

APPENDIX III. U.S. RESIDUE LIMITS FOR VETERINARY DRUGS AND UNAVOIDABLE CONTAMINANTS IN MEAT, POULTRY, AND EGG PRODUCTS

This appendix provides information on the residue limits (tolerances) for animal drugs, food additives and unavoidable contaminants in meat, poultry, and egg products. The Food Safety and Inspection Service in its regulatory programs applies tolerances, which are set by the Food and Drug Administration (FDA). The official source of these tolerances is Title 21 of the Code of Federal Regulations (CFR): those for animal drugs are found in CFR, Title 21, Part 556; and those for unavoidable contaminants are found in CFR, Title 21 CFR, Part 109, Section 109.30. This Appendix supplies the relevant citation for each tolerance and action level.

The tolerances and action levels for the various tissues in meat, poultry and egg products are listed alphabetically by compound in Table AIII, *Residue Limits for Veterinary Drugs, and Unavoidable Contaminants*. These tolerances may be for the parent compound (the original chemical form of the compound given to the animal), or for the compound's metabolites (the chemical forms into which the compound is metabolized by the animal), or for a combination of parent plus metabolites. All tolerances are provided in units of parts per million (ppm) unless otherwise noted. Please note that this appendix has been generated for the convenience of the reader, and if any discrepancies arise between this appendix and the CFR, the values from the latter source should be used.

Table AIII
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
2-Acetylamino-5-nitrothiazole	Cattle Goats Hogs Horses Poultry Sheep						0.1 ¹	21 CFR 556.20
Aklomide	Cattle Goats Hogs Horses Poultry Sheep	3	4.5		4.5			21 CFR 556.30
Albendazole	Cattle Goats Hogs Horses Poultry Sheep		0.05 0.05		0.2 0.25			21 CFR 556.34
Amoxicillin	Cattle Goats Hogs Horses Poultry Sheep						0.01	21 CFR 556.38
Ampicillin	Cattle Goats Hogs Horses Poultry Sheep						0.01 0.01	21 CFR 556.40
Amprolium	Cattle Goats Hogs Horses Poultry Sheep Eggs	2.0 4 ^w , 8 ^y	0.5 0.5		0.5 1 ^{6, 14}	0.5 1 ⁶		21 CFR 556.50

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Apramycin	Cattle Goats Hogs Horses Poultry Sheep					0.1		21 CFR 556.52
Arsenic	Cattle Goats Hogs Horses Poultry ⁶ Sheep Eggs	0.5 ^w	0.5 0.5	0.5 2	2	2		21 CFR 556.60
Bacitracin	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.5 ^w					0.5 0.5 0.5 ^{3,6}	21 CFR 556.70
Buquinolate	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.4 0.5 ^y , .2 ^w	0.1		0.4	0.4		21 CFR 556.90
Carbadox	Cattle Goats Hogs Horses Poultry Sheep				0.03			21 CFR 556.100
Cephapirin	Cattle Goats Hogs Horses Poultry Sheep						0.1	21 CFR 556.115

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Chlorhexidine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0	21 CFR 556.120
Chlortetracycline ¹⁷	Cattle Goats Hogs Horses Poultry Sheep Eggs	12 12 12 12 0.4 ^W	2 2 2 2		6 6 6 6	12 12 12 12		21 CFR 556.150
Clopidol	Cattle Goats Hogs Horses Poultry Sheep		0.2 0.2 5 0.2		1.5 1.5 15 1.5	3 3 15 ⁶ 3	0.2	21 CFR 556.160
Clorsulon	Cattle Goats Hogs Horses Poultry Sheep		0.1					21 CFR 556.163
Cloxacillin	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.01	21 CFR 556.165
Colistimethate	Cattle Goats Hogs Horses Poultry ⁴ Sheep Eggs							21 CFR 556.167

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Decoquinatate	Cattle	2	1	2	2	2		21 CFR 556.170
	Goats	2	1	1	1	2		
	Hogs							
	Horses							
	Poultry ⁵	2	1	2	2	2		
Sheep								
Dichlorvos	Cattle						0.1	21 CFR 556.180
	Goats							
	Hogs							
	Horses							
	Poultry							
Sheep								
Dihydro-streptomycin	Cattle	0.5	0.5	0.5	0.5	2.0		21 CFR 556.200
	Goats							
	Hogs	0.5	0.5	0.5	0.5	2.0		
	Horses							
	Poultry							
Sheep								
3,5-Dinitrobenzamide	Cattle							21 CFR 556.220
	Goats							
	Hogs							
	Horses							
	Poultry						0 ⁵	
Sheep								
Doramectin	Cattle		0.03		0.1			21 CFR 556.225
	Goats							
	Hogs				0.16			
	Horses							
	Poultry							
Sheep								
Enrofloxacin	Cattle				0.1 ⁷			21 CFR 556.228
	Goats							
	Hogs							
	Horses							
	Poultry			0.3 ⁶				
Sheep								

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Eprinomectin	Cattle Goats Hogs Horses Poultry Sheep		0.1		4.8			21 CFR 556.227
Erythromycin	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.025 ^w					0.1 0.1 0.125 ⁶	21 CFR 556.230
Estradiol benzoate & related esters ⁸	Cattle Goats Hogs Horses Poultry Sheep	480 600	120 120		240 600	360 600		21 CFR 556.240
Ethopabate	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.5		1.5	1.5		21 CFR 556.260
Ethoxyquin	Cattle Goats Hogs Horses Poultry Sheep Eggs	5 5 5 5 3 5 0.5 ^w	0.5 0.5 0.5 0.5 0.5 0.5		3			21 CFR 172.140
Famphur	Cattle Goats Hogs Horses Poultry Sheep	0.1	0.1	0.1				21 CFR 556.273

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Fenbendazole	Cattle Goats Hogs ⁹ Horses Poultry Sheep Eggs				0.8 0.8			21 CFR 556.275
Fenprostalene	Cattle ⁹ Goats Hogs Horses Poultry Sheep Eggs							21 CFR 556.277
Florfenicol	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.3		3.7			21 CFR 556.283
Flunixin meglumine	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.025		0.125			21 CFR 556.286
Furazolidone	Cattle Goats Hogs Horses Poultry Sheep Eggs						0	21 CFR 556.290
Gentamicin sulfate	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.4	0.1		0.3	0.4	0.1 ⁶	21 CFR 556.300

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Halofuginone hydrobromide	Cattle Goats Hogs Horses Poultry Sheep Eggs				0.16 ⁵ , 0.13 ¹			21 CFR 556.308
Haloxon	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1	21 CFR 556.310
Hygromycin B	Cattle Goats Hogs Horses Poultry Sheep Eggs	0 ^w					0 0	21 CFR 556.330
Ivermectin	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.01 0.02		0.1,015 ^B 0.02 0.03			21 CFR 556.344
Lasalocid	Cattle Goats Hogs Horses Poultry Sheep ⁹ Eggs	0.3 ⁵			0.7 0.7 ^R			21 CFR 556.347
Levamisole hydrochloride	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1 0.1	21 CFR 556.350

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Lincomycin	Cattle Goats Hogs Horses Poultry ^{5,9} Sheep Eggs		0.1		0.6			21 CFR 556.360
Maduramicin ammonium	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.38 ⁵						21 CFR 556.375
Melengestrol acetate	Cattle Goats Hogs Horses Poultry Sheep Eggs	0.025						21 CFR 556.380
Metoserpate hydrochloride	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.02 ⁵	21 CFR 556.410
Monensin	Cattle Goats Hogs Horses Poultry ⁹ Sheep Eggs						0.05 0.05	21 CFR 556.420
Morantel tartrate	Cattle Goats Hogs Horses Poultry Sheep Eggs				0.7 ¹⁰ 0.7 ¹⁰			21 CFR 556.425

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Moxidectin	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.05		0.2			21 CFR 556.426
Narasin	Cattle Goats Hogs Horses Poultry ^{5,9} Sheep Eggs							21 CFR 556.428
Neomycin	Cattle Goats Hogs Horses Poultry ¹ Sheep Eggs	7.2 7.2 7.2 7.2 ^{SF} 7.2	1.2 1.2 1.2 1.2 1.2		3.6 3.6 3.6 3.6 3.6	7.2 7.2 7.2 7.2 7.2		21 CFR 556.430
Nequinatate	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 ⁵	21 CFR 556.440
Nicarbazin	Cattle Goats Hogs Horses Poultry ⁵ Sheep Eggs	4	4		4	4		21 CFR 556.445
Novobiocin	Cattle Goats Hogs Horses Poultry Sheep Eggs						1 1	21 CFR 556.460

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Nystatin	Cattle Goats Hogs Horses Poultry Sheep Eggs	0					0 0	21 CFR 556.470
Oleandomycin	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.15 0.15 ⁶	21 CFR 556.480
Ormetoprim	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1	21 CFR 556.490
Oxfendazole	Cattle Goats Hogs Horses Poultry Sheep Eggs				0.8			21 CFR 556.495
Oxytetracycline ¹⁷	Cattle Goats Hogs Horses Poultry ⁶ Sheep Eggs	12 12 12 12	2 2 2 2		6 6 6 6	12 12 12 12		21 CFR 556.500
PCB's	Cattle Goats Hogs Horses Poultry Sheep Eggs	3 ¹¹ 3 ¹¹ 3 ¹¹ 3 ¹¹ 3 ¹¹ 3 ¹¹						21 CFR 109.30

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Penicillin	Cattle						0.05	21 CFR 556.510
	Goats						0	
	Hogs						0	
	Horses						0 ^{3,5} , 0.01 ¹	
	Poultry						0	
	Sheep						0	
Eggs								
Pirlimycin	Cattle				0.5			21 CFR 556.515
	Goats							
	Hogs							
	Horses							
	Poultry							
	Sheep							
Eggs								
Progesterone	Cattle	12 ¹⁶	3 ¹⁶		6 ¹⁶	9 ¹⁶		21 CFR 556.540
	Goats							
	Hogs							
	Horses							
	Poultry							
	Sheep	15 ¹⁶	3 ¹⁶		15 ¹⁶	15 ¹⁶		
Eggs								
Pyrantel tartrate	Cattle							21 CFR 556.560
	Goats							
	Hogs							
	Horses		1		10	10		
	Poultry							
	Sheep							
Eggs								
Robenidine hydrochloride	Cattle							21 CFR 556.580
	Goats							
	Hogs							
	Horses							
	Poultry	0.2 ^{5,SF}					0.1 ⁵	
	Sheep							
Eggs								
Sarafloxacin	Cattle							21 CFR 556.594
	Goats							
	Hogs							
	Horses							
	Poultry ^{6,9}							
	Sheep							
Eggs								

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Spectinomycin	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.25			4	0.1 ⁶	21 CFR 556.600
Streptomycin	Cattle Goats Hogs Horses Poultry ⁵ Sheep Eggs	0.5 0.5 0.5	0.5 0.5 0.5	0.5 0.5 0.5	0.5 0.5 0.5	2 2 2	0.5 0.5 0.5	21 CFR 556.610
Sulfabromo-methazine sodium	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1	21 CFR 556.620
Sulfachloropyrazine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0 ⁵	21 CFR 556.625
Sulfachlorpyridazine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1	21 CFR 556.630
Sulfadimethoxine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1	21 CFR 556.640

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Sulfaethoxy-pyridazine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0	21 CFR 556.650
Sulfamethazine	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1 0.1 ⁶	21 CFR 556.670
Sulfanitran	Cattle Goats Hogs Horses Poultry Sheep Eggs						0 ⁵	21 CFR 556.680
Sulfaquinoxaline	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1 ⁶	21 CFR 556.685
Sulfathiazole	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1	21 CFR 556.690
Sulfomyxin	Cattle Goats Hogs Horses Poultry Sheep Eggs						0 ⁶	21 CFR 556.700

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Testosterone propionate	Cattle ¹² Goats Hogs Horses Poultry Sheep Eggs	0.0026	0.00064		0.0013	0.0019		21 CFR 556.710
Tetracycline ¹⁷	Cattle ¹³ Goats Hogs Horses Poultry ⁶ Sheep Eggs	12 12 12 12	2 2 2 2		6 6 6 6	12 12 12 12		21 CFR 556.720
Thiabendazole	Cattle Goats Hogs Horses Poultry Sheep Eggs						0.1 0.1 0.1 0.1 ¹⁴	21 CFR 556.730
Tiamulin	Cattle Goats Hogs Horses Poultry Sheep Eggs				0.6 ¹⁵			21 CFR 556.738
Tilmicosin	Cattle Goats Hogs Horses Poultry Sheep Eggs		0.1		1.2 7.5			21 CFR 556.735
Trenbolone	Cattle ⁹ Goats Hogs Horses Poultry Sheep Eggs							21 CFR 556.739

Table AIII - continued
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

Compound	Species	Fat (ppm)	Meat (ppm)	Meat ^M by-products (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
TripeleNNamine	Cattle						0.2	21 CFR 556.741
	Goats							
	Hogs							
	Horses							
	Poultry							
	Sheep							
Tylosin	Cattle	0.2	0.2		0.2	0.2		21 CFR 556.740
	Goats							
	Hogs	0.2	0.2		0.2	0.2		
	Horses							
	Poultry							
	Sheep							
Virginiamycin	Cattle ⁹	0.4	0.1		0.3	0.4		21 CFR 556.750
	Goats							
	Hogs							
	Horses							
	Poultry ^{6,9}							
	Sheep							
Zeranol	Cattle ⁹	600 ppb	150 ppb		300 ppb	450 ppb	0	21 CFR 556.760
	Goats							
	Hogs							
	Horses							
	Poultry							
	Sheep							
Zoalene	Cattle	2 ⁵	3 ⁶		6 ⁵ , 3 ¹	6 ⁵		21 CFR 556.770
	Goats							
	Hogs							
	Horses							
	Poultry							
	Sheep							
Eggs								

Footnotes:

1. Turkey
2. Marker residue: albendazole 2-aminosulfone
3. Pheasants and quail
4. No tolerance required

Table AIII - *continued*
Residue Limits for Veterinary Drugs and Unavoidable Contaminants

5. Chicken
 6. Chicken and turkey
 7. Marker residue: desethylene ciprofloxacin
 8. Concentration in parts per trillion (ppt)
 9. No tolerance required
 10. Marker residue: N-methyl-1,3-propanediamine
 11. Action level
 12. Heifers; no residues are permitted at concentrations above these, which represent the levels naturally present in untreated animals
 13. Calves
 14. Pheasants
 15. Marker residue: 8-alpha-hydroxymutilin
 16. Concentration in parts per billion (ppb)
 17. Tolerances are for the sum of all approved tetracycline residues (i.e., tetracycline, chlortetracycline, and oxytetracycline)
- B: American bison
- M: Kidney and liver
- S: Chicken skin
- SF: Skin with adhering fat
- R: Rabbit
- W: Whole egg
- Y: Egg yolk