

Table 4.1
Scoring Table for Veterinary Drugs
2002 FSIS NRP, Domestic Monitoring Plan

COMPOUND/COMPOUND CLASS	Historical Testing Info. on Violations (FSIS) (V)	Regulatory Concern (CVM) (R)	Withdrawal Time (CVM) (W)	Relative Number of Animals Treated (CVM) (N)	Predicted V = (0.19437* R*N) + 0.84625	Predicted V, Except When Actual V is Available	Impact New & Existing Human Disease (CDC) (D)	Acute or Chronic Toxicity Concerns (CVM) (T)	Lack of Testing Info. on Violations (FSIS) (L)	Relative Public Health Concern Score = $V * [(D+3*T)/4] * \{1 + [(L-1) * 0.05]\}$
Those antibiotics quantitated by the FSIS Bioassay MRM	4	4	4	4	3.956	4.000	3	4	1	15.0
Amikacin (aminoglycoside)	NT	3	4	2	2.012	2.012	3	2	4	5.2
Apramycin (aminoglycoside)	NT	4	4	2	2.401	2.401	3	2	4	6.2
Kanamycin (aminoglycoside)	NT	3	4	2	2.012	2.012	3	2	4	5.2
Spectinomycin (aminoglycoside)	NA-D, M	4	4	3	3.179	3.179	3	2	4	8.2
Streptomycin (aminoglycoside)	NA-D	4	4	3	3.179	3.179	3	2	4	8.2
Amoxicillin (beta-lactam)	NT	3	2	2	2.012	2.012	3	4	4	8.7
Ampicillin (beta-lactam)	NT	3	2	2	2.012	2.012	3	4	4	8.7
Cloxacillin (beta-lactam)	NT	3	2	2	2.012	2.012	3	4	4	8.7
Hetacillin (beta-lactam)	NT	2	2	2	1.624	1.624	3	4	4	7.0
Ticarcillin (beta-lactam)	NT	2	2	2	1.624	1.624	3	4	4	7.0
Ceftiofur (cefalosporin)	NT	3	2	3	2.596	2.596	4	2	4	7.5
Cefazolin (synthetic cefalosporin)	NT	3	2	2	2.012	2.012	3	2	4	5.2
Chloramphenicol	NA-N	4	2	1	1.624	1.624	4	4	4	7.5
Florfenicol (chloramphen. deriv.)	NT	3	4	4	3.179	3.179	3	3	4	11.0
Thiamphenicol (chloramphen. deriv.)	NT	3	2	1	1.429	1.429	3	3	4	4.9
Fluoroquinolones	1 [NA-O]	4	3	3	3.179	3.179	4	2	3	8.7
Avoparcin (glycopeptide)	NT	4	2	1	1.624	1.624	4	2	4	4.7
Vancomycin (glycopeptide)	NT	4	2	1	1.624	1.624	4	2	4	4.7
Clindamycin (lincosamide)	NA-Q	2	2	2	1.624	1.624	3	3	4	5.6
Lincomycin (lincosamide)	NA-Q	2	2	2	1.624	1.624	3	3	4	5.6
Pirlimycin (lincosamide)	NA-Q	3	4	3	2.596	2.596	4	2	4	7.5
Oleandomycin (macrolide)	NA-Q	2	2	2	1.624	1.624	3	3	4	5.6
Spiramycin (macrolide)	NA-Q	2	3	2	1.624	1.624	3	2	4	4.2
Tilmicosin (macrolide)	1 [NA-O]	4	4	3	3.179	3.179	3	3	2 [3]	10.5
Tylosin (macrolide)	NA-D	3	3	2	2.012	2.012	3	2	1	4.5
Colistin (polypeptide antibiotic)	NT	1	1	2	1.235	1.235	1	3	4	3.6
Virginiamycin	NT	1	1	3	1.429	1.429	3	1	4	2.5
Amprolium (coccidiostat)	NT	4	2	2	2.401	2.401	3	2	4	6.2

Table 4.1 - Continued
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Arsenicals (detected as As)	3 [4]	4	2	4	3.956	4.000	3	2	1	9.0
Avermectins in FSIS MRM (incl. doramectin, ivermectin, moxidectin) (antiparasitics)	3*	3	4	4	3.179	3.000	2	3	1 [3]	9.1
Eprinomectin (avermectin)	NT	2	2	3	2.012	2.012	2	2	4	4.6
Benzimidazoles (anthelmintic)	1	1	3	2	1.235	1.000	1	2	3	1.9
Berenil (antiprotozoal, Histomonas)	NA-G, Mx	4	4	1	1.624	1.624	2	3	4	5.1
Carbadox (antimicrobial)	NA-O	4	4	3	3.179	3.179	3	4	2 [3]	13.1
Clenbuterol and other unapproved beta agonists (growth promotants)	NA-O	4	2	1	1.624	1.624	3	4	3	6.7
Ractopamine (beta agonist)	NT	4	2	3	3.179	3.179	2	4	4	12.8
Clorsulon (anthelmintic, Trematodes)	NT	2	3	2	1.624	1.624	2	2	4	3.7
Dexamethasone (glucocorticoid)	NA-O	4	2	2	2.401	2.401	1	3	3	6.6
Methyl prednisone (glucocorticoid)	NT	4	2	2	2.401	2.401	1	3	4	6.9
Prednisone (glucocorticoid)	NT	2	2	1	1.235	1.235	1	3	4	3.6
Halofuginone (antiprotozoal, coccidiostat)	2	1	2	2	1.235	2.000	2	2	1	4.0
Hormones, naturally-occurring	NT	2	1	4	2.401	2.401	2	2	4	5.5
DES (hormone, synthetic)	NA-O [NA-N]	4	4	1	1.624	1.624	3	4	3 [4]	7.0
MGA (hormone, synthetic)	NA-O [NA-N]	3	1	4	3.179	3.179	3	3	3 [4]	11.0
Trenbolone (hormone, synthetic)	NT	4	1	3	3.179	3.179	3	3	4	11.0
Zeranol (hormone, synthetic)	NT	3	1	3	2.596	2.596	3	3	4	9.0
Lasalocid (coccidiostat)	NT	2	1	3	2.012	2.012	3	2	4	5.2
Levamisole (anthelmintic, Nematodes)	2	3	3	2	2.012	2.000	1	1	2 [1]	2.0
Morantel and pyrantel (anthelmintic)	1	1	1	2	1.235	1.000	2	1	3	1.4
Nicarbazin (coccidiostat)	NA-O [1]	2	2	1	1.235	1.000	2	1	4 [3]	1.4
Nitrofurans (incl. furazolidone, nitrofurazone) (antimicrobial)	NT	4	2	1	1.624	1.624	3	4	4	7.0
Nitromidazoles in FSIS MRM (dimetridazole, ipronidazole) (antiprotozoals, Histomonas)	1 [NA-O]	4	2	1	1.624	1.624	3	4	3	6.7

Table 4.1 - Continued
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Ronidazole (nitroimidazole) (antimicrobial)	NT	2	2	1	1.235	1.235	3	4	4	5.3
Etodolac (NSAID)	NT	3	2	1	1.429	1.429	1	3	4	4.1
Flunixin (NSAID)	2 [NA-O]	4	2	3	3.179	3.179	1	3	1 [2]	8.3
Phenylbutazone (NSAID)	2 [NA-O]	4	3	2	2.401	2.401	1	4	3 [2]	8.2
Dipyron (NSAID)	NT	3	3	1	1.429	1.429	1	3	4	4.1
Sulfonamides (antimicrobials, some are coccidiostats)	4	4	3	4	3.956	4.000	3	3	1	12.0
Sulfanitran (antibacterial, coccidiostat)	NT	4	3	4	3.956	3.956	3	3	4	13.6
Thyreostats (incl. thiouracil)	NT	4	3	1	1.624	1.624	2	4	4	6.5
Veterinary tranquilizers	NT	4	2	2	2.401	2.401	1	1	4	2.8

*Scoring based on ivermectin violations only; method not extended to other avermectin compounds until after 1998

- Key:**
MRM = Multiresidue method
NT = Not Tested by FSIS (1990-1999);
NA = Compound has been tested by FSIS (1990-1999), but the information is Not Applicable
NA-C = compound is of concern in several production classes, but testing has been carried out in only one
NA-D = detected and quantitated, but not uniquely identified, i.e., method cannot distinguish between this compound and one or more other compounds
NA-G = testing carried out in limited geographical area only, and thus does not necessarily represent overall national violation rate, e.g., sampling for berenil in Puerto Rico
NA-M = problem with analytical methodology
NA-Mx = new information indicates that testing was not carried out in the correct matrix, e.g., berenil testing carried out in plasma rather than serum)
NA-N = new information since previous testing, suggesting that the results of this testing may not be representative of the current situation
NA-Q = detected but not quantitated by method
NA-O = data is preliminary, because useable data on this compound (i.e., data not subject to any of the various problems listed immediately above) has been collected for only one year
FSIS = Scores in this column supplied by FSIS
CVM = Scores in this column supplied by CVM
CDC = Scores in this column supplied by CDC
Numbers in parentheses are estimates.

[Where scores have been changed from the 2000 NRP, those from year 2000 are shown in square brackets.]

Table 4.2
Rank and Status for Veterinary Drugs
2002 FSIS NRP, Domestic Monitoring Plan

Rank	DRUG	SCORE	STATUS IN 2002 NRP
	Antibiotics in FSIS Bioassay MRM (tetracycline, oxytetracycline, chlortetracycline, beta-lactams [penicillins and cephalosporins; not differentiated within this category], streptomycin/specinomycin [not differentiated], gentamicin, erythromycin, tilmicosin, tylosin, neomycin, flavomycin, bacitracin, hygromycin, novobiocin, lincomycin*, pirlimycin*, clindamycin*, spiramycin*, oleandomycin*) *identification by follow-up with mass spectrometry; not quantitated		
1		15.0	Monitoring Plan, MRM. Domestic: all production classes except egg products. Imported: all fresh product classes.
2	Sulfantran (antibacterial, coccidiostat)	13.6	NIP; no method - need to add to sulfonamide MRM, or find new method.
3	Carbadox (antimicrobial)	13.1	Monitoring Plan, Domestic: 460 roaster pigs. Imported: 92 fresh pork.
4	Ractopamine (beta agonist)	12.8	Monitoring Plan, Domestic: 300 market hogs and 300 steers. Imported: 92 fresh pork.
5	Sulfonamides in FSIS MRM (sulfapyridine, sulfadiazine, sulfathiazole, sulfamerazine, sulfamethazine, sulfachloropyridazine, sulfadoxine, sulfamethoxyipyridazine, sulfaguinoxaline, sulfadimethoxine, sulfisoxazole, sulfacetamide, sulfamethoxazole, sulfamethizole, sulfanilamide, sulfaguanidine, sulfabromomethazine, sulfasalazine, sulfathoxyipyridazine, sulfaphenazole, and sulfatroxazole) (antimicrobials, some are coccidiostats)	12.0	Monitoring Plan, MRM. Domestic: all production classes except sheep and rabbits. Imported: all product classes except processed veal, processed mutton/lamb, and processed other fowl.
6	Florfenicol (chloramphenicol derivative)	11.0	NIP; no method. FDA is developing an MRM for chloramphenicol, florfenicol, and thiamphenicol.
7	MGA (hormone, synthetic)	11.0	Monitoring Plan, Domestic: 300 heifers. Should also be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.
8	Trenbolone (hormone, synthetic)	11.0	NIP; no method. Need to attempt extension of FSIS DES/zeranol method to trenbolone.
9	Tilmicosin (macrolide)	10.5	NIP; laboratory resources not available.
10	Avermectins in FSIS MRM (doramectin, ivermectin, and moxidectin) (antiparasitic)	9.1	Monitoring Plan, MRM. Domestic: raites and all non-avian production classes. Imported: all non-avian fresh product classes.
11	Arsenicals (detected as As)	9.0	Monitoring Plan. Domestic: beef cows, goats, all porcine production classes, and all avian production classes (including egg products) except raites and squab. Imported: fresh poultry, pork, and goats, and processed pork, beef/pork, chicken, and turkey.
12	Zeranol (hormone, synthetic)	9.0	NIP; method needs improvement.
13	Amoxicillin (beta-lactam)	8.7	NIP; no method - need MRM for beta-lactams.
14	Ampicillin (beta-lactam)	8.7	NIP; no method - need MRM for beta-lactams.
15	Cloxacillin (beta-lactam)	8.7	NIP; no method - need MRM for beta-lactams.
16	Fluoroquinolones in FSIS MRM (ciprofloxacin, desethylenciprofloxacin, danofloxacin, difloxacin, enrofloxacin, marbofloxacin, orbifloxacin, sarafloxacin)	8.7	Monitoring Plan, MRM. Domestic: 460 dairy cows and 230 young chickens. Imported: 8 fresh chicken.

Table 4.2 - Continued
Rank and Status for Veterinary Drugs
2002 FSIS NRP, Domestic Monitoring Plan

Rank	DRUG	SCORE	STATUS IN 2002 NRP
17	Flunixin (NSAID)	8.3	Monitoring Plan. Dom estic: 300 dairy cows. ARS is developing an MRM for veterinary tranquilizers and NSAID's.
18	Phenylbutazone (NSAID)	8.2	Monitoring Plan, as part of the CHC/COP MRM. Domestic: all production classes except roaster pigs. Imported: all product classes except processed veal, processed mutton/lamb, and processed other fowl. ARS is developing an MRM for veterinary tranquilizers and NSAID's.
19	Spectinomycin (aminoglycoside)	8.2	NIP; method not operational - ultimately need MRM for aminoglycosides.
20	Streptomycin (aminoglycoside)	8.2	NIP; no method - need MRM for aminoglycosides; will need bridging data to use chemical method on streptomycin.
21	Ceftiofur (cefalosporin)	7.5	NIP; no method - need MRM for beta-lactams.
22	Chloramphenicol	7.5	Monitoring Plan. Dom estic: 300 each, dairy cows, formula-fed veal, and non-formula-fed veal. Imported: 301 fresh beef and 24 fresh veal. FDA is developing an MRM for chloramphenicol, florfenicol, and thiamphenicol.
23	Prilimycin (lincosamide)	7.5	NIP; method needs improvement.
24	DES (hormone, synthetic)	7.0	NIP; method needs improvement.
25	Hetacillin (beta-lactam)	7.0	NIP; no method - need MRM for beta-lactams.
26	Nitrofurans (incl. furazolidone and nitrofurazone) (antimicrobial)	7.0	NIP; no viable method available.
27	Ticarclillin (beta-lactam)	7.0	NIP; no method - need MRM for beta-lactams.
28	Methyl prednisone (glucocorticoid)	6.9	NIP; no method, but should be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.
29	Clenbuterol and other unapproved beta agonists (growth promotants)**	6.7	Monitoring Plan. Dom estic: 300 each, market hogs, steers, and formula-fed veal, by eyeball screen followed by confirmatory method performed by FDA-NCTR; need to test eyeball screen to officially extend to other beta agonists, and install NCTR confirmatory MRM for beta agonists.
30	Nitromidazoles in FSIS MRM (dimetridazole and ipronidazole) (antiprotozoal)	6.7	NIP; laboratory resources not available.
31	Dexamethasone (glucocorticoid)	6.6	NIP; laboratory resources not available.
32	Thyreostats (incl. thiouracil)	6.5	NIP; laboratory resources not available.
33	Amprolium (coccidiostat)	6.2	NIP; laboratory resources not available.
34	Apramycin (aminoglycoside)	6.2	NIP; no method - need MRM for aminoglycosides.
BASED ON CONSULTATION WITH FDA, CDC, AND OTHER AGENCIES, COMPOUNDS BELOW THIS POINT WERE NOT CONSIDERED TO REPRESENT A BROAD POTENTIAL PUBLIC HEALTH RISK. HOWEVER, SOME OF THESE MAY BE SAMPLED ON A SPECIFIC, AS-NEEDED BASIS. NONE OF THE COMPOUNDS ON THE FOLLOWING PAGE WAS SELECTED FOR INCLUSION IN THE 2002 FSIS NATIONAL RESIDUE PROGRAM (NRP).			
35	Clindamycin (lincosamide)	5.6	NIP; no method, low priority.
36	Lincomycin (lincosamide)	5.6	NIP; no method, low priority.
37	Oleandomycin (macrolide)	5.6	NIP; no method, low priority.
38	Hormones, naturally-occurring (17-estradiol, testosterone, and progesterone)	5.5	NIP; no method, low priority, but should be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.
39	Ronidazole (nitroimidazole) (antimicrobial)	5.3	NIP; may be able to add to MRM for nitroimidazoles.

Table 4.2 - Continued
Rank and Status for Veterinary Drugs
2002 FSIS NRP, Domestic Monitoring Plan

Rank	DRUG	SCORE	STATUS IN 2002 NRP
40	Amikacin (aminoglycoside)	5.2	NIP; no method - need MRM for aminoglycosides.
41	Cefazolin (synthetic cefalosporin)	5.2	NIP; no method - need MRM for beta-lactams.
42	Kanamycin (aminoglycoside)	5.2	NIP; no method - need MRM for aminoglycosides.
43	Lasalocid (coccidiostat)	5.2	NIP; Official FSIS Method available, low priority.
44	Berenil (antiprotozoal)	5.1	NIP; scored as low priority, but priority may increase because of recent FDA concerns about misuse in dairy cattle. FSIS method available, but for plasma only. Need to review NADA method for liver.
45	Thiamphenicol (chloramphenicol derivative)	4.9	NIP; no method. FDA is developing an MRM for chloramphenicol, florfenicol, and thiamphenicol.
46	Avoparcin (glycopeptide)	4.7	NIP; no method, low priority.
47	Vancomycin (glycopeptide)	4.7	NIP; no method, low priority.
48	Eprinomectin (avermectin)	4.6	NIP; no method, low priority.
49	Tylosin (macrolide)	4.5	NIP; no method, low priority.
50	Spiramycin (macrolide)	4.2	NIP; low priority.
51	Dipyrone (NSAID)	4.1	NIP; no method. Priority may increase in future, and ARS is developing an MRM for veterinary tranquilizers and NSAID's.
52	Etidolac (NSAID)	4.1	NIP; no method, low priority.
53	Halofuginone (antiprotozoal, coccidiostat)	4.0	NIP; Official FSIS Method available, low priority.
54	Clorsulon (anthelmintic)	3.7	NIP; Official FSIS Method available, low priority.
55	Colistin (polypeptide antibiotic)	3.6	NIP; no method, low priority.
56	Prednisone (glucocorticoid)	3.6	NIP; no method, low priority, but should be analyzable by extension of FSIS DES/zernalol method, or by adoption of Swiss MRM.
57	Veterinary tranquilizers (azaperone and its metabolite azaperol, xylazine, haloperidol, acetopromazine, propionylpromazine, and chlorpromazine)	2.8	NIP; screening method available. Low score, but FDA indicates interest in applying this method to dairy cows, market hogs, and rattes. ARS is developing an MRM for veterinary tranquilizers and NSAID's.
58	Virginiamycin	2.5	NIP; no method, low priority.
59	Levamisole (anthelmintic)	2.0	NIP; Official FSIS Method available, low priority.
60	Benzimidazoles in FSIS MRM (thiabendazole and its 5-hydroxythiabendazole metabolite, albandazole 2-animosulfone metabolite, benomyl in the active hydrolyzed form carbendazim, oxfendazole, mebendazole, cambendazole, and fenbendazole) (anthelmintics)	1.9	NIP; Official FSIS Method available, low priority.
61	Morantel and pyrantel (anthelmintic)	1.4	NIP; Official FSIS Method available, low priority.
62	Nicarbazin (coccidiostat)	1.4	NIP; no method, low priority.

**The clenbuterol methodology employs a screen that has been officially validated for clenbuterol only, but has also demonstrated the ability to detect other beta agonists (including fenoterol and cimaterol). This is followed by a confirmatory method that detects eight unapproved beta agonists (clenbuterol, cinaterol, fenoterol, mabuterol, salbutamol, brombuterol, and terbutaline).

Key:

CHC/COP = Chlorinated hydrocarbon/chlorinated organophosphate; MRM = Multiresidue method

NIP = Not included in 2002 FSIS National Residue Program (NRP); NSAID = Non-steroidal anti-inflammatory drug
 FDA-NCTR = Food and Drug Administration, National Center for Toxicological Research, Jefferson, AR.

In the second column, where multiple compounds have been grouped together for analysis or potential analysis by a single MRM, the title of that group has been bolded (e.g., “Antibiotics in FSIS Bioassay MRM”).

Table 4.3
Production Classes to be Considered for Each Veterinary Drug/Drug Class
2002 FSIS NRP, Domestic Monitoring Plan

Est. Rel. % Dom. Cons.	DRUG->	Anti-biotics	Car-badox	Racto-pamine	Sulfon-amides	MGA	Aver-mecs.	Arsen-icals	Zer-anol	Fluoro-quins.	Flu-nixin	Pheny-lbutate.	Chlor-fenicol.	DES	Clen-buterol
	DRUG SCORE->	15.0	13.1	12.8	12.0	11.0	9.1	9.0	9.0	8.7	8.3	8.2	7.5	7.0	6.7
0.028	Horses	★			★		★				☒	★			
0.645	Bulls	★			★		★					★			
1.747	Beef cows	★			★		★	★				★			
1.954	Dairy cows	★			★		★			★	★	★	★		
10.245	Heifers	★		☒	★	★	★					★		☒	
16.736	Steers	★		★	★	☒	★					★		☒	★
0.032	Bob veal	★			★		★					☒	☒		
0.190	Formula-fed veal	★			★	☒	★		★			☒	★	★	★
0.008	Non-formula-fed veal	★			★	☒	★		☒			☒	★		
0.019	Heavy calves	★			★		★					★			
0.012	Sheep	★					★					☒			
0.252	Lambs	★			★		★					☒			
0.032	Goats	★			★		★	★				☒			
21.004	Market hogs	★	☒	★	★		★	★		☒		☒			★
0.013	Roaster pigs	★	★	☒	★		★	★							
0.084	Boars/Stags	★	☒		★		★	★				★			
1.097	Sows	★	☒		★		★	★				★			
36.015	Young chickens	★			★			★		★		☒			
0.625	Mature chickens	★			★			★		☒		☒			
6.324	Young turkeys	★		☒	★			★		☒		☒			
0.056	Mature turkeys	★			★			★		☒		☒			
0.137	Ducks	★			★			★				☒			
0.002	Geese	★			★			★				☒			
0.010	Other fowl - ratites	★			★		★					☒	☒		
>>0.01	Squab	★			★							☒			
0.002	Rabbits	★					★					☒			
0.013	Bison	★			★		★					☒			
2.717	Egg products	☒			★			★		☒		☒			

Key:

Est. Rel. % Dom. Cons. = Estimated relative percent of domestic consumption, calendar year 2000. This was derived by estimating the total annual U.S. domestic production (pounds dressed weight) for each production class, and dividing by the total poundage for all production classes on this list (see Table 4.4). See explanation in text, Section 4, for values used for ratites and squab.

★ = Scheduled for sampling under the 2002 FSIS NRP.

☒ = Of potential regulatory concern, but could not be sampled under the 2002 FSIS NRP because of laboratory resource constraints or methodological limitations.

Table 4.3
Production Classes to be Considered for Each Veterinary Drug/Drug Class
2002 FSIS NRP, Domestic Monitoring Plan

☐ = Not of regulatory concern, but sampled anyway because comes through during CHC/COP method.

Table 4.4
Estimated Relative Consumption, Domestically Produced Meat, Poultry, and Egg Products
2002 FSIS NRP, Domestic Monitoring Plan

PRODUCTION CLASS	NUMBER HEAD SLAUGHTERED	LBS./ ANIMAL, DRESSED WT.	TOTAL LBS., DRESSED WT.	EST. RELATIVE CONSUMPTION
Bulls	612,000	892	545,904,000	0.645
Beef cows	2,796,000	529	1,479,084,000	1.748
Dairy cows	2,631,000	629	1,654,899,000	1.956
Heifers	11,835,000	733	8,675,055,000	10.253
Steers	17,758,000	798	14,170,884,000	16.748
Bob veal	357,090	[75]	26,781,750	0.032
Formula-fed veal	655,351	[245]	160,560,995	0.190
Non-formula-fed veal	18,729	[350]	6,555,150	0.008
Heavy calves	39,483	[400]	15,793,200	0.019
SUBTOTAL, CATTLE	36,702,653		26,735,517,095	31.598
Market hogs	93,115,000	191	17,784,965,000	21.020
Roaster pigs	160,000	70	11,200,000	0.013
Boars/Stags	316,000	226	71,416,000	0.084
Sows	3,005,000	309	928,545,000	1.097
SUBTOTAL, SWINE	96,596,000		18,796,126,000	22.215
Sheep	167,000	63	10,521,000	0.012
Lambs	3,141,000	68	213,588,000	0.252
SUBTOTAL, OVINE	3,308,000		224,109,000	0.265
Goats	549,371	[50]	27,468,550	0.032
Horses	47,134	[500]	23,567,000	0.028
Bison	17,674	[610]	10,781,140	0.013
TOTAL, ALL LIVESTOCK	136,606,653		45,755,752,095	54.078
Young chickens			30,495,172,000	36.042
Mature chickens			529,342,000	0.626
Young turkeys			5,354,928,000	6.329
Mature turkeys			47,260,000	0.056
Ducks			115,979,000	0.137
Geese			2,057,957	0.002
Other fowl (includes rattes)			8,763,000	0.010
SUBTOTAL, POULTRY			36,553,501,957	43.202
Rabbits			1,696,082	0.002
Egg products			2,300,156,000	2.719
GRAND TOTAL, ALL PRODUCTION CLASSES			84,611,106,134	100.000

Notes on Table --- Sources of data: The numbers in this table were derived from National Agricultural Statistical Service (NASS) data on animals (and egg products) presented for slaughter (or processing) in federally inspected establishments, for calendar year 2000 (CY '00), with the exception of the numbers for calves, which were obtained from the FSIS Automated Data Reporting System. **Livestock:** For livestock, NASS does not provide figures for total pounds dressed weight. Therefore, CY '00 NASS figures for number of head slaughtered were multiplied by CY '00 NASS values for average pounds dressed weight per animal (where indicated by square brackets, the latter was unavailable and estimates were used instead), to calculate total pounds dressed weight. **Poultry, rabbits, and egg products:** For these production classes, figures for total pounds dressed weight, CY '00, were available from NASS, and it was therefore not necessary to calculate them from the number of head slaughtered. **Purpose:** The purpose of this table is to estimate, for each individual production class for which FSIS has regulatory responsibility, the amount of domestically-produced product consumed relative to the total for all of these production classes (this will in turn be used to estimate relative exposures to chemical residues). This was estimated by assuming that the relative amount of each production class consumed would be approximately proportional to the total poundage (based on dressed weight) of each production class presented for slaughter or processing in federally inspected establishments. Dressed weight, which represents the weight of the carcass after hide, hoof, hair, and viscera have been removed, was used instead of live weight, because the former was thought to be more closely representative of total pounds consumed. *Note: this table estimates the amount of domestically produced product that is consumed, regardless of who consumes it (i.e., no distinction is made between domestically produced product consumed domestically, vs. that which is exported).*

Table 4.5
Veterinary Drug Compound/Production Class Pairs,
Sorted by Sampling Priority Score, “Full-Resource” Sampling
2002 FSIS NRP, Domestic Monitoring Plan

RANK	COMPOUND CLASS	COMPOUND PRIORITY RATING (P)	PRODUCTION CLASS	EST. RELATIVE % DOMESTIC CONSUMPTION (D)	C/PC PAIR PRIORITY SCORE (P x D)	UNADJ. # SAMPLES
1	Antibiotics	15.0	Young chickens	36.015	540.229	460
2	Sulfonamides	12.0	Young chickens	36.015	432.183	460
3	Arsenicals	9.0	Young chickens	36.015	324.137	460
4	Antibiotics	15.0	Market hogs	21.004	315.065	460
5	Sulfonamides	12.0	Market hogs	21.004	252.052	460
6	Antibiotics	15.0	Sheers	16.736	251.040	460
7	Sulfonamides	12.0	Sheers	16.736	200.832	460
8	Avermectins	9.1	Market hogs	21.004	191.139	460
9	Arsenicals	9.0	Market hogs	21.004	189.039	460
10	Antibiotics	15.0	Heifers	10.245	153.681	460
11	Avermectins	9.1	Sheers	16.736	152.298	460
12	Sulfonamides	12.0	Heifers	10.245	122.944	460
13	Antibiotics	15.0	Young turkeys	6.324	94.864	460
14	Avermectins	9.1	Heifers	10.245	93.233	460
15	Sulfonamides	12.0	Young turkeys	6.324	75.891	460
16	Arsenicals	9.0	Young turkeys	6.324	56.918	460
17	Antibiotics	15.0	Egg products	2.717	40.748	460
18	Sulfonamides	12.0	Egg products	2.717	32.598	460
19	Antibiotics	15.0	Dairy cows	1.954	29.317	460
20	Antibiotics	15.0	Beef cows	1.747	26.202	300
21	Arsenicals	9.0	Egg products	2.717	24.449	300
22	Sulfonamides	12.0	Dairy cows	1.954	23.454	300
23	Sulfonamides	12.0	Beef cows	1.747	20.962	300
24	Avermectins	9.1	Dairy cows	1.954	17.786	300
25	Antibiotics	15.0	Sows	1.097	16.449	300
26	Avermectins	9.1	Beef cows	1.747	15.896	300
27	Arsenicals	9.0	Beef cows	1.747	15.721	300
28	Sulfonamides	12.0	Sows	1.097	13.160	300
29	Avermectins	9.1	Sows	1.097	9.979	300
30	Arsenicals	9.0	Sows	1.097	9.870	300
31	Antibiotics	15.0	Bulls	0.645	9.671	300
32	Antibiotics	15.0	Mature chickens	0.625	9.377	300
33	Sulfonamides	12.0	Bulls	0.645	7.737	300
34	Sulfonamides	12.0	Mature chickens	0.625	7.502	300
35	Avermectins	9.1	Bulls	0.645	5.867	300
36	Arsenicals	9.0	Mature chickens	0.625	5.626	300
37	Antibiotics	15.0	Lambs	0.252	3.784	300
38	Sulfonamides	12.0	Lambs	0.252	3.027	300
39	Antibiotics	15.0	Formula-fed veal	0.190	2.844	300
40	Avermectins	9.1	Lambs	0.252	2.295	300

Table 4.5 - Continued
Veterinary Drug Compound/Production Class Pairs,
Sorted by Sampling Priority Score, “Full-Resource” Sampling
2002 FSIS NRP, Domestic Monitoring Plan

RANK	COMPOUND CLASS	COMPOUND PRIORITY RATING (P)	PRODUCTION CLASS	EST. RELATIVE % DOMESTIC CONSUMPTION (D)	C/P/C PAIR PRIORITY SCORE (P x D)	UNADJ. # SAMPLES
41	Sulfonamides	12.0	Formula-fed veal	0.190	2.275	300
42	Antibiotics	15.0	Ducks	0.137	2.055	230
43	Avermectins	9.1	Formula-fed veal	0.190	1.726	230
44	Sulfonamides	12.0	Ducks	0.137	1.644	230
45	Antibiotics	15.0	Boars/Stags	0.084	1.265	230
46	Arsenicals	9.0	Ducks	0.137	1.233	230
47	Sulfonamides	12.0	Boars/Stags	0.084	1.012	230
48	Antibiotics	15.0	Mature turkeys	0.056	0.837	230
49	Avermectins	9.1	Boars/Stags	0.084	0.768	230
50	Arsenicals	9.0	Boars/Stags	0.084	0.759	230
51	Sulfonamides	12.0	Mature turkeys	0.056	0.670	230
52	Arsenicals	9.0	Mature turkeys	0.056	0.502	230
53	Antibiotics	15.0	Goats	0.032	0.487	230
54	Antibiotics	15.0	Bob veal	0.032	0.474	230
55	Antibiotics	15.0	Horses	0.028	0.417	230
56	Sulfonamides	12.0	Goats	0.032	0.389	230
57	Sulfonamides	12.0	Bob veal	0.032	0.380	230
58	Sulfonamides	12.0	Horses	0.028	0.334	230
59	Avermectins	9.1	Goats	0.032	0.295	230
60	Arsenicals	9.0	Goats	0.032	0.292	230
61	Avermectins	9.1	Bob veal	0.032	0.288	230
62	Antibiotics	15.0	Heavy calves	0.019	0.280	230
63	Avermectins	9.1	Horses	0.028	0.253	230
64	Sulfonamides	12.0	Heavy calves	0.019	0.224	230
65	Antibiotics	15.0	Roaster pigs	0.013	0.198	230
66	Antibiotics	15.0	Bison	0.013	0.191	230
67	Antibiotics	15.0	Sheep	0.012	0.186	230
68	Avermectins	9.1	Heavy calves	0.019	0.170	230
69	Sulfonamides	12.0	Roaster pigs	0.013	0.159	230
70	Antibiotics	15.0	Other fowl	0.010	0.155	230
71	Sulfonamides	12.0	Bison	0.013	0.153	230
72	Sulfonamides	12.0	Other fowl	0.010	0.124	90
73	Avermectins	9.1	Roaster pigs	0.013	0.120	90
74	Arsenicals	9.0	Roaster pigs	0.013	0.119	90
75	Antibiotics	15.0	Non-formula veal	0.008	0.116	90
76	Avermectins	9.1	Bison	0.013	0.116	90
77	Avermectins	9.1	Sheep	0.012	0.113	90
78	Avermectins	9.1	Other fowl	0.010	0.094	90
79	Sulfonamides	12.0	Non-formula veal	0.008	0.093	90
80	Avermectins	9.1	Non-formula veal	0.008	0.070	90

Table 4.5 - Continued
Veterinary Drug Compound/Production Class Pairs,
Sorted by Sampling Priority Score, “Full-Resource” Sampling
2002 FSIS NRP, Domestic Monitoring Plan

RANK	COMPOUND CLASS	COMPOUND PRIORITY RATING (P)	PRODUCTION CLASS	EST. RELATIVE % DOMESTIC CONSUMPTION (D)	C/P C PAIR PRIORITY SCORE (P x D)	UNADJ. # SAMPLES
81	Antibiotics	15.0	Geese	0.002	0.036	90
82	Antibiotics	15.0	Rabbits	0.002	0.030	90
83	Sulfonamides	12.0	Geese	0.002	0.029	90
84	Arsenicals	9.0	Geese	0.002	0.022	90
85	Avermectins	9.1	Rabbits	0.002	0.018	90

Table 4.6
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2002 FSIS NRP, Domestic Monitoring Plan

COMPOUND CLASS	PRODUCTION CLASS	PRIORITY SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Antibiotics	Young chickens	540.229	3816	0.05	460		460		460
Antibiotics	Market hogs	315.065	3991	0.58	460	+1	690		690
Antibiotics	Steers	251.040	3063	0.07	460		460		460
Antibiotics	Heifers	153.681	2548	0.04	460		460		460
Antibiotics	Young turkeys	94.864	3952	0.23	460		460		460
Antibiotics	Egg products	40.748	304	0.66	460	+2	690	No method	0
Antibiotics	Dairy cows	29.317	4676	0.79	460	+2	690		690
Antibiotics	Beef cows	26.202	4164	0.22	300		300		300
Antibiotics	Sows	16.449	4070	0.27	300		300		300
Antibiotics	Bulls	9.671	2100	0.00	300	-1	230		230
Antibiotics	Mature chickens	9.377	3532	0.00	300	-1	230		230
Antibiotics	Lambs	3.784	3835	0.23	300		300		300
Antibiotics	Formula-fed veal	2.844	6361	0.71	300	+2	690		690
Antibiotics	Ducks	2.055	3058	0.13	230		230		230
Antibiotics	Boars/Stags	1.265	2688	0.26	230		230		230
Antibiotics	Mature turkeys	0.837	2143	0.14	230		230		230
Antibiotics	Goats	0.487	2913	0.17	230		230		230
Antibiotics	Bob veal	0.474	4347	1.29	230	+2	460		460
Antibiotics	Horses	0.417	2097	5.58	230	+2	460		460
Antibiotics	Heavy calves	0.280	3358	0.42	230		230		230
Antibiotics	Roaster pigs	0.198	197	1.02	230	+1	300		300
Antibiotics	Bison	0.191	NT	NT	230	+1	300		300
Antibiotics	Sheep	0.186	2277	0.04	230		230		230
Antibiotics	Other fowl - ratites	0.155	NT	NT	230	+1	300		300
Antibiotics	Non-formula-fed veal	0.116	3051	0.59	90	+1	230		230
Antibiotics	Geese	0.036	601	0.00	90	NO ADJ	90		90
Antibiotics	Rabbits	0.030	1014	2.56	90	+2	300		300
Antibiotics	Squab		NT		45		45		45
TOTAL # SAMPLES					7865		9825		9135

Table 4.6 - Continued
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2002 FSIS NRP, Domestic Monitoring Plan

COMPOUND CLASS	PRODUCTION CLASS	PRIORITY SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Avermectins	Market hogs	191.139	2699	0.00	460	-1	300		300
Avermectins	Steers	152.298	3197	0.03	460		460		460
Avermectins	Heifers	93.233	2197	0.00	460	-1	300		300
Avermectins	Dairy cows	17.786	2855	0.14	300		300		300
Avermectins	Beef cows	15.896	3177	0.22	300		300		300
Avermectins	Sows	9.979	2179	0.00	300	-1	230		230
Avermectins	Bulls	5.867	1612	0.31	300		300		300
Avermectins	Lambs	2.295	2608	0.08	300		300		300
Avermectins	Formula-fed veal	1.726	2940	0.14	230		230		230
Avermectins	Boars/Stags	0.768	1324	0.00	230	-1	90		90
Avermectins	Goats	0.295	2812	0.68	230	+1	300		300
Avermectins	Bob veal	0.288	157	0.00	230		230		230
Avermectins	Horses	0.253	1290	0.78	230	+2	460		460
Avermectins	Heavy calves	0.170	2895	0.45	230		230		230
Avermectins	Roaster pigs	0.120	NT	NT	90	+1	230		230
Avermectins	Bison	0.116	NT	NT	90	+1	230		230
Avermectins	Sheep	0.113	1650	0.18	90		90		90
Avermectins	Other fowl - ratites	0.094	NT	NT	90	+1	230		230
Avermectins	Non-formula-fed veal	0.070	2219	0.50	90	+1	230		230
Avermectins	Rabbits	0.018	NT	NT	90	+1	230		230
TOTAL # SAMPLES					4800		5270		5270

Table 4.6 - Continued
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2002 FSIS NRP, Domestic Monitoring Plan

COMPOUND CLASS	PRODUCTION CLASS	PRIORITY SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Sulfonamides	Young chickens	432.183	4170	0.17	460		460	max. 300	300
Sulfonamides	Market hogs	252.052	14510	0.71	460	+2	460	max. 300	300
Sulfonamides	Steers	200.832	2725	0.11	460		460	max. 300	300
Sulfonamides	Heifers	122.944	2346	0.04	460		460	max. 300	300
Sulfonamides	Young turkeys	75.891	3961	0.15	460		460	max. 300	300
Sulfonamides	Egg products	32.598	NT	NT	460	+1	460	max. 300	300
Sulfonamides	Dairy cows	23.454	4157	0.36	300		300		300
Sulfonamides	Beef cows	20.962	3811	0.13	300		300		300
Sulfonamides	Sows	13.160	4394	0.71	300	+2	460	max. 300	300
Sulfonamides	Bulls	7.737	2109	0.09	300		300		300
Sulfonamides	Mature chickens	7.502	3508	0.03	300		300		300
Sulfonamides	Lambs	3.027	2912	0.14	300		300		300
Sulfonamides	Formula-fed veal	2.275	6021	0.10	300		300		300
Sulfonamides	Ducks	1.644	2419	0.08	230		230		230
Sulfonamides	Boars/Stags	1.012	2760	0.80	230	+2	460	max. 300	300
Sulfonamides	Mature turkeys	0.670	2218	0.50	230	+1	300		300
Sulfonamides	Goats	0.389	2309	0.30	230		230		230
Sulfonamides	Bob veal	0.380	4459	0.70	230	+2	460	max. 300	300
Sulfonamides	Horses	0.334	1573	0.25	230		230		230
Sulfonamides	Heavy calves	0.224	3475	0.17	230		230		230
Sulfonamides	Roaster pigs	0.159	NT	NT	230	+1	300		300
Sulfonamides	Bison	0.153	NT	NT	230	+1	300		300
Sulfonamides	Other fowl - ratites	0.124	NT	NT	90	+1	230		230
Sulfonamides	Non-formula-fed veal	0.093	3028	0.59	90	+1	230		230
Sulfonamides	Geese	0.029	531	0.19	90		90		90
Sulfonamides	Squab		NT	NT	45		45		45
TOTAL # SAMPLES					7245		8355		6915

Table 4.6 - Continued
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2002 FSIS NRP, Domestic Monitoring Plan

COMPOUND CLASS	PRODUCTION CLASS	PRIORITY SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Arsenicals	Young chickens	324.137	3113	0.42	460		460	+740	1200
Arsenicals	Market hogs	189.039	2541	0.00	460	-1	300		300
Arsenicals	Young turkeys	56.918	2502	0.20	460		460		460
Arsenicals	Egg products	24.449	NT	NT	300	+1	460		460
Arsenicals	Beef cows	15.721	765	0.13	300		300		300
Arsenicals	Sows	9.870	1012	0.00	300	-1	230		230
Arsenicals	Mature chickens	5.626	1344	0.00	300	-1	230		230
Arsenicals	Ducks	1.233	142	0.00	230		230		230
Arsenicals	Boars/Stags	0.759	871	0.00	230	-1	90		90
Arsenicals	Mature turkeys	0.502	724	0.00	230	-1	90		90
Arsenicals	Goats	0.292	944	0.64	230	+1	300		300
Arsenicals	Roaster pigs	0.119	NT	NT	90	+1	230		230
Arsenicals	Geese	0.022	259	0.39	90		90		90
TOTAL # SAMPLES					3680		3470		4210

Key:

#SAMP. = Total number of samples analyzed by the FSIS Monitoring Plan (i.e., random sampling only), 1/1/90 - 12/31/99.

%VIOL. = Percent violative, i.e., the percent of samples with residue concentrations exceeding the tolerance or action level (or, for a drug whose use was not permitted in the production class in which it was detected, the percent of samples with any detectable residue).

UNADJ.# = Unadjusted number of samples, obtained from last column of Table 4.7.

INITIAL ADJ.# = Number of samples proposed following adjustment for historical violation rate information or lack of testing information.

FINAL ADJ.# = Finalized sample numbers, obtained following any adjustments needed to match sample volume to laboratory capacity.

NT = Not Tested.

+1 level, +2 levels, -1 level = There are four different sampling levels: 90, 230, 300 and 460 (five for antibiotics: 90, 230, 300, 460, and 690). Sampling levels were increased or decreased (e.g., changed from 300 samples to 230 samples) based on the rules described in Section 4.

NO ADJ = As explained in Section 4, the number of samples taken from geese is limited to 90 per compound class per year, and thus this number could not be adjusted upward based on the rules applied to the other production class.