National Residue Program Quarterly Report (July-September 2022)

National Residue Program

In FY 2022 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 1,940 samples analyzed by FSIS (1,876 from U.S. Federal plants and 64 from U.S. State inspected plants), eight sample contained violative chemical residues. In total, more than 361,000 chemical residue analyses were conducted on the 1,940 samples collected under the surveillance sampling plan.

Table 1: Summary of FY 2022 Q4 Surveillance Sampling Results

FY 2022 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 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	229	223	5	1
	Bob Veal	400	95	94	1	--
	Dairy Cows	800	202	200	1	1
	Formula-Fed Veal	75	23	23	--	--
	Heifers	400	99	99	--	--
	Non-Formula-Fed Veal	75	10	10	--	--
	Steers	400	102	101	--	1
Porcine	Feral Swine	75	8	8	--	--
	Market Swine	800	216	214	2	--
	Roaster Swine	300	78	75	--	3
	Sows	800	194	193	1	--
Poultry	Young Chickens	400	101	101	--	--
	Whole Chickens	400	85	84	1	--
	Young Turkeys	800	204	203	1	--
Other Species	Goats	300	74	73	1	--
	Lambs	100	25	25	--	--
	Mature Sheep	100	21	21	--	--
	Siluriformes (Catfish)	650	131	129	--	2
	Egg Products	400	43	43	--	--
Quarter Total		**8,075**	**1,940**	**1919**	**13**	**8**

[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 Q4 Number Collected NRP Surveillance Sampling Residues by Chemical Methods

FY 2022 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								
		Aminoglycosides	Antifungal Dyes	Carbadox	Metals	MRM[1]	Nitrofurans	Pesticides	PFAS[2]	Speciation
Bovine	Beef Cows	229	--	--	43	229	--	167	--	--
	Bob Veal	95	--	--	43	95	--	73	--	--
	Dairy Cows	202	--	--	37	202	--	156	--	--
	Formula-Fed Veal	23	--	--	1	23	--	5	--	--
	Heifers	99	--	--	28	99	--	68	--	--
	Non-Formula Fed Veal	10	--	--	--	10	--	1	--	--
	Steers	102	--	--	34	102	--	69	--	--
Porcine	Feral Swine	--	--	--	--	--	--	8	--	--
	Market Swine	216	--	--	41	216	--	166	8	--
	Roaster Swine	--	--	78	--	--	--	--	--	--
	Sows	194	--	--	42	194	--	140	3	--
Poultry	Young Chickens	101	--	--	49	101	17	48	31	--
	Whole Chickens	85	--	--	--	85	85	85	--	--
	Young Turkeys	204	--	--	67	204	39	100	--	--
Other Species	Goats	74	--	--	--	74	--	19	--	--
	Lambs	25	--	--	--	25	--	14	--	--
	Mature Sheep	21	--	--	--	21	--	11	--	--
	Siluriformes (Catfish)	--	111	--	111	123	12	72	15	119
	Egg Products	--	--	--	--	43	--	43	--	--
	Quarter Total	**1,680**	**111**	**78**	**496**	**1,846**	**153**	**1,245**	**57**	**119**

[1] MRM: multiresidue method

[2] PFAS: polyfluoroalkyl substances

Table 3. FY 2022 Q4 Surveillance Sampling Residue Violations

List of FY 2022 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	Liver	Sulfadimethoxine	0.795	ppm	0.1 ppm	40 CFR 556.640
	Muscle	Sulfadimethoxine	0.686	ppm	0.1 ppm	40 CFR 556.640
Dairy Cow	Liver	Flunixin	0.331	ppm	0.125 ppm	40 CFR 556.286
Steer	Muscle	Diclofenac	*	*	*	Not Approved/1/
Roaster Swine	Liver	Carbadox	52.5	ppb	30	40 CFR 556.100
	Liver	Carbadox	43.6	ppb	30	40 CFR 556.100
	Liver	Carbadox	71.8	ppb	30	40 CFR 556.100
Siluriformes Fish	Muscle	Metolachlor	*	*	*	Not Approved/1/
	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 2022 Q4, of the 31,772 Kidney Inhibition Swab (KIS™) tests conducted on animals selected by FSIS (Table 4), 439 samples were submitted to FSIS field laboratories for further analysis. In total, 93 chemical residue violations were reported in 71 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 (26), Flunixin (11), and Neomycin (8) which account for 28%, 12%, and 9% of total violative residues, respectively.

Table 4. Summary of FY 2022 Q4 Inspector-Generated Sampling (KIS™) Test and Confirmatory Tests

FY 2022 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	2,248	2,185	48	5
	Bob Veal	3,765	3,734	26	11
	Bulls	378	350	21	3
	Dairy Cows	17,640	17,350	227	44
	Formula-fed Veal	14	14	--	--
	Heavy Calves	33	33	--	--
	Heifers	654	635	18	1
	Non-Formula-fed Veal	12	10	2	1
	Steers	1,566	1,499	56	3
Porcine	Boar/Stag Swine	23	23	--	--
	Market Swine	2,842	2,813	21	1
	Roaster Swine	323	313	8	--
	Sows	1,707	1,691	9	2
Other Species	Adult Goats	24	24	--	--
	Goats	25	25	--	--
	Young Goats	55	55	--	--
	Mature Sheep	81	81	--	--
	Lambs	382	377	3	--
	Quarter Total	**31,772**	**31,212**	**439**	**71**

Table 5. FY 2022 Q4 Inspector-Generated Sampling Residue Violation Results by Chemical Residue and Animal Class
FY 2022 Q4 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	Market Swine	Sow	Quarter Total
Ampicillin	--	--	--	2	--	--	--	--	--	--	**2**
Ciprofloxacin	--	2	--	2	--	--	--	--	--	--	**4**
Desethylene Ciprofloxacin	--	2	--	--	--	--	--	--	--	--	**2**
Desfuroylceftiofur	4	1	1	19	--	--	--	1	--	--	**26**
Dihydrostreptomycin	--	--	--	2	--	--	--	--	--	--	**2**
Enrofloxacin	--	2	--	--	--	--	--	--	--	--	**2**
Florfenicol	1	1	--	1	--	--	--	--	--	--	**3**
Florfenicol Amine	--	1	--	--	--	--	--	--	--	--	**1**
Flunixin	--	1	--	8	--	--	1	1	--	--	**11**
Gentamycin Sulfate	--	--	--	--	--	1	--	--	--	--	**1**
Meloxicam	--	1	--	4	--	--	--	1	--	--	**6**
Neomycin	--	4	--	3	--	--	1	--	--	--	**8**
Oxyphenylbutazone	--	--	--	--	--	--	--	--	1	--	**1**
Penicillin	--	--	1	4	--	--	--	--	--	1	**6**
Phenylbutazone	--	--	--	--	--	--	--	--	1	--	**1**
Spectinomycin	--	2	--	--	--	--	--	--	--	--	**2**
Sulfadimethoxine	--	--	--	3	--	--	--	--	--	--	**3**
Sulfadoxine	--	--	--	--	--	--	--	--	--	1	**1**
Sulfamethazine	--	--	1	--	--	--	--	--	--	1	**2**
Sulfamethoxazole	--	3	--	--	--	--	--	--	--	--	**3**
Sulfathiazole	--	3	--	--	--	--	--	--	--	--	**3**

Tilmicosin	--	1	--	1	--	--	--	1	--	--	**3**
Quarter Total	**5**	**24**	**3**	**49**	**0**	**1**	**2**	**4**	**2**	**3**	**93**

Table 6. Summary of FY 2022 Q4 Collected-Generated Sampling
FY 2022 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 Cow	8	6	2	--
	Bob Veal	1	--	1	--
	Bulls	3	3	--	--
	Dairy Cows	11	9	1	1
	Heifer	11	11	--	--
	Steer	222	214	5	3
Porcine	Market Swine	142	137	2	3
	Roaster Swine	1	1	--	--
Other Species	Goat	4	4	--	--
	Young Goat	3	3	--	--
	Mature Sheep	4	4	--	--
	Lamb	43	42	--	1
Quarter Total		**453**	**434**	**11**	**8**

In addition to the publication of the quarterly 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 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 263 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 2022 Q4 Residue Sampling of Imported Products

FY 2022 Q4 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 Fish Products-Eastern Laboratory IMPFISH_CH_E	Speciation	34	--	--	--	--	34
Imported Fish Products-Western Laboratory IMPFISH_CH_W	Nitrofurans, Pesticides	27	--	--	--	--	27
Imported - Metals IMPMETALS	Metals	54	--	--	--	--	54
Imported - Pesticide IMPPESTICIDE	Pesticides	75	--	--	14	--	89
Imported Egg Products - Chemistry IMPRESEGG	Pesticides	11	--	--	--	--	11
Imported Processed Products - Residue Eastern Lab IMPRESPR_EL	Avermectins	22	--	--	--	--	22
Imported Processed Products - Residue Midwestern Lab IMPRESPR_MWL	Sulfonamides	26	--	--	--	--	26
Quarter Total		**263**	**0**	**0**	**14**	**0**	**611**

/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.