin	Melengestrol Acetate	Sarafloxacin	Tilmicosin
Butorphanol	Doxycycline	Meloxicam	Selamectin	Tolfenamic Acid
Carazolol	Emamectin Benzoate	Metronidazole	Sulfachloropyridazine	Tulathromycin A
Cefazolin	Enrofloxacin	– Metronidazole-OH	Sulfadiazine	Tylosin
Chloramphenicol	Eprinomectin	Morantel tartrate	Sulfadimethoxine	Tyvalosin
Chlortetracycline	Erythromycin A	Moxidectin	Sulfadoxine	Virginiamycin
Cimaterol	Fenbendazole	Nafcillin	Sulfaethoxypyridazine	Xylazine
Ciprofloxacin	Fenbendazole sulphone	Norfloxacin	Sulfamerazine	Zeranol (β-Zearalanol)
Clindamycin	Florfenicol	Orbifloxacin	Sulfamethazine	
Cloxacillin	Flubendazole	Oxacillin	Sulfamethizole	
Danofloxacin	Flunixin	Oxyphenylbutazone	Sulfamethoxazole	

Aminoglycoside Method

Amikacin	Gentamicin	Neomycin
Apramycin	Hygromycin B	Spectinomycin
Dihydrostreptomycin	Kanamycin	Streptomycin

Hormones Method

Megestrol	Melengestrol Acetate	Hexestrol	Zeranol

Beta-Agonist Method

Cimaterol	Ractopamine	Zilpaterol
Clenbuterol	Salbutamol	

Avermectin Method

Doramectin	Ivermectin	Moxidectin

Nitrofuran Method

3-Amino-2-oxazolidinone (AOZ)	1-Aminohydantoin (AHD)	Semicarbazide (SEM)
3-Amino-5-morpholinomethyl-2-oxazolidinone (AMOZ)		

Carbadox Method
Quinoxaline-2-carboxylic acid

ii. Pesticides and environmental contaminants

a. Pesticide Method

1-Naphthol	Coumaphos O	Fluroxypyr-1-Methylhepyl-Ester	Pentachlorobenzene (PCB)
3-Hydroxycarbofuran	Coumaphos S	Fluvalinate	Permethrin (cis&trans)
Acephate	DDD o,p’	Heptachlor	Piperonyl butoxide
Acetamiprid	DDD p,p’ + DDT, o,p'	Heptachlor epoxide (cis+ trans) or (B+A)	Pirimiphos methyl
Alachlor	DDE o,p’	Hexachlorobenzene (HCB)	Prallethrin
Aldicarb	DDE p,p’	Hexazinone	Profenofos
Aldicarb sulfone	DDT p,p’	Hexythiazox	Pronamide
Aldicarb sulfoxide	Deethylatrazine	Imazalil	Propachlor
Aldrin	Diazinon	Imidacloprid	Propanil
Atrazine	Dichlorvos (DDVP)	Indoxacarb	Propetamphos
Azinphos methyl	Dieldrin	Lindane (BHC gamma)	Propiconazole
Azoxystrobin	Difenoconazole	Linuron	Pyraclostrobin
Benoxacor	Diflubenzuron	Malathion	Pyrethrin I
Bifenthrin	Dimethoate	Metalaxyl	Pyrethrin II
Boscalid	Diuron	Methamidophos	Pyridaben
Buprofezin	Endosulfan I	Methomyl	Pyriproxyfen
Carbaryl	Endosulfan II	Methoxyfenozide	Resmethrin (cis&trans)
Carbofuran	Endosulfan sulfate	Metolachlor	Simazine
Carfentrazone ethyl	Ethion	Metribuzin	Sulprofos
Chlordane cis	Ethion monoxon	MGK-264 (isomers 1 & 2)	Tebufenozide
Chlordane trans	Ethofumesate	Myclobutanil	Tefluthrin

Chloroneb	Fenoxaprop ethyl	Nonachlor cis	Tetrachlorvinphos
Chlorothalonil	Fenpropathrin	Nonachlor trans	Tetraconazole
Chlorpropham	Fipronil	Norflurazon	Thiabendazole
Chlorpyrifos	Fipronil desulfinyl	Omethoate	Thiamethoxam
Chlorpyrifos methyl	Fipronil sulfide	Oxychlordane	Thiobencarb
Clothianidin	Fluridone	Pentachloroaniline (PCA)	Trifloxystrobin
1-Naphthol	Coumaphos O	Fluroxypyr-1-Methylhepyl-Ester	Pentachlorobenzene (PCB)
3-Hydroxycarbofuran	Coumaphos S	Fluvalinate	Permethrin (cis&trans)
Acephate	DDD o,p’	Heptachlor	Piperonyl butoxide
Acetamiprid	DDD p,p’ + DDT, o,p'	Heptachlor epoxide (cis+ trans) or (B+A)	Pirimiphos methyl
Alachlor	DDE o,p’	Hexachlorobenzene (HCB)	Prallethrin
Aldicarb	DDE p,p’	Hexazinone	Profenofos
Aldicarb sulfone	DDT p,p’	Hexythiazox	Pronamide
Aldicarb sulfoxide	Deethylatrazine	Imazalil	Propachlor
Aldrin	Diazinon	Imidacloprid	Propanil
Atrazine	Dichlorvos (DDVP)	Indoxacarb	Propetamphos
Azinphos methyl	Dieldrin	Lindane (BHC gamma)	Propiconazole
Azoxystrobin	Difenoconazole	Linuron	Pyraclostrobin
Benoxacor	Diflubenzuron	Malathion	Pyrethrin I
Bifenthrin	Dimethoate	Metalaxyl	Pyrethrin II
Boscalid	Diuron	Methamidophos	Pyridaben
Buprofezin	Endosulfan I	Methomyl	Pyriproxyfen
Carbaryl	Endosulfan II	Methoxyfenozide	Resmethrin (cis&trans)
Carbofuran	Endosulfan sulfate	Metolachlor	Simazine
Carfentrazone ethyl	Ethion	Metribuzin	Sulprofos
Chlordane cis	Ethion monoxon	MGK-264 (isomers 1 & 2)	Tebufenozide
Chlordane trans	Ethofumesate	Myclobutanil	Tefluthrin
Chloroneb	Fenoxaprop ethyl	Nonachlor cis	Tetrachlorvinphos
Chlorothalonil	Fenpropathrin	Nonachlor trans	Tetraconazole
Chlorpropham	Fipronil	Norflurazon	Thiabendazole
Chlorpyrifos	Fipronil desulfinyl	Omethoate	Thiamethoxam
Chlorpyrifos methyl	Fipronil sulfide	Oxychlordane	Thiobencarb
Clothianidin	Fluridone	Pentachloroaniline (PCA)	Trifloxystrobin

b. Metals Method

Aluminum (Al)	Copper (Cu)	Selenium (Se)
Barium (Ba)	Iron (Fe)	Strontium (Sr)
Boron (B)	Lead (Pb)	Thallium (Tl)
Cadmium (Cd)	Manganese (Mn)	Vanadium (V)
Chromium (Cr)	Molybdenum (Mo)	Zinc (Zn)
Cobalt (Co)	Nickel (Ni)	

Appendix IV

U.S. NRP – Domestic Scheduled Sampling Program

Year	Number of Samples	Number of Violative Samples	Number of Non-Violative Positive Analytes	Number of Violative Chemical Residues
FY2014	6,066	10	34	10
FY2015	6,445	12	23	8
FY 2016	7,067	26	24	11
FY 2017	7,029	22	17	12

Appendix V

U.S. NRP – Import Re-inspection Sampling Program

Year	Number of Samples	Number of Violative Samples	Violative Residues
FY2014	1,967	8	Ivermectin (7), Zilpaterol (1)
FY2015	2,922	7	Abamectin (1) Ethion (5), Piperonyl Butoxide (1)
FY 2016	2,676	22	Ethion (21), Diazinon (1)
FY 2017	2,720	24	Dyes (22), Nitrofurans (1), Pesticide(2)

Appendix VI

NRP – Domestic Inspector Generated Sampling Program (*include* KIS™ and Non- KIS™ *test*) & lab confirmed residue results

Year	Number of Samples / (Include In-plant KIS™ Screens Tests)	Number of Samples Tested in FSIS Labs / (include in-plant KIS™ screens positive)	Number of Lab-Confirmed Violative Analytes / Number of Violative Carcasses	Top Three Violative Chemical Residue	Number of Lab-Confirmed Non-Violative Positive Analytes	Top Three Non-Violative Chemical Residue
FY2014	210,705 / (**210,516**)	5,048 / (**4,859**)	1,408 / **1,136**	Ceftiofur Penicillin Neomycin	1,150	Oxytetracyline Tulathromycin Penicillin
FY2015	184,167 / **(184,010)**	4,179 / (**4,022**)	1,024 / **796**	Ceftiofur Penicillin Sulfamethazine	873	Tulathromycin Oxytetracyline Neomycin
FY 2016	182,313 / **(182,184)**	3,778 / (**3,649**)	893 / **732**	Ceftiofur Penicillin Sulfadimethoxine	728	Oxytetracycline Tulathromycin Penicillin
FY 2017	177,238 / **(177,138)**	4,262 / (**4,162**)	843 / **681**	Ceftiofur Penicillin Sulfadimethoxine	714	Tulathromycin Oxytetracycline Penicillin

Note:

- (**Number of KIS™ test samples 2**)
- Multiple violative analytes in different tissue types may be associated with a single carcass

Appendix VII

FY 2017 FSIS Residue Sampling for Siluriformes

On December 2, 2015, FSIS published the final rule, "Mandatory Inspection of Fish of the Order Siluriformes and Products Derived From Such Fish." The 2008 Farm Bill amended the Federal Meat Inspection Act (FMIA), to make Siluriformes a species amendable to the FMIA and therefore, subject to FSIS inspection. FSIS is providing a 12 month transitional period (Oct 2016-Sep 2017) for the inspection of Siluriformes and the residue testing will be done based on parameters set forth in the final rule. During FY2017, FSIS scheduled routine testing of Siluriformes for dyes (malachite green and gentian violet), nitrofurans, and veterinary drugs, metals, and pesticides residues.

	Domestic	Imports	Total
Siluriformes	**200**	**435**	**635**

Siluriformes	Chemical Class Oct 2016- Sep 2017					
	Aminoglycoside	Dyes	Metals	MRM	Nitrofurans	Pesticides
Domestic	√	√	√	√	√	√
Imports	--	√	√	√	√	√

Table 17. FY 2017 NRP Residue Scheduled Samples -Number of Residue Samples Tested Per Chemical Method by Sampling Plan

Siluriformes (# Samples Collected)	Number of Samples per Chemical Method					
	Aminoglycoside	Dyes	Metals	MRM	Nitrofurans	Pesticides
Domestic (200)	4	77 **(2)**	77	200	123	121 **(1)**
Import (435)	--	209 **(20)**	213	209	226 **(1)**	226 **(2)**
Total (635)	**4**	**286**	**300**	**409**	**349**	**347**

Note: Number of violative samples **(in parenthesis)**
Data Source: FSIS Data Warehouse and PHIS databases.

Table18. FY 2017 NRP Residue Scheduled Samples - Number of Chemical Analytes Tested Per Chemical Method by Sampling Plan

Siluriformes (# Samples Collected)	Number of Chemical Analytes per Chemical Method						
	Aminoglycoside	**Dyes**	**Metals**	**MRM**	**Nitrofurans**	**Pesticides**	**Total**
Domestic (200)	49	384	1,491	21,442	615	15,879	39,860
Import (435)	-	1,028	3,987	23,636	1,119	30,969	60,739
Total (635)	**49**	**1,412**	**5,478**	**45,078**	**1,744**	**47,155**	**100,599**

Note: Multiple analytes may be associated with the same sample. Not all samples are tested for all chemical method. Number of samples per chemical method is indicated in **Table 17** above.

Data Source: FSIS Data Warehouse and PHIS databases