

National Residue Program Quarterly Report (Jul–Sep 2021)

National Residue Program

In FY 2021 Q4, 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 1,811 samples analyzed by FSIS (1,721 from U.S. Federal plants and 90 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 1,811 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2021 Q4 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	180	180	--	--
	Bob Veal	400	80	77	3	--
	Dairy Cows	800	161	158	3	--
	Formula-Fed Veal	75	25	25	--	--
	Heifers	400	81	80	1	--
	Non-Formula-Fed Veal	75	17	17	--	--
	Steers	400	90	90	--	--
Porcine	Feral Swine	75	15	15	--	--
	Market Swine	800	181	180	--	1
	Roaster Swine	300	86	85	--	1
	Sows	800	192	185	6	1
Poultry	Young Chickens	400	108	104	3	1
	Whole Chickens	400	103	101	2	--
	Young Turkeys	800	152	151	1	--
Other Species	Goats	300	90	89	1	--
	Lambs	100	24	21	1	2
	Mature Sheep	100	28	28	--	--
	<i>Siluriformes</i> (Catfish)	650	148	142	--	6
	Egg Products	400	50	47	2	1
Annual Total		8,075	1,811	1,775	23	13

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 Q4 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	180	--	--	19	180	--	50	--	--
	Bob Veal	80	--	--	33	80	--	24	--	--
	Dairy Cows	161	--	--	17	161	--	35	--	--
	Formula-Fed Veal	25	--	--	--	25	--	1	--	--
	Heifers	81	--	--	34	81	--	19	--	--
	Non- Formula Fed Veal	17	--	--	--	17	--	1	--	--
	Steers	90	--	--	39	90	--	23	--	--
Porcine	Feral Swine	--	--	--	--	--	--	15	--	--
	Market Swine	181	--	--	27	181	--	94	43	--
	Roaster Swine	1	--	86	--	--	--	--	--	--
	Sows	192	--	--	24	192	--	116	45	--
Poultry	Young Chickens	108	--	--	54	108	9	9	--	--
	Whole Chickens	103	--	--	--	103	103	103	97	--
	Young Turkeys	152	--	--	44	152	71	71	--	--
Other Species	Goats	90	--	--	--	90	--	48	--	--
	Lambs	24	--	--	--	24	--	15	--	--
	Mature Sheep	28	--	--	--	28	--	17	--	--
	<i>Siluriformes</i> (Catfish)	--	53	--	53	131	78	78	39	70
	Egg Products	--	--	--	--	41	--	50	--	--
Annual Total		1,513	53	86	344	1,684	261	769	224	70

Table 3. FY 2021 Q4 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)
Egg Products	Eggs	Piperonyl Butoxide	1.02	ppm	0.100	40 CFR 180.127
Lamb	Muscle	Piperonyl Butoxide	0.169	ppm	0.100	40 CFR 180.127
Lamb	Muscle	Piperonyl Butoxide	0.260	ppm	0.100	40 CFR 180.127
Market Swine	Muscle	Amoxicillin	*	*	*	21 CFR 556.380
Roaster Swine	Liver	Carbadox	60.0	ppb	30.0	21 CFR 556.100
Siluriformes	Muscle	Metolachlor	*	*	*	40 CFR 180.368
Siluriformes	Muscle	Metolachlor	*	*	*	40 CFR 180.368
Siluriformes	Muscle	Metolachlor	*	*	*	40 CFR 180.368
Siluriformes	Muscle	Metolachlor	*	*	*	40 CFR 180.368
Siluriformes	Muscle	Metolachlor	*	*	*	40 CFR 180.368
Siluriformes	Muscle	Tetraconazole	*	*	*	Not Approved ^{/1/}
Sow	Muscle	Piperonyl Butoxide	0.425	ppm	0.100	40 CFR 180.127
Young Chicken	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.

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 Q4, of the 39,205 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 402 samples were submitted to FSIS field laboratories for further analysis. In total, 82 chemical residue violations were reported in 77 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 (27), penicillin (20), and sulfamethazine (7), which account for 33%, 24%, and 11% of total violative residues, respectively.

Table 4. Summary of FY 2021 Q4 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2021 Q4 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	2,602	2,565	36	10
	Bison	1	1	--	--
	Bob Veal	4,535	4,515	20	9
	Bulls	475	464	11	1
	Dairy Cows	21,463	21,194	264	48
	Formula-fed Veal	35	34	1	--
	Heavy Calves	39	39	--	--
	Heifers	1,002	982	18	2
	Non-Formula-fed Veal	33	33	--	--
Steers	2,737	2,704	31	4	
Porcine	Boar/Stag Swine	15	15	--	--
	Market Swine	4,088	4,062	8	--
	Roaster Swine	290	289	--	--
	Sows	1,134	1,129	5	--
Other Species	Goats	177	175	1	--
	Mature Sheep	86	86	--	--
	Lambs	493	484	7	3
Annual Total		39,205	38,771	402	77

Table 5. FY 2021 Q4 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
 FY 2021 Q4 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Animal Class							Annual Total
	Beef Cow	Bob Veal	Bulls	Dairy Cow	Heifer	Lamb	Steer	
Ampicillin	--	--	--	1	--	--	--	1
Desfuoylceftiofur	3	1	--	20	1	--	2	27
Florfenicol	1	--	--	2	--	--	1	4
Flunixin	--	1	--	2	--	1	2	6
Gamithromycin	--	--	--	--	--	1	--	1
Meloxicam	1	--	--	3	--	--	--	4
Neomycin	--	5	--	--	--	--	--	5
Penicillin	4	1	--	15	--	--	--	20
Sulfadimethoxine	--	--	--	6	--	--	--	6
Sulfamethazine	2	1	1	1	1	1	--	7
Tilmicosin	1	--	--	--	--	--	--	1
Annual Total	12	9	1	50	2	3	5	82

Table 6. Summary of FY 2021 Q4 Collected-Generated Sampling

FY 2021 Q4 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	6	1	1	8
	Bob Veal	--	--	2	2
	Bull	1	--	--	1
	Dairy Cow	8	1	1	10
	Heifer	4	1	--	5
	Steer	2	1	--	3
Porcine	Market Swine	7	--	--	7
Other Species	Goat	8	2	--	10
	Mature Sheep	1	--	--	1
	Lamb	9	1	--	10
	Young Turkey	1	--	--	1
Annual Total		47	7	4	58

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 774 samples were analyzed under this program in FY 2021 Q4. During FY 2021 Q4, there were no violative import samples. The results are summarized in **Table 7**.

Table 7. Summary of FY 2021 Q4 Residue Sampling of Imported Products

FY 2021 Q4 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	Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positives Samples	
Imported Fish Products- Eastern Laboratory IMPFISH_CH_E	Antifungal Dyes, Metals, MRM	207	--	--	--	15	15	222
Imported Fish Products- Western Laboratory IMPFISH_CH_W	Nitrofurans, Pesticides	209	1	--	--	--	--	209
Imported - Metals IMP METALS	Metals	131	--	1	1	--	--	132
Imported - Pesticide IMP PESTICIDE	Pesticides	157	--	--	--	5	5	162
Imported Egg Products - Chemistry IMP RESEGG	Pesticides	12	--	--	--	--	--	12
Imported Fresh Products - Residue Eastern Lab IMP RESFR_EL	Aminoglycosides, MRM	--	--	--	--	2	2	2
Imported Processed Products - Residue Eastern Lab IMP RESPR_EL	Avermectins	22	--	1	1	--	--	23

Product Name and Project Code	Analytical Method	Normal		Increased ^{/1/}		Intensified ^{/2/}		Annual Total
		Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positives Samples	
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	12	--	--	--	--	--	12
Annual Total		750	1	2	2	22	22	774

^{/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 Q4, there were no violative import samples.

^{/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.