National Residue Program Quarterly Report (Jan-March 2022)

National Residue Program

In FY 2022 Q2, 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 1,856 samples analyzed by FSIS (1,763 from U.S. Federal plants and 93 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 1,856 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2022 Q2 Surveillance Sampling Results

FY 2022 Q2 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 2022	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	196	193	3	0
	Bob Veal	400	80	78	2	0
	Dairy Cows	800	204	202	1	1
	Formula-Fed Veal	75	17	17	0	0
	Heifers	400	108	107	1	0
	Non-Formula-Fed Veal	75	15	15	0	0
	Steers	400	106	105	0	1
Porcine	Feral Swine	75	14	14	0	0
	Market Swine	800	201	200	1	0
	Roaster Swine	300	56	56	0	0
	Sows	800	178	178	0	0
Poultry	Young Chickens	400	97	97	0	0
	Whole Chickens	400	83	83	0	0
	Young Turkeys	800	202	202	0	0
Other Species	Goats	300	68	66	1	1
	Lambs	100	20	20	0	0
	Mature Sheep	100	18	17	1	0
	Siluriformes (Catfish)	650	153	144	6	3
	Egg Products	400	40	40	0	0
Quarter Total		**8,075**	**1,856**	**1,834**	**16**	**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 2022 Q2 Number Collected NRP Surveillance Sampling Residues by Chemical Methods

FY 2022 Q2 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	196	--	--	49	196	--	115	--	--
	Bob Veal	80	--	--	18	80	--	43	--	--
	Dairy Cows	204	--	--	39	204	--	113	--	--
	Formula-Fed Veal	17	--	--	2	17	--	3	--	--
	Heifers	108	--	--	30	108	--	61	--	--
	Non-Formula Fed Veal	15	--	--	--	15	--	4	--	--
	Steers	106	--	--	38	106	--	58	--	--
Porcine	Feral Swine		--	--	--	--	--	14	10	--
	Market Swine	201	--	--	53	201	--	107	20	--
	Roaster Swine		--	56	--	--	--		--	--
	Sows	178	--	--	37	178	--	90	19	--
Poultry	Young Chickens	97	--	--	23	97	17	54	11	--
	Whole Chickens	83	--	--	--	83	83	83	--	--
	Young Turkeys	202	--	--	31	202	57	118	--	--
Other Species	Goats	68	--	--	--	68	--	24	--	--
	Lambs	20	--	--	--	19	--	9	--	--
	Mature Sheep	18	--	--	--	18	--	8	--	--
	Siluriformes (Catfish)	--	29	--	29	142	114	123	14	39
	Egg Products	--	--	--	--	36	--	40	--	--
	Quarter Total	**1,593**	**29**	**56**	**349**	**1,770**	**271**	**1067**	**140**	**39**

[1] MRM: multiresidue method

[2] PFAS: polyfluoroalkyl substances

Table 3. FY 2022 Q2 Surveillance Sampling Residue Violations

List of FY 2022 Q2 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)
Dairy Cow	Liver	Florfenicol	4.37	ppm	3.7	40 CFR 556.283
	Muscle	Florfenicol	0.400	ppm	0.3	40 CFR 556.283
Goat	Muscle	Moxidectin	*	*	*	Not Approved/1/
Siluriformes	Muscle	Diclofenac	*	*	*	Not Approved/1/
	Muscle	Metolachlor	*	*	*	Not Approved/1/
	Muscle	Nitrofurazone	*	*	*	Not Approved/1/
Steer	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.

ppm – parts per million (mg/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 2022 Q2, of the 37,883 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 477 samples were submitted to FSIS field laboratories for further analysis. In total, 102 chemical residue violations were reported in 92 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) and penicillin (16) which account for 33% and 16% of total violative residues, respectively.

Table 4. Summary of FY 2022 Q2 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2022 Q2 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	2,513	2,456	55	11
	Bob Veal	3,983	3,955	26	14
	Bulls	305	297	8	2
	Dairy Cows	22,331	22,025	300	58
	Formula-fed Veal	54	54	--	--
	Heavy Calves	44	44	--	--
	Heifers	994	972	21	2
	Non-Formula-fed Veal	53	51	2	1
	Steers	1,885	1,850	33	2
Porcine	Boar/Stag Swine	32	31	1	--
	Market Swine	3,373	3,350	22	--
	Roaster Swine	346	346	--	--
	Sows	1,569	1,563	6	1
Other Species	Goats	135	134	1	1
	Mature Sheep	68	67	1	--
	Lambs	198	197	1	--
	Quarter Total	**37,883**	**37,392**	**477**	**92**

Table 5. FY 2022 Q2 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
FY 2022 Q2 summary of chemical residue violations reported within the inspector-generated sampling.

Chemical Residue	Animal Class										
	Beef Cow	Bob Veal	Bulls	Dairy Cow	Heavy Calves	Heifer	Non-Formula-fed Veal	Steer	Sow	Goat	Quarter Total
Ampicillin	--	--	--	2	--	--	--	--	--	--	2
Ciprofloxacin	--	1	--	1	--	--	--	--	--	--	2
Desfuroylceftiofur	2	4	1	25	--	1	--	1	--	--	34
Dihydrostreptomycin	--	--	--	2	--	--	--	--	--	--	2
Doramectin	2	--	--	--	--	--	--	--	--	--	2
Florfenicol	1	--	--	1	--	1	1	--	--	--	4
Flunixin	1	2	--	8	--	--	--	--	--	--	11
Gentamycin Sulfate	--	--	1	--	--	--	--	--	--	--	1
Meloxicam	--	--	--	1	--	--	--	--	--	--	1
Neomycin	--	4	--	1	--	--	--	--	--	--	5
Oxytetracycline	--	--	--	--	--	--	--	--	--	1	1
Penicillin	2	2	--	11	--	--	--	--	1	--	16
Sulfadimethoxine	--	--	--	10	--	--	--	--	--	--	10
Sulfamethazine	--	--	--	2	--	--	--	1	--	--	3
Sulfamethoxazole	--	1	--	--	--	--	--	--	--	--	1
Sulfathiazole	--	1	--	--	--	--	--	--	--	--	1
Tilmicosin	5	1	--	--	--	--	--	--	--	--	6
Quarter Total	**13**	**16**	**2**	**64**	**0**	**2**	**1**	**2**	**1**	**1**	**102**

Table 6. Summary of FY 2022 Q2 Collected-Generated Sampling
FY 2022 Q2 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	2	2	--	--
	Bulls	1	--	1	--
	Dairy Cow	2	2	--	--
	Formula-fed Veal	1	1	--	--
	Heifer	3	3	--	--
	Steer	11	6	3	2
Porcine	Market Swine	7	7	--	--
Other Species	Goats	2	2	--	--
	Lamb	3	3	--	--
Quarter Total		**32**	**26**	**4**	**2**

In addition to the publication of the FY 2022 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 768 samples were analyzed under this program in FY 2022 Q2. During FY 2022 Q2, there were no violative import samples. The results are summarized in **Table 7**.

Table 7. Summary of FY 2022 Q2 Residue Sampling of Imported Products

FY 2022 Q2 import residue samples by inspection level and production type.

Product Name and Project Code	Analytical Method	Normal		Intensified[/1/]		
		Number of Samples Analyzed	Non-Violative Positives Samples	Number of Samples Analyzed	Non-Violative Positive Samples	Quarter Total
Imported Fish Products-Eastern Laboratory IMPFISH_CH_E	Antifungal Dyes, Metals, MRM	218	--	--	--	218
Imported Fish Products-Western Laboratory IMPFISH_CH_W	Nitrofurans, Pesticides	217	--	1	--	218
Imported - Metals IMPMETALS	Metals	102	--	--	--	102
Imported - Pesticide IMPPESTICIDE	Pesticides	189	1	--	--	189
Imported Egg Products - Chemistry IMPRESEGG	Pesticides	6	--	--	--	6
Imported Processed Products - Residue Eastern Lab IMPRESPR_EL	Avermectins	16	--	--	--	16
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	19	--	--	--	19
Quarter Total		**7687**	**1**	**1**	**0**	**768**

[/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.