

National Residue Program Quarterly Report (Apr–Jun 2021)

National Residue Program

In FY 2021 Q3, nine 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 2,047 samples analyzed by FSIS (1,977 from U.S. Federal plants and 70 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 2,047 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2021 Q3 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	214	210	3	1
	Bob Veal	400	89	84	5	--
	Dairy Cows	800	224	222	1	1
	Formula-Fed Veal	75	14	14	--	--
	Heifers	400	113	111	2	--
	Non-Formula-Fed Veal	75	10	10	--	--
	Steers	400	109	107	1	1
Porcine	Feral Swine	75	17	17	--	--
	Market Swine	800	215	215	--	--
	Roaster Swine	300	77	77	--	--
	Sows	800	191	190	1	--
Poultry	Young Chickens	400	110	109	1	--
	Whole Chickens	400	97	96	1	--
	Young Turkeys	800	215	211	4	--
Other Species	Goats	300	74	73	1	--
	Lambs	100	26	26	--	--
	Mature Sheep	100	34	34	--	--
	<i>Siluriformes</i> (Catfish)	650	170	161	3	6
	Egg Products	400	48	46	2	--
Annual Total		8,075	2,047	2,013	25	9

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 Q3 Surveillance Sampling Results by Chemical Method

Animal Category	Animal Class	Number of Samples Analyzed per Chemical Method								
		Aminoglycosides	Antifungal Dyes	Carbadox	Metals	MRM	Nitrofurans	Pesticides	PFAS	Speciation
Bovine	Beef Cows	213	--	--	34	214	--	121	--	--
	Bob Veal	89	--	--	33	89	--	50	--	--
	Dairy Cows	223	--	--	36	224	--	118	--	--
	Formula-Fed Veal	14	--	--	--	14	--	--	--	--
	Heifers	113	--	--	26	113	--	73	--	--
	Non- Formula Fed Veal	10	--	--	--	10	--	--	--	--
	Steers	109	--	--	31	109	--	64	--	--
Porcine	Feral Swine	--	--	--	--	--	--	17	--	--
	Market Swine	215	--	--	43	215	--	110	53	--
	Roaster Swine	--	--	77	--	--	--	--	--	--
	Sows	191	--	--	36	191	--	99	50	--
Poultry	Young Chickens	110	--	--	40	110	2	2	--	--
	Whole Chickens	97	--	--	--	97	97	97	69	--
	Young Turkeys	215	--	--	34	215	120	120	--	--
Other Species	Goats	74	--	--	--	74	--	44	--	--
	Lambs	26	--	--	--	26	--	21	--	--
	Mature Sheep	34	--	--	--	34	--	26	--	--
	<i>Siluriformes</i> (Catfish)	--	64	--	64	152	88	88	34	82
	Egg Products	--	--	--	--	48	--	46	--	--
Annual Total		1,733	64	77	377	1,935	307	1,096	206	82

Table 3. FY 2021 Q3 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)
Beef Cow	Muscle	Doramectin	52.4	ppb	30	21 CFR 556.222
	Liver	Doramectin	285	ppb	100	21 CFR 556.222
Dairy Cow	Muscle	Salbutamol	*	*	*	Not Approved/ ^{1/}
	Liver	Salbutamol	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Atrazine and Metabolites	*	*	*	Not Approved/ ^{1/}
		Metolachlor	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Diclofenac	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Atrazine and Metabolites	*	*	*	Not Approved/ ^{1/}
		Metolachlor	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Metolachlor	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Metolachlor	*	*	*	Not Approved/ ^{1/}
Siluriformes	Muscle	Diclofenac	*	*	*	Not Approved/ ^{1/}
Steer	Liver	Ractopamine	0.125	ppm	0.09	21 CFR 556.570

* 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)

ppm – parts per million (mg/kg)

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 Q3, of the 36,355 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 429 samples were submitted to FSIS field laboratories for further analysis. In total, 116 chemical residue violations were reported in 105 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 (35), penicillin (25), and sulfadimethoxine (11), which account for 30%, 22%, and 9% of total violative residues, respectively.

Table 4. Summary of FY 2021 Q3 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2021 Q3 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	3,132	3,080	51	9
	Bison	1	1	--	--
	Bob Veal	4,552	4,531	18	8
	Bulls	420	407	13	3
	Dairy Cows	20,569	20,275	289	77
	Formula-fed Veal	39	39	--	--
	Heavy Calves	81	81	--	--
	Heifers	1,029	1006	18	3
	Non-Formula-fed Veal	22	22	--	--
	Steers	2,055	2,024	28	2
Porcine	Boar/Stag Swine	16	16	--	--
	Feral Swine	2	2	--	--
	Market Swine	2,662	2,648	9	2
	Roaster Swine	311	311	--	--
	Sows	970	966	3	1
Other Species	Deer/Reindeer	1	1	--	--
	Goats	150	150	--	--
	Mature Sheep	250	249	--	--
	Lambs	93	86	--	--
	Annual Total	36,355	35,895	429	105

Table 5. FY 2021 Q3 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
 FY 2021 Q3 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Animal Class								Annual Total
	Beef Cow	Bob Veal	Bulls	Dairy Cow	Market Swine	Heifer	Sow	Steer	
Ampicillin	--	--	--	4	--	--	--	--	4
Ciprofloxacin	--	--	--	--	1	--	--	--	1
Desfuroylceftiofur	1	1	--	31	--	2	--	--	35
Dihydrostreptomycin	--	1	--	--	--	--	--	--	1
Flunixin	2	--	--	5	--	--	--	--	7
Gentamycin Sulfate	1	--	--	--	--	--	--	--	1
Ketoprofen	--	--	1	3	1	--	--	--	5
Lincomycin	--	1	--	--	--	--	--	--	1
Meloxicam	--	--	--	6	--	--	--	1	7
Neomycin	1	5	--	2	--	--	--	--	8
Oxytetracycline	--	--	--	1	--	--	--	--	1
Penicillin	3	--	2	17	1	1	1	--	25
Sulfadimethoxine	--	--	--	9	--	1	--	1	11
Sulfadoxine	--	--	1	--	--	--	--	--	1
Sulfamethazine	1	--	--	2	--	--	--	1	4
Sulfathiazole	--	--	--	1	--	--	--	--	1
Tilmicosin	1	--	--	2	--	--	--	--	3
Annual Total	10	8	4	83	3	4	1	3	116

Table 6. Summary of FY 2021 Q3 Collected-Generated Sampling

FY 2021 Q3 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	3	--	--	3
	Bob Veal	1	1	--	2
	Dairy Cow	6	1	2	9
	Heavy Calves	2	--	--	2
	Heifer	1	--	--	1
	Steer	3	--	--	3
Porcine	Market Swine	8	--	--	8
	Sow	3	--	--	3
Other Species	Goat	1	--	1	2
	Lamb	1	--	--	1
Annual Total		29	2	3	34

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 916 samples were analyzed under this program in FY 2021 Q3, of which 11 samples were violative. Those violative samples originated from the following countries: Canada, The People's Republic of China, and Vietnam. The results are summarized in **Table 7**.

Table 7. Summary of FY 2021 Q3 Residue Sampling of Imported Products

FY 2021 Q3 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	205	--	--	--	--	--	--	--	205
Imported Fish Products- Western Laboratory IMPFISH_CH_W	Nitrofurans, Pesticides	200	1	1	--	--	30	--	7	230
Imported - Metals IMPMETALS	Metals	86	--	--	--	--	--	--	--	86
Imported - Pesticide IMPPESTICIDE	Pesticides	122	--	--	--	--	--	--	--	122
Imported Egg Products - Chemistry IMPRESEGG	Pesticides	11	--	--	--	--	--	--	--	11
Imported Fresh Products - Residue Eastern Lab IMPRESFR_EL	Aminoglycosides, MRM	90	--	1	--	--	36	1	--	126
Imported Fresh Products - Residue Western Lab IMPRESFR_WL	Aminoglycosides, MRM, Nitrofurans	80	--	1	--	--	36	--	--	116

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	14	--	--	--	--	--	--	--	14
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	6	--	--	--	--	--	--	--	6
Annual Total		814	1	3	0	0	102	1	7	916

^{/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 Q3, there were no samples analyzed under the 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 Q3 Import Residue Sampling Violations by Foreign Country/Animal Class

List of FY 2021 Q3 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)
Canada	Beef	Meloxicam	*	*	*	Not Approved/ ^{1/}
Canada	Beef	Meloxicam	*	*	*	Not Approved/ ^{1/}
The People's Republic of China	<i>Siluriformes</i>	Atrazine and Metabolites	*	*	*	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/}
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/}
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/}
Vietnam	<i>Siluriformes</i>	Ivermectin	73.8	ppb	0	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)