

National Residue Program Quarterly Report (Jan–Mar 2021)

National Residue Program

In FY 2021 Q2, eight analytical methods were used by FSIS to detect approximately 260 different veterinary drugs, pesticides, and environmental contaminants. Key observations are below.

Surveillance Sampling Plan

Specified slaughter subclasses are sampled at the time of slaughter, after a carcass has passed antemortem inspection. Of the 2,026 samples analyzed by FSIS (1,973 from U.S. Federal plants and 53 from U.S. State inspected plants), five sample contained violative chemical residues. In total, more than 361,000 chemical residue analyses were conducted on the 2,026 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2021 Q2 Surveillance Sampling Results

Animal Category	Animal Class	Total Number of Samples Planned for FY 2021	Number of Samples Analyzed this Quarter			
			Total Samples ¹	Number of Non-Detect Samples	Number of Non-Violative Positives Samples	Number of Violative Samples
Bovine	Beef Cows	800	226	226	--	--
	Bob Veal	400	83	82	1	--
	Dairy Cows	800	227	223	2	2
	Formula-Fed Veal	75	16	16	--	--
	Heifers	400	117	108	7	2
	Non-Formula-Fed Veal	75	14	13	1	--
	Steers	400	120	110	10	--
Porcine	Feral Swine	75	16	16	--	--
	Market Swine	800	215	215	--	--
	Roaster Swine	300	76	76	--	--
	Sows	800	182	182	--	--
Poultry	Young Chickens	400	107	105	2	--
	Whole Chickens	400	99	98	1	--
	Young Turkeys	800	232	232	--	--
Other Species	Goats	300	72	71	--	1
	Lambs	100	23	23	--	--
	Mature Sheep	100	26	26	--	--
	<i>Siluriformes</i> (Catfish)	650	125	123	2	--
	Egg Products	400	50	50	--	--
Annual Total		8,075	2,026	1,995	26	5

¹ For raw product, a sample is a representative portion of a meat, poultry, or egg product collected to identify potential microbiological, chemical, or pathological hazards.

Table 2: FY 2021 Q2 Surveillance Sampling Results by Chemical Method

		Number of Samples Analyzed per Chemical Method							
		Aminoglycosides		Antifungal					
Bovine	Beef Cows	226	--	--	34	226	--	117	--
	Bob Veal	83	--	--	20	83	--	52	--
	Dairy Cows	227	--	--	34	227	--	122	--
	Formula-Fed Veal	16	--	--	1	16	--	--	--
	Heifers	117	--	--	22	117	--	68	--
	Non- Formula Fed Veal	14	--	--	--	14	--	--	--
	Steers	120	--	--	22	120	--	74	--
Porcine	Feral Swine	--	--	--	--	--	--	16	--
	Market Swine	214	--	--	32	215	--	114	27
	Roaster Swine	--	--	76	--	--	--	--	--
	Sows	181	--	--	22	182	--	98	23
Poultry	Young Chickens	107	--	--	34	107	4	4	--
	Whole Chickens	99	--	--	--	99	99	99	93
	Young Turkeys	232	--	--	34	232	126	126	--
Other Species	Goats	72	--	--	--	72	--	45	--
	Lambs	23	--	--	--	23	--	21	--
	Mature Sheep	26	--	--	--	26	--	13	--
	<i>Siluriformes</i> (Catfish)	--	59	--	59	125	66	66	37
	Egg Products	--	--	--	--	50	--	50	--
Annual Total		1,757	59	76	314	1,934	295	1,085	180

Table 3. FY 2021 Q2 Surveillance Sampling Residue Violations

List of FY 2021 Surveillance Sampling residue violations (specific compound, concentration, tolerance and regulatory citation) by animal class.

Animal Class	Tissue	Compound	Concentration	Units	Tolerance Level Value	Authority (CFR Citation)
Dairy Cow	Kidney	Penicillin	0.306	ppm	0.05	21 CFR 556.510
Dairy Cow	Muscle	Salbutamol	*	*	*	Not Approved ^{/1/}
Goat	Muscle	Moxidectin	32.6	ppb	0	Not Approved ^{/1/}
Heifer	Liver	Ractopamine	0.113	ppm	0.09	21 CFR 556.570
Heifer	Muscle	Diclofenac	*	*	*	Not Approved ^{/1/}

* Violative residue results were detected but not quantified.

^{/1/}Not Approved: the residue detected is not approved for the animal class.

Inspector-Generated Sampling Plan

FSIS inspectors conduct inspector-generated sampling when they suspect that animals presented for slaughter may have violative levels of chemical residues. If an inspector suspects that there is misuse of drugs that cannot be detected by the KIS™ test, the samples are sent directly to the laboratory for appropriate analysis. These samples are reported under the Inspector-Generated program. If an inspector suspects that there is misuse of drugs that cannot be detected by the KIS™ test, the samples are sent directly to the laboratory for appropriate analysis. These samples are reported under the Collector-Generated program.

In FY 2021 Q2, of the 32,738 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 576 samples were submitted to FSIS field laboratories for further analysis. In total, 146 chemical residue violations were reported in 107 samples (Table 5). Due to multiple analyses per sample submitted, multiple residue violations may be found in the same sample. The predominant violative residues in the inspector-generated samples were ceftiofur (39), penicillin (27), and sulfamethazine (15), which account for 27%, 18%, and 10% of total violative residues, respectively.

Table 4. Summary of FY 2021 Q2 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2021 Q2 summary of in-plant screening tests performed using the KIS™ test, number of in-plant screens with negative results, number of carcasses sent to FSIS laboratory for confirmation, and the number of carcasses with violations for each animal class.

Animal Category	Animal Class	KIS™ Test			
		Total Number of In-plant Carcasses	Number of In-plant Negative Carcasses	Number of Samples Analyzed in FSIS Labs	Number of Samples with Confirmed Lab Violations
Bovine	Beef Cows	2,359	2,295	69	11
	Bob Veal	6,303	6,264	39	11
	Bulls	330	320	10	0
	Dairy Cows	16,779	16,421	365	73
	Heavy Calves	70	54	16	2
	Formula-fed Veal	49	49	0	0
	Heifers	1,123	1,095	27	5
	Non-Formula-fed Veal	42	39	2	0
Porcine	Steers	1,872	1,846	26	2
	Boar/Stag Swine	15	15	0	0
	Market Swine	2,270	2,257	11	0
	Roaster Swine	274	274	0	0
Other Species	Sows	909	902	7	1
	Goats	105	104	1	1
	Mature Sheep	60	57	3	1
	Lambs	178	178	0	0
	Annual Total	32,738	32,170	576	107

Table 5. FY 2021 Q2 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class

FY 2021 Q2 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Animal Class									
	Beef Cow	Bob Veal	Dairy Cow	Goat	Heavy Calf	Heifer	Mature Sheep	Sow	Steer	Annual Total
Ampicillin	--	--	1	--	--	1	--	--	--	2
Butorphanol	1	--	--	--	--	--	--	--	--	1
Ciprofloxacin	1	2	--	--	--	--	--	--	--	3
Desfuroylceftiofur	--	2	35	--	--	2	--	--	--	39
Dihydrostreptomycin	--	--	1	--	--	--	--	--	--	1
Enrofloxacin	--	2	--	--	--	--	--	--	--	2
Eprinomectin	--	--	--	--	--	--	1	--	--	1
Florfenicol	--	--	4	--	--	--	--	--	--	4
Flunixin	3	--	7	--	--	--	--	--	--	10
Gentamycin Sulfate	2	--	--	--	--	2	--	--	--	4
Meloxicam	--	1	4	--	--	--	--	--	--	5
Neomycin	--	5	--	--	1	--	--	--	--	6
Oxytetracycline	1	--	--	--	--	--	--	--	--	1
Penicillin	3	--	22	--	1	--	--	1	--	27
Spectinomycin	--	--	--	2	--	--	--	--	--	2
Sulfadimethoxine	2	1	7	--	--	--	--	--	--	10
Sulfadoxine	--	--	1	--	--	--	--	1	--	2
Sulfamethazine	6	--	6	--	--	1	--	--	2	15
Sulfamethoxazole	--	3	--	--	--	--	--	--	--	3
Sulfamethoxypyridazine	--	--	1	--	--	--	--	--	1	2
Sulfathiazole	--	3	--	--	--	--	--	--	--	3
Tetracycline	--	--	--	1	--	--	--	--	--	1
Tilmicosin	2	--	--	--	--	--	--	--	--	2
Annual Total	21	19	89	3	2	6	1	2	3	146

Table 6. Summary of FY 2021 Q2 Collected-Generated Sampling

FY 2021 Q2 summary of suspect animal samples sent directly to FSIS laboratory (collected-generated sampling) for appropriate analysis.

Animal Category	Animal Class	Number of Non-Detect Samples	Number of Non-Violative Positives Samples	Number of Violative Samples	Total Samples
Bovine	Beef Cow	1	--	--	1
	Bob Veal	1	--	--	1
	Dairy Cow	14	--	--	14
	Heifer	3	1	--	4
	Non-Formula-fed Veal	1	--	--	1
Porcine	Steer	4	1	--	5
	Market Swine	3	--	--	3
Poultry	Sow	3	--	--	3
Annual Total		30	2	0	32

In addition to the publication of the FY 2021 Sampling Summary NRP results, FSIS posts the details of each positive non-violative, and positive violative residue result associated with the NRP sampling program in a spreadsheet format on the FSIS website at:

<https://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/red-books/redbook>

This spreadsheet includes detailed information regarding samples collected and analyzed by FSIS under both the “scheduled” sampling and the “inspector-generated” sampling programs. Overall, these data indicate levels of metals in FSIS-regulated product, on average, are relatively low and are not likely to cause a human health concern. FSIS plans to update this spreadsheet on an ongoing basis so as to increase program transparency for all stakeholders. The spreadsheet includes the following data fields: sample collection and reviewed date, the project code, the animal class, tissue type, chemical residue name, concentration values, sample results (whether positive non-violative or positive violative), chemical concentration values (if any) and the CFR reference for each chemical listed.

Import Residue Sampling

Imported meat, poultry, and egg products are sampled through the point-of-entry Import Reinspection Sampling Plan. This verifies that foreign inspection systems in exporting countries are equivalent to U.S. standards. A total of 927 samples were analyzed under this program in FY 2021 Q2, of which four samples were violative. Those violative samples originated from the following countries: The People's Republic of China and Mexico. The results are summarized in **Table 7**.

Table 7. Summary of FY 2021 Q2 Residue Sampling of Imported Products

FY 2021 Q2 import residue samples by inspection level and production type.

Product Name and Project Code	Analytical Method	Normal			Increased ^{/1/}		Intensified ^{/2/}			Annual Total
		Number of Samples Analyzed	Non-Violative Positives Samples	Violative Samples	Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positives Samples	Violative Samples	
Imported Fish Products- Eastern Laboratory IMPFISH_CH_E	Antifungal Dyes, Metals, MRM	236	--	--	--	--	--	--	--	236
Imported Fish Products- Western Laboratory IMPFISH_CH_W	Nitrofurans, Pesticides	236	--	1	--	--	10	1	2	246
Imported - Metals IMP METALS	Metals	78	--	--	2	--	--	--	--	80
Imported - Pesticide IMP PESTICIDE	Pesticides	111	--	--	--	--	1	--	--	112
Imported Egg Products- Chemistry IMP RESEGG	Pesticides	13	--	--	--	--	--	--	--	13
Imported Fresh Products - Residue Eastern Lab IMP RESFR_EL	Aminoglycosides, MRM	113	--	-	--	--	2	--	--	115
Imported Fresh Products - Residue Western Lab IMP RESFR_WL	Aminoglycosides, MRM, Nitrofurans	101	3	1	--	--	2	--	--	103

Product Name and Project Code	Analytical Method	Normal			Increased ^{/1/}		Intensified ^{/2/}			Annual Total
		Number of Samples Analyzed	Non-Violative Positives Samples	Violative Samples	Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positives Samples	Violative Samples	
Imported Processed Products - Residue Eastern Lab IMPRESPR_EL	Avermectins	12	--	--	2	--	--	--	--	14
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	8	--	--	--	--	--	--	--	8
Annual Total		908	3	3	4	0	15	1	2	927

^{/1/}Increased is a level of reinspection above the normal level that is directed by a FSIS management decision. Under increased reinspection, FSIS may hold, on a case-by-case basis, lots of imported meat, poultry, or egg products pending receipt of a laboratory analysis. If FSIS does not place the product on hold, the importer of record is still required to hold product tested for adulterants by FSIS and is not to allow such product to enter commerce unless and until negative results are received. During FY 2021 Q2, there were no violative samples at increased level of inspection.

^{/2/}Intensified is a level of reinspection that is implemented automatically by the Public Health Information System (PHIS) when a Type of Inspection PHIS task is reported as "Fail." Under intensified reinspection, FSIS holds the sampled lot at the official import inspection establishment pending receipt of laboratory analysis. The sampled lot is not allowed to move off-site to be held.

Table 8. FY 2021 Q2 Import Residue Sampling Violations by Foreign Country/Animal Class

List of FY 2021 Q2 import residue sampling violations (foreign country, specific compound, concentration, tolerance, and regulatory citation) by animal class.

Foreign Country	Animal Class	Compound	Concentrations	Units	Tolerance Level Value	Authority (CFR Citations)
The People's Republic of China	<i>Siluriformes</i>	Nitrofurazone	*	*	*	Not Approved/ ^{1/}
The People's Republic of China	<i>Siluriformes</i>	Nitrofurazone	*	*	*	Not Approved/ ^{1/}
The People's Republic of China	<i>Siluriformes</i>	Nitrofurazone	*	*	*	Not Approved/ ^{1/}
Mexico	Beef	Dipyron	*	*	*	Not Approved/ ^{1/}
		Phenylbutazone	*	*	*	Not Approved/ ^{1/}

* Violative residue results were detected but not quantified.

^{1/}Not Approved: the residue detected is not approved for the animal class.

PPB – parts per billion (µg/kg)