

National Residue Program Quarterly Report (October-December 2022)

National Residue Program

In FY 2023 Q1, nine analytical methods were used by FSIS to detect approximately 260 different veterinary drugs, pesticides, and environmental contaminants. Accompanying this report is an Excel spreadsheet. This sheet includes detailed information regarding samples taken by FSIS in both the residue domestic scheduled and inspector-generated sampling programs, in addition to the residue import sampling program results. Additionally, the excel sheet includes quarterly metals and per- and polyfluorinated alkyl substances (PFAS) results. 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 1,880 samples analyzed by FSIS (1,784 from U.S. Federal plants and 96 from U.S. State inspected plants), six sample contained violative chemical residues. In total, more than 361,000 chemical residue analyses were conducted on the 1,880 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2023 Q1 Surveillance Sampling Results

FY 2023 Q1 summary of surveillance sampling results from FSIS inspector-collected muscle, kidney, and liver tissue from carcasses and parts is shown.

Animal Category	Animal Class	Total Number of Samples Planned for FY 2023	Total Samples ¹	Number of Samples Analyzed this Quarter		
				Number of Non-Detect Samples	Number of Non-Violative Positives Samples	Number of Violative Samples
Bovine	Beef Cows	800	228	226	--	2
	Bob Veal	400	102	100	--	2
	Dairy Cows	800	205	203	2	--
	Formula-Fed Veal	75	25	25	--	--
	Heifers	400	119	119	--	--
	Non-Formula-Fed Veal	75	14	14	--	--
	Steers	400	113	113	--	--
Porcine	Feral Swine	75	25	25	--	--
	Market Swine	800	234	232	2	--
	Roaster Swine	300	90	90	--	--
	Sows	800	215	214	1	--
Poultry	Young Chickens	400	110	110	--	--
	Young Turkeys	400	102	102	--	--
Other Species	Goats	300	74	73	--	1
	Lambs	100	22	22	--	--
	Sheep	100	25	25	--	--
	<i>Siluriformes</i> (Catfish)	200	129	128	--	1
	Egg Products	400	48	47	1	--
Quarter Total		6,825	1,880	1,868	6	6

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 2023 Q1 Number Collected NRP Surveillance Sampling Residues by Chemical Methods

FY 2023 Q1 number collected surveillance sampling residue sampling summary is shown reflecting the number of samples (carcasses) analyzed per chemical method per animal class.

Animal Category	Animal Class	Number of Samples Analyzed per Chemical Method								
		Aminoglycosides	Antifungal Dyes	Carbadox	Metals	MRM ¹	Nitrofurans	Pesticides	PFAS ²	Speciation
Bovine	Beef Cows	228	--	--	36	228	--	162	--	--
	Bob Veal	102	--	--	28	102	--	88	--	--
	Dairy Cows	205	--	--	43	205	--	141	--	--
	Formula-Fed Veal	25	--	--	1	25	--	10	--	--
	Heifers	119	--	--	32	119	--	87	--	--
	Non- Formula Fed Veal	14	--	--	--	14	--	1	--	--
	Steers	113	--	--	34	113	--	80	--	--
Porcine	Feral Swine	--	--	--	--	--	--	25	21	--
	Market Swine	234	--	--	45	234	--	185	35	--
	Roaster Swine	--	--	90	--	--	--	--	--	--
	Sows	215	--	--	32	215	--	164	38	--
Poultry	Young Chickens	110	--	--	32	110	5	44	48	--
	Young Turkeys	102	--	--	28	102	6	55	--	--
Other Species	Goats	74	--	--	--	74	--	23	--	--
	Lambs	22	--	--	--	22	--	18	--	--
	Mature Sheep	25	--	--	--	25	--	18	--	--
	<i>Siluriformes</i> (Catfish)	--	128	--	128	129	1	83	25	3
	Egg Products	--	--	--	--	48	--	44	--	--
Quarter Total		1,588	128	90	439	1,765	12	1,228	167	3

¹ MRM: multiresidue method

² PFAS: polyfluoroalkyl substances

Table 3. FY 2023 Q1 Surveillance Sampling Residue Violations

List of FY 2023 Q1 surveillance sampling residue violations, including specific compound, concentration, tolerance, and regulatory citation by animal class is shown.

Animal Class	Tissue	Compound	Concentration	Units	Tolerance Level Value	Authority (CFR Citation)
Beef Cow	Liver	Sulfadimethoxine	0.465	ppm	0.1 ppm	40 CFR 556.640
	Liver	Sulfadimethoxine	11.0	ppm	0.1 ppm	40 CFR 556.640
	Muscle	Sulfanilamide	*	*	*	Not Approved ^{/1/}
Bob Veal	Kidney	Penicillin	1.22	ppm	0.05 ppm	40 CFR 556.510
	Muscle	Penicillin	0.061	ppm	0.05 ppm	40 CFR 556.510
	Muscle	Gamithromycin	*	*	0.15 ppm	40 CFR 556.292
Goat	Muscle	Piperonyl Butoxide	0.228	ppm	0.1 ppm	40 CFR 180.127
<i>Siluriformes</i> Fish	Muscle	Simazine	0.0134	ppm	*	Not Approved ^{/1/}
	Muscle	Simazine	*	*	*	Not Approved ^{/1/}

* Violative residue results were detected but not quantified.

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

ppm – parts per million (mg/kg)

ppb – parts per billion (µg/kg)

CFR – Code of Federal Regulations

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 2023 Q1, of the 30,126 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 390 samples were submitted to FSIS field laboratories for further analysis. In total, 118 chemical residue violations were reported in 93 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 Desfuroylceftiofur (32), Flunixin (14), and Neomycin (13) which account for 27%, 12%, and 11% of total violative residues, respectively.

Table 4. Summary of FY 2023 Q1 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2023 Q1 summary of KIS™ tests, number of in-plant screens with negative results, number of carcasses sent to FSIS laboratory for confirmation, and the number of carcasses (i.e., samples) 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	Bison	1	1	--	--
	Beef Cows	2772	2713	44	12
	Bob Veal	3330	3277	45	25
	Bulls	382	365	14	4
	Dairy Cows	17096	16811	196	39
	Formula-fed Veal	17	15	1	--
	Heavy Calves	51	48	3	1
	Heifers	664	645	18	2
	Non-Formula-fed Veal	162	144	17	6
	Steers	1402	1360	33	4
Porcine	Boar/Stag Swine	20	20	--	--
	Market Swine	2566	2545	16	--
	Roaster Swine	398	397	1	--
	Sows	1030	1028	1	--
Other Species	Adult Goats	19	19	--	--
	Young Goats	28	28	--	--
	Mature Sheep	49	49	--	--
	Lambs	139	137	1	--
	Quarter Total	30,126	29,602	390	93

Table 5. FY 2023 Q1 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
 FY 2023 Q1 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Beef Cow	Bob Veal	Bulls	Dairy Cow	Heavy Calves	Heifer	Non-Formula-fed Veal	Steer	Market Swine	Quarter Total
Ciprofloxacin	--	--	--	--	--	--	--	1	--	1
Desfuroylceftiofur	2	1	--	24	--	2	--	3	--	32
Dihydrostreptomycin	--	--	--	1	--	--	--	--	--	1
Doramectin	5	--	--	--	--	--	--	--	--	5
Eprinomectin	--	--	--	--	--	--	--	--	1	1
Florfenicol	1	2	1	--	1	--	2	--	--	7
Florfenicol Amine	--	2	--	--	--	--	--	--	--	2
Flunixin	1	4	--	8	--	--	--	1	--	14
Gentamycin Sulfate	--	--	--	--	--	--	--	--	1	1
Meloxicam	--	--	--	1	--	--	--	--	--	1
Neomycin	--	13	--	--	--	--	--	--	--	13
Oxytetracycline	--	1	--	1	--	--	--	--	--	2
Penicillin	2	2	--	6	--	--	--	--	--	10
Spectinomycin	--	3	--	--	--	--	--	--	--	3
Sulfadimethoxine	--	--	--	2	--	--	--	--	--	2
Sulfamethazine	1	3	1	1	1	--	--	--	--	7
Sulfamethoxazole	--	3	--	--	--	--	--	--	--	3
Sulfathiazole	--	2	--	--	--	--	--	--	--	2
Tilmicosin	--	--	3	--	--	--	4	1	--	8
Tylosin	1	1	--	--	--	--	1	--	--	3
Quarter Total	13	37	5	44	2	2	7	6	2	118

Table 6. Summary of FY 2023 Q1 Collected-Generated Sampling

FY 2023 Q1 summary of suspect animal samples sent directly to FSIS laboratory (collected-generated sampling) for appropriate analysis.

Animal Category	Animal Class	Total Samples	Number of Non-Detect Samples	Number of Non-Violative Positives Samples	Number of Violative Samples
Bovine	Beef Cow	13	12	1	--
	Dairy Cows	9	9	--	--
	Formula-fed Veal	1	0	1	--
	Steer	15	14	1	--
Porcine	Market Swine	5	5	--	--
Poultry	Young Chicken	1	1	--	--
Other	Young Goat	1	1	--	--
	Lamb	5	5	--	--
Quarter Total		50	47	3	0

In addition to the publication of the quarterly FY 2023 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 Residue Chemistry website.

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 191 samples were analyzed under this program in FY 2022 Q4. During FY 2022 Q4, there were zero violative import samples. The results are summarized in **Table 7**.

Table 7. Summary of FY 2023 Q1 Residue Sampling of Imported Products

FY 2023 Q1 import residue samples by inspection level and production type.

Product Name and Project Code	Analytical Method	Normal			Intensified ^{/1/}		Quarter Total
		Number of Samples Analyzed	Non-Violative Positives Samples	Violative Positive Samples	Number of Samples Analyzed	Non-Violative Positive Samples	
Imported - Metals IMP METALS	Metals	53	--	--	--	--	53
Imported - Pesticide IMP PESTICIDE	Pesticides	110	--	--	3	--	113
Imported Egg Products - Chemistry IMP RESEGG	Pesticides	10	--	--	--	--	10
Imported Processed Products - Residue Eastern Lab IMP RESPR_EL	Avermectins	6	--	--	--	--	6
Imported Processed Products - Residue Midwestern Lab IMP RESPR_MWL	Sulfonamides	9	--	--	--	--	9
Quarter Total		188	0	0	3	0	191

^{/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. 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. 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.