National Residue Program Quarterly Report (July-September 2023)

National Residue Program

In FY 2023 Q4, 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 1,565 samples analyzed by FSIS (1,516 from U.S. Federal plants and 49 from U.S. State inspected plants), 4 sample contained violative chemical residues. In total, more than 361,000 chemical residue analyses were conducted on the 1,565 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2023 Q4 Surveillance Sampling Results

FY 2023 Q4 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	183	182	-	1
	Bob Veal	400	90	88	2	-
	Dairy Cows	800	203	203	-	-
	Formula-Fed Veal	75	8	8	-	-
	Heifers	400	78	78	-	-
	Non-Formula-Fed Veal	75	14	14	-	-
	Steers	400	112	109	3	-
Porcine	Feral Swine	75	18	18	-	-
	Market Swine	800	209	207	2	-
	Roaster Swine	300	35	35	-	-
	Sows	800	191	190	1	-
Poultry	Young Chickens	400	110	109	1	-
	Young Turkeys	400	84	82	2	-
Other Species	Goats	300	77	75	-	2
	Lambs	100	24	24	-	-
	Sheep	100	23	23	-	-
	Siluriformes (Catfish)	200	60	59	-	1
	Egg Products	400	46	46	-	-
Quarter Total		**6,825**	**1,565**	**1,550**	**11**	**4**

[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 Q4 Number Collected NRP Surveillance Sampling Residues by Chemical Methods

FY 2023 Q4 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									
		Avermectins	Aminoglycosides	Antifungal Dyes	Beta Agonists	Carbadox	Metals	MRM[1]	Nitrofurans	Pesticides	PFAS[2]
Bovine	Beef Cows	-	183	-	-	-	23	183	-	141	-
	Bob Veal	-	90	-	-	-	32	90	-	75	-
	Dairy Cows	-	203	-	1	-	12	203	-	151	-
	Formula-Fed Veal	-	8	-	-	-	-	8	-	3	-
	Heifers	-	78	-	-	-	32	78	-	63	-
	Non- Formula Fed Veal	-	14	-	-	-	-	14	-	6	-
	Steers	-	112	-	-	-	38	112	-	84	-
Porcine	Feral Swine	-	-	-	-	-	-	-	-	18	16
	Market Swine	-	209	-	-	-	19	209	-	162	42
	Roaster Swine	-	-	-	-	35	-	-	-	-	-
	Sows	-	191	-	-	-	23	191	-	145	39
Poultry	Young Chickens	-	110	-	-	-	54	110	-	83	61
	Young Turkeys	-	84	-	-	-	34	84	-	70	-
Other Species	Goats	2	77	-	-	-	-	77	-	16	-
	Lambs	-	24	-	-	-	-	24	-	21	-
	Mature Sheep	-	23	-	-	-	-	23	-	19	-
	Siluriformes (Catfish)	-	-	44	-	-	43	60	16	42	13
	Egg Products	-	-	-	-	-	-	46	-	46	-
	Quarter Total	**1**	**1,406**	**44**	**1**	**35**	**310**	**1,512**	**16**	**1,145**	**171**

[1] MRM: multiresidue method

[2] PFAS: polyfluoroalkyl substances

Table 3. FY 2023 Q4 Surveillance Sampling Residue Violations

List of FY 2023 Q4 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	Muscle	Piperonyl Butoxide	0.126	ppm	0.1 ppm	40 CFR 180.127
Goat	Muscle	Moxidectin	--	--	--	Not Approved/1/
	Muscle	Ivermectin	--	--	--	Not Approved/1/
	Muscle	Moxidectin	--	--	--	Not Approved/1/
Siluriformes	Muscle	Metolachlor	--	--	--	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 Q4, of the 27,422 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 379 samples were submitted to FSIS field laboratories for further analysis. In total, 79 chemical residue violations were reported in 68 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 (34), Penicillin (9), and Sulfadimethoxine (9) which account for 43%, 11%, and 11% (each) of total violative residues, respectively.

Table 4. Summary of FY 2023 Q4 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2023 Q4 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	Beef cows	2215	2161	39	6
	Bob Veal	1913	1901	10	3
	Bulls	355	339	11	1
	Dairy Cows	16442	16132	224	47
	Formula-fed Veal	26	24	1	-
	Heavy Calves	13	12	1	-
	Heifers	899	870	23	1
	Non-Formula-fed Veal	24	23	1	-
	Steers	1885	1817	51	8
Porcine	Boar/Stag Swine	18	18	-	-
	Market Swine	2152	2134	13	-
	Roaster Swine	331	330	1	-
	Sows	616	612	2	2
Other Species	Adult Goats	22	22	-	-
	Young Goats	70	69	1	-
	Goats	5	5	-	-
	Mature Sheep	96	96	-	-
	Lambs	339	334	1	-
	Yak	1	1	-	-
	Quarter Total	**27,422**	**26,900**	**379**	**68**

Table 5. FY 2023 Q4 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
FY 2023 Q4 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Beef Cow	Bob Veal	Bull/Stag	Dairy Cow	Heifer	Steer	Sow	Quarter Total
Ampicillin	-	-	-	2	-	-	-	**2**
Ciprofloxacin	-	2	-	-	-	-	1	**3**
Desfuroylceftiofur	1	-	1	27	-	4	1	**34**
Dimetridazole	1	-	-	-	-	-	-	**1**
Doxycycline	-	-	-	1	-	-	-	**1**
Florfenicol	-	-	-	1	1	-	-	**2**
Flunixin	-	-	1	2	-	1	2	**6**
Gentamycin Sulfate	-	-	-	2	1	-	-	**3**
Meloxicam	-	-	-	-	-	1	-	**1**
Neomycin	-	2	-	-	-	-	-	**2**
Penicillin	-	-	1	7	-	1	-	**9**
Spectinomycin	-	1	-	-	-	-	-	**1**
Sulfadimethoxine	-	-	-	9	-	-	-	**9**
Sulfamethazine	1	-	-	-	-	-	-	**1**
Tilmicosin	-	1	-	3	-	-	-	**4**
Quarter Total	**3**	**6**	**3**	**54**	**2**	**7**	**4**	**79**

Table 6. Summary of FY 2023 Q4 Collected-Generated Sampling
FY 2023 Q4 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 Cows	4	4	-	-
	Bob Veal	1	1	-	-
	Bulls	3	3	-	-
	Dairy Cows	7	7	-	-
	Heifers	19	16	3	-
	Heavy Calves	1	1	-	-
	Steers	248	240	7	1
Porcine	Market Swine	197	186	10	1
	Roaster Swine	1	1	-	-
Other	Lamb	42	40	-	2
	Mature Sheep	2	2	-	-
	Adult Goat	2	2	-	-
	Young Goat	6	6	-	-

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 315 samples were analyzed under this program in FY 2023 Q4. During FY 2023 Q4, there were zero violative import samples. The results are summarized in **Table 7**.

Table 7. Summary of FY 2023 Q4 Residue Sampling of Imported Products

FY 2023 Q4 import residue samples by inspection level and production type.

Product Name and Project Code	Analytical Method	Normal			Increased[/1/]		Intensified[/2/]		Quarter Total
		Number of Samples Analyzed	Non-Violative Positives Samples	Violative Positive Samples	Number of Samples Analyzed	Non-Violative Positive Samples	Number of Samples Analyzed	Non-Violative Positive Samples	
Imported - Metals IMPMETALS	Metals	102	-	-	-	-	-	-	102
Imported - Pesticide IMPPESTICIDE	Pesticides	190	-	-	-	-	-	-	190
Imported Egg Products - Chemistry IMPRESEGG	Pesticides	10	-	-	4	-	-	-	14
Imported Processed Products - Residue Eastern Lab IMPRESPR_EL	Avermectins	6	-	-	-	-	-	-	6
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	7	-	-	-	-	-	-	7
Quarter Total		**315**	**0**	**0**	**4**	**0**	**0**	**0**	**319**

[/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.

/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. 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.