

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

## **INTRODUCTION**

This Appendix provides information on the residue limits (tolerances) for animal drugs and unavoidable contaminants in meat, poultry, and egg products, as of December 31, 1999. These tolerances, which are set by the Food and Drug Administration (FDA), are applied by the Food Safety and Inspection Service in its regulatory programs. The official source of these tolerances is Title 21 of the Code of Federal Regulations (CFR): those for animal drugs are found in Title 21, Part 556 (21 CFR 556); and those for unavoidable contaminants are found in 21 CFR 109.30. This Appendix supplies the relevant citation for each tolerance.

The tolerances in poultry and livestock species are listed alphabetically by compound. 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). 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.

Unless otherwise indicated, "meat by-products" include kidney and liver.

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
2-Acetylamino-5-nitrothiazole	Cattle							21 CFR 556.20
	Goat							
	Hogs							
	Horse							
	Poultry						0.1 <sup>1</sup>	
	Sheep							
Aklomide	Cattle							21 CFR 556.30
	Goat							
	Hogs							
	Horse							
	Poultry	3.0	4.5		4.5			
	Sheep							
Albendazole	Cattle		0.05		0.2			21 CFR 556.34
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep		0.05		0.25			
Amoxicillin	Cattle						0.01	21 CFR 556.38
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Ampicillin	Cattle						0.01	21 CFR 556.40
	Goat							
	Hogs						0.01	
	Horse							
	Poultry							
	Sheep							
Amprolium	Cattle	2.0	0.5		0.5	0.5		21 CFR 556.50
	Goat							
	Hogs							
	Horse							
	Poultry		0.5		1.0	1.0		
	Sheep							
Apramycin	Cattle							21 CFR 556.52
	Goat							
	Hogs					0.1		
	Horse							
	Poultry							
	Sheep							
Arsenic	Cattle							21 CFR 556.60
	Goat							
	Hogs		0.5	0.5	2.0	2.0		
	Horse							
	Poultry		0.5				2.0	
	Sheep							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Bacitracin	Cattle						0.5	21 CFR 556.70
	Goat							
	Hogs						0.5	
	Horse							
	Poultry						0.5 <sup>1,3</sup>	
	Sheep							
Bambermycin <sup>4</sup>	Cattle							21 CFR 556.428
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
Buquinolate	Cattle							21 CFR 556.90
	Goat							
	Hogs							
	Horse							
	Poultry	0.4	0.1		0.4	0.4		
	Sheep							
Eggs	0.5 <sup>Y</sup> , 0.2 <sup>W</sup>							
Carbadox	Cattle							21 CFR 556.100
	Goat							
	Hogs				0.03			
	Horse							
	Poultry							
	Sheep							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Carbomycin	Cattle							21 CFR 556.110
	Goat							
	Hogs							
	Horse							
	Poultry						0	
	Sheep							
Ceftiofur	Cattle		1.0		2.0	8.0		21 CFR 556.113
	Goat							
	Hogs <sup>4</sup>							
	Horse							
	Poultry <sup>4</sup>							
	Sheep <sup>4</sup>							
Cephapirin	Cattle						0.1	21 CFR 556.115
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
Chlorhexidine	Cattle						0	21 CFR 556.120
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Chlortetracycline	Cattle	12	2		6	12		21 CFR 556.150
	Goat							
	Hogs	12	2		6	12		
	Horse							
	Poultry	12	2		6	12		
	Sheep	12	2		6	12		
	Eggs	0.4						
Clopidol	Cattle		0.2		1.5	3		21 CFR 556.160
	Goat		0.2		1.5	3		
	Hogs						0.2	
	Horse							
	Poultry		5		15	15		
	Sheep							
Clorsulon	Cattle					1.0		21 CFR 556.163
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
Cloxacillin	Cattle						0.01	21 CFR 556.165
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Colistimethate	Cattle							21 CFR 556.167
	Goat							
	Hogs							
	Horse							
	Poultry						4	
	Sheep							
	Eggs							
Decoquate	Cattle	2.0	1.0	2.0	2.0	2.0	2.0	21 CFR 556.170
	Goat							
	Hogs							
	Horse							
	Poultry <sup>5</sup>	2.0	1.0	2.0	2.0	2.0	2.0	
Sheep								
Dichlorvos	Cattle							21 CFR 556.180
	Goat							
	Hogs						0.1	
	Horse							
	Poultry							
	Sheep							
Dihydrostreptomycin	Cattle	0.5	0.5	0.5	0.5	2.0	0.5	21 CFR 556.200
	Goat							
	Hogs	0.5	0.5	0.5	0.5	2.0	0.5	
	Horse							
	Poultry							
Sheep								

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
3,5-Dinitrobenzamide	Cattle							21 CFR 556.220
	Goat							
	Hogs							
	Horse							
	Poultry						0 <sup>5</sup>	
	Sheep							
Doramectin	Cattle		0.03		0.1			21 CFR 556.225
	Goat							
	Hogs				0.16			
	Horse							
	Poultry							
	Sheep							
Enrofloxacin	Cattle				0.1 <sup>7</sup>			21 CFR 556.228
	Goat							
	Hogs							
	Horse							
	Poultry			0.3 <sup>6</sup>				
	Sheep							
Eprinomectin	Cattle		0.1		4.8			21 CFR 556.227
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Erythromycin	Cattle						0.1	21 CFR 556.230
	Goat							
	Hogs						0.1	
	Horse							
	Poultry						0.125 <sup>6</sup>	
	Sheep							
	Eggs	0.025						
Estradiol benzoate & related esters <sup>8</sup>	Cattle	480	120		240	360		21 CFR 556.240
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep	600	120		600	600		
Ethopabate	Cattle							21 CFR 556.260
	Goat							
	Hogs							
	Horse							
	Poultry			0.5	1.5	1.5		
	Sheep							
	Eggs							
Ethoxyquin	Cattle	5.0	0.5					21 CFR 172.140
	Goat	5.0	0.5					
	Hogs	5.0	0.5					
	Horse	5.0	0.5					
	Poultry	3.0	0.5		3.0			
	Sheep	5.0	0.5					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Famphur	Cattle Goat Hogs Horse Poultry Sheep	0.1	0.1	0.1				21 CFR 556.273
Fenbendazole	Cattle Goat Hogs <sup>9</sup> Horse Poultry Sheep Eggs				0.8 0.8			21 CFR 556.275
Fenprostalene	Cattle <sup>9</sup> Goat Hogs Horse Poultry Sheep Eggs							21 CFR 556.277
Florphenicol	Cattle Goat Hogs Horse Poultry Sheep Eggs		0.3		3.7			21 CFR 556.283

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Flunixin meglumine	Cattle		0.025		0.125			21 CFR 556.286
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Furazolidone	Cattle							21 CFR 556.290
	Goat							
	Hogs						0	
	Horse							
	Poultry							
	Sheep							
	Eggs							
Gentamicin sulfate	Cattle							21 CFR 556.300
	Goat							
	Hogs	0.4	0.1		0.3	0.4		
	Horse							
	Poultry						0.1 <sup>6</sup>	
	Sheep							
	Eggs							
Halofuginone hydrpbromide	Cattle							21 CFR 556.308
	Goat							
	Hogs							
	Horse							
	Poultry				0.16 <sup>5</sup> , 0.13 <sup>1</sup>			
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Haloxon	Cattle						0.1	21 CFR 556.310
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Hygromycin B	Cattle							21 CFR 556.330
	Goat							
	Hogs						0	
	Horse							
	Poultry						0	
	Sheep							
	Eggs	0						
Ivermectin	Cattle				0.1			21 CFR 556.344
	Goat							
	Hogs		0.02		0.02			
	Horse							
	Poultry							
	Sheep					0.03		
	Eggs							
Lasalocid	Cattle				0.7			21 CFR 556.347
	Goat							
	Hogs							
	Horse							
	Poultry <sup>9</sup>	0.3 <sup>5</sup>						
	Sheep <sup>9</sup>							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Levamisole hydrochloride	Cattle						0.1	21 CFR 556.350
	Goat							
	Hogs						0.1	
	Horse							
	Poultry							
	Sheep						0.1	
	Eggs							
Lincomycin	Cattle							21 CFR 556.360
	Goat							
	Hogs		0.1		0.6			
	Horse							
	Poultry <sup>5,9</sup>							
	Sheep							
	Eggs							
Maduramicin ammonium	Cattle							21 CFR 556.375
	Goat							
	Hogs							
	Horse							
	Poultry	0.38 <sup>5</sup>						
	Sheep							
	Eggs							
Melengestrol Acetate	Cattle	0.025						21 CFR 556.380
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Metoserpate hydrochloride	Cattle							21 CFR 410
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep						0.02 <sup>5</sup>	
	Eggs							
Monensin	Cattle						0.05	21 CFR 556.420
	Goat						0.05	
	Hogs							
	Horse							
	Poultry <sup>9</sup>							
	Sheep							
	Eggs							
Morantel tartrate	Cattle				0.7 <sup>10</sup>			21 CFR 556.425
	Goat				0.7 <sup>10</sup>			
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Moxidectin	Cattle		0.05		0.2			21 CFR 556.426
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Narasin	Cattle							21 CFR 556.428
	Goat							
	Hogs							
	Horse							
	Poultry <sup>5,9</sup>							
	Sheep							
	Eggs							
Neomycin	Cattle	7.2	1.2		3.6			21 CFR 556.430
	Goat	7.2	1.2		3.6			
	Hogs	7.2	1.2		3.6			
	Horse							
	Poultry							
	Sheep	7.2	1.2		3.6			
	Eggs							
Nequinatate	Cattle							21 CFR 556.440
	Goat							
	Hogs							
	Horse							
	Poultry						0.1 <sup>5</sup>	
	Sheep							
	Eggs							
Nicarbazine	Cattle							21 CFR 556.445
	Goat							
	Hogs							
	Horse							
	Poultry <sup>5</sup>	4.0	4.0		4.0	4.0		
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Novobiocin	Cattle						1	21 CFR 556.460
	Goat							
	Hogs							
	Horse							
	Poultry						1	
	Sheep							
	Eggs							
Nystatin	Cattle							21 CFR 556.470
	Goat							
	Hogs						0	
	Horse							
	Poultry						0	
	Sheep							
	Eggs	0						
Oleandomycin	Cattle							21 CFR 556.480
	Goat							
	Hogs						0.15	
	Horse							
	Poultry						0.15 <sup>6</sup>	
	Sheep							
	Eggs							
Ormetoprim	Cattle							21 CFR 556.490
	Goat							
	Hogs							
	Horse							
	Poultry						0.1	
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Oxfendazole	Cattle				0.8			21 CFR 556.495
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Oxytetracycline	Cattle	12	2		6	12		21 CFR 556.500
	Goat							
	Hogs	12	2		6	12		
	Horse							
	Poultry <sup>6</sup>	12	2		6	12		
	Sheep	12	2		6	12		
	Eggs							
PCB's	Cattle							21 CFR 109.30
	Goat							
	Hogs							
	Horse							
	Poultry	3.0 <sup>11</sup>						
	Sheep							
	Eggs							
Penicillin	Cattle						0.05	21 CFR 556.510
	Goat							
	Hogs						0	
	Horse							
	Poultry						0 <sup>3,5</sup> , 0.01 <sup>1</sup>	
	Sheep						0	
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Pirlimycin	Cattle				0.5			21 CFR 556.515
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Progesterone	Cattle	0.012	0.003		0.006	0.009		21 CFR 556.540
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep	0.015	0.003		0.015	0.015		
	Eggs							
Pyrantel tartrate	Cattle							21 CFR 556.560
	Goat							
	Hogs		1.0		10.0	10.0		
	Horse							
	Poultry							
	Sheep							
	Eggs							
Robenidine hydrochloride	Cattle							21 CFR 556.580
	Goat							
	Hogs							
	Horse							
	Poultry	0.2 <sup>5</sup>					0.1 <sup>5</sup>	
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Sarafloxacin	Cattle Goat Hogs Horse Poultry <sup>6,9</sup> Sheep Eggs							21 CFR 556.594
Spectinomycin	Cattle Goat Hogs Horse Poultry Sheep Eggs		0.25			4.0	0.1 <sup>6</sup>	21 CFR 556.600
Streptomycin	Cattle Goat Hogs Horse Poultry <sup>5</sup> Sheep Eggs	0.5	0.5	0.5	0.5	2.0	0.5	21 CFR 556.610
Sulfabromomethazine sodium	Cattle Goat Hogs Horse Poultry Sheep Eggs						0.1	21 CFR 556.620

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Sulfachloropyrazine	Cattle							21 CFR 556.625
	Goat							
	Hogs							
	Horse							
	Poultry						0 <sup>5</sup>	
	Sheep							
	Eggs							
Sulfachlorpyridazine	Cattle						0.1	21 CFR 556.630
	Goat							
	Hogs						0.1	
	Horse							
	Poultry							
	Sheep							
	Eggs							
Sulfadimethoxine	Cattle						0.1	21 CFR 556.640
	Goat							
	Hogs							
	Horse							
	Poultry						0.1	
	Sheep							
	Eggs							
Sulfaethoxypyridazine	Cattle						0.1	21 CFR 556.650
	Goat							
	Hogs						0	
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Sulfamethazine	Cattle						0.1	21 CFR 556.670
	Goat							
	Hogs						0.1	
	Horse							
	Poultry						0.1 <sup>6</sup>	
	Sheep							
	Eggs							
Sulfanitran	Cattle							21 CFR 556.680
	Goat							
	Hogs							
	Horse							
	Poultry						0 <sup>5</sup>	
	Sheep							
	Eggs							
Sulfaquinoxaline	Cattle						0.1	21 CFR 556.685
	Goat							
	Hogs							
	Horse							
	Poultry						0.1 <sup>6</sup>	
	Sheep							
	Eggs							
Sulfathiazole	Cattle							21 CFR 556.690
	Goat							
	Hogs						0.1	
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Sulfomyxin	Cattle							21 CFR 556.700
	Goat							
	Hogs							
	Horse							
	Poultry						0 <sup>6</sup>	
	Sheep							
	Eggs							
Testosterone propionate	Cattle <sup>12</sup>	0.0026	0.00064		0.0013	0.0019		21 CFR 556.710
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Tetracycline	Cattle <sup>13</sup>	12	2		6	12		21 CFR 556.720
	Goat							
	Hogs	12	2		6	12		
	Horse							
	Poultry <sup>6</sup>	12	2		6	12		
	Sheep	12	2		6	12		
	Eggs							
Thiabendazole	Cattle						0.1	21 CFR 556.730
	Goat						0.1	
	Hogs						0.1	
	Horse							
	Poultry						0.1 <sup>14</sup>	
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Tiamulin	Cattle							21 CFR 556.738
	Goat							
	Hogs				0.6 <sup>15</sup>			
	Horse							
	Poultry							
	Sheep							
	Eggs							
Tilmicosin	Cattle				1.2			21 CFR 556.735
	Goat							
	Hogs		0.1		7.5			
	Horse							
	Poultry							
	Sheep							
	Eggs							
Trenbolone	Cattle <sup>9</sup>							21 CFR 556.739
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Tripelethamine	Cattle						0.2	21 CFR 556.741
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Edible Tissue (ppm)	Reference
Tylosin	Cattle	0.2	0.2		0.2	0.2		21 CFR 556.740
	Goat							
	Hogs	0.2	0.2		0.2	0.2		
	Horse							
	Poultry							
	Sheep							
	Eggs	0.2						
Virginiamycin	Cattle <sup>9</sup>							21 CFR 556.750
	Goat							
	Hogs	0.4	0.1		0.3	0.4		
	Horse							
	Poultry <sup>6</sup>	0.2	0.1		0.3	0.5		
	Sheep							
	Eggs							
Zeranol	Cattle <sup>9</sup>							21 CFR 556.760
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep						0	
	Eggs							
Zoalene	Cattle							21 CFR 556.770
	Goat							
	Hogs							
	Horse							
	Poultry	2 <sup>5</sup>	3 <sup>6</sup>		6 <sup>5</sup> , 3 <sup>1</sup>	6 <sup>5</sup>		
	Sheep							
	Eggs							

**Footnotes:**

1. Turkey
2. Marker Residue :Albendazole 2-aminosulfone
3. Pheasants and Quail.
4. No Tolerance required.
5. Chicken
6. Chicken and Turkey
7. Marker residue:desethylene ciprofloxacin
8. Concentration in parts per trillion
9. No tolerance required
10. Marker residue: N-methyl-1,3-propanediamine
11. Action Level
12. Heifers: above concentrations naturally present
13. Calves
14. Pheasants
15. Marker residue: 8-alphahydroxymutilin
- S: Chicken skin
- W: Whole egg
- Y: Egg yolk