

APPENDIX III

**Table AIII
Analytical Methods
2003 National Residue Program**

Compound Class	Compound	Analytical Method			Minimum Proficiency Level ^a			
		Screen	Determinative (quantitative)	Confirmatory (identification)	Screen	Determinative (quantitative)	Confirmatory (identification)	
Antibiotics	Carbadox		GC-ECD	TBD		15 ppb	TBD	
	Chloramphenicol		GC	GC-MS		0.25 ppb (M)	0.30 ppb (M)	
	Florfenicol		HPLC	GC/SIM-MS		1.9 ppm (L)	1.9 ppm (L)	
Antibiotics : <i>beta</i> -Lactams	Amoxicillin	7-Plate Bioassay	Bioassay			TBD		
	Ampicillin					0.01 ppm		
	Cefazolin					0.02 ppm		
	Cloxacillin					TBD		
	Desacetyl cephalirin					0.1 ppm		
	Desfuoylceftiofur cysteine disulfide (DCCD)					0.05 ppm		
	Dicloxacillin					0.05 ppm		
	Nafcillin							
	Penicillin-G					0.05 ppm		
Antibiotics : Tetracyclines	Chlortetracycline	7-Plate Bioassay	Bioassay	HPLC (chemistry)	0.5 ppm	0.08 ppm		
	Oxytetracycline							
	Tetracycline							
Antibiotics: Macrolides	Clindamycin	7-Plate Bioassay		MS			0.1 ppm	
	Erythromycin		Bioassay			0.05 ppm	0.1 ppm	
	Lincomycin						0.1 ppm	
	Pirlimycin						0.1 ppm	
	Tilmicosin				HPLC- Ion Pairing		300 ppb (M) 600 ppb (L,K)	0.1 ppm
	Tylosin				Bioassay		0.2 ppm	0.1 ppm

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Antibiotics: Aminoglycosides	Amikacin	7-Plate Bioassay		MS			1.0 ppm (L,K), 0.4 ppm (M)
	Apramycin					0.4 ppm (K) 0.1 ppm (L,M)	
	Dihydrostreptomycin		Bioassay			0.4 ppm (L,K,M)	
	Gentamicin		Bioassay			0.15 ppm	0.1 ppm (K,M), 0.4 (L)
	Hygromycin						1.0 ppm (L,K) 0.4 ppm (M)
	Kanamycin						4.0 ppm(L), 2.0 ppm (K), 0.4 ppm (M)
	Neomycin		Bioassay			0.25 ppm	0.1ppm (K,M), 0.4 (L)
	Spectinomycin					10.0 ppm	1.0 ppm (L) 0.4 ppm (K) 0.25 ppm (M)
	Streptomycin		Bioassay			0.1 ppm	0.4 ppm (L,K,M)
	Tobramycin						1.0 ppm (L) 0.1 ppm (K,M)
Arsenicals	Arsenicals		AA	AA		0.2 ppm	0.2 ppm
Avermectins	Ivermectin		HPLC	HPLC/APCI-MS		7.5 ppb	25 ppb
	Doramectin						
	Moxidectin						
<i>beta</i> -Agonists	Cimaterol	ELISA			6 ppb		
	Clenbuterol	ELISA		LC/MS-MS	3 ppb		TBD
	Ractopamine		HPLC	LC/MS		1 ppb (M), 25 ppb (L)	1 ppb
	Salbutamol	ELISA			3 ppb		
Hormones, synthetic	Diethylstilbesterol (DES)		GC-MS	GC-MS		0.5 ppb	1.0 ppb (L,M)
	Zeranol	ELISA	GC-MS	GC-MS		0.5 ppb	5.0 ppb (L)
	<i>alpha</i> -Trenbolone			GC/MS-MS			5.0 ppb (L)
	<i>beta</i> -Trenbolone			GC/MS-MS			5.0 ppb (M)

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		Screen	Determinative (quantitative)	Confirmatory (identification)	Screen	Determinative (quantitative)	Confirmatory (identification)
Nonsteroidal Anti-inflammatory Drugs (NSAIDs)	Dipyrones ^b	HPLC	HPLC		0.2 ppm	0.2 ppm	
	Flunixin	ELISA	HPLC	HPLC/ESI-MS-MS	50 ppb	62.5 ppb	125 ppb
	Phenylbutazone	ELISA		HPLC/ESI-MS-MS	50 ppb		50 ppb
Anabolic Steroids	Melengesterol Acetate (MGA)		GC/ECD	HPLC/APCI-MS		10 ppm	12.5 ppb
Sulfonamides	Sulfapyridine		TLC	GC/ESI-MS		0.08 ppm	0.08 ppm
	Sulfadiazine						
	Sulfathiazole						
	Sulfamerazine						
	Sulfamethazine						
	Sulfachloropyridazine						
	Sulfamethoxypryridazine						
	Sulfaquinoxaline						
	Sulfadimethoxine						
	Sulfaethoxypryridazine						
	Sulfaphenazole						
	Sulfatroxazole						
	Sulfisoxazole						
Sulfadoxine							
Thyreostats	2-Mercaptobenzimidazole			HPLC/MS-MS			25 ppb
	6-Methyl-2-thiouracil						
	2-Mercapto-1-methylimidazole						
	6-Phenyl-2-thiouracil						

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		Screen	Determinative (quantitative)	Confirmatory (identification)	Screen	Determinative (quantitative)	Confirmatory (identification)	
Thyreostats (continued)	6-Propyl-2-thiouracil			HPLC/MS-MS			25 ppb	
	2-Thiouracil							
CHCs/COPs/PCBs	Aldrin		GPC with GC-EC	GC-MS		0.10 ppm		
	<i>alpha</i> -BHC						0.10 ppm	0.01 ppm
	Captan					0.04 ppm		
	Carbophenothion					0.06 ppm		
	Chlorfenvinphos						0.05 ppm	
	Chlorpyrifos						0.10 ppm	
	<i>cis</i> -chlordane						0.30 ppm	
	Coumaphos-O						0.20 ppm	
	Coumaphos-S						0.20 ppm	
	Dieldrin						0.10 ppm	0.01 ppm
	Endosulfan I					0.02 ppm		
	Endosulfan II						0.04 ppm	
	Endrin						0.10 ppm	0.03 ppm
	HCB						0.10 ppm	0.01 ppm
	Heptachlor epoxide						0.10 ppm	0.10 ppm
	Heptachlor						0.10 ppm	0.01 ppm
	Kepone					0.06 ppm		
	Lindane						0.10 ppm	0.01 ppm
	Linuron					0.50 ppm		
Methoxychlor				0.50 ppm	0.15 ppm			
Mirex				0.10 ppm				

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		Screen	Determinative (quantitative)	Confirmatory (identification)	Screen	Determinative (quantitative)	Confirmatory (identification)
CHCs/COPs/PCBs (continued)	Nonachlor		GPC with GC-EC	GC-MS		0.15 ppm	
	o,p'-TDE				0.15 ppm		
	Oxychlorane					0.04 ppm	0.1 ppm
	p,p'-DDE					0.10 ppm	0.02 ppm
	p,p'-DDT					0.15 ppm	0.04 ppm
	p,p'-TDE					0.15 ppm	0.04 ppm
	PCB 1260					0.50 ppm	
	PCB 1254					0.50 ppm	
	PCB 1242					0.50 ppm	
	PCB 1248					0.50 ppm	
	Phosalone				0.02 ppm		
	Ronnel					0.03 ppm	
	Stirofos					0.06 ppm	
	Toxaphene					1.00 ppm	
trans-chlordane		0.30 ppm					

^a Minimum Proficiency Level: The lowest amount of individual residue or sample component that FSIS requires its laboratories to reliably detect, quantify, or confirm. This is usually the lowest amount for which the method used by FSIS laboratories has been validated.

^b 4-methylaminoantipyrine, 4-formylaminoantipyrine, and 4-aminoantipyrine

Table AIII – *continued*
Analytical Methods
2003 National Residue Program

Key:

L = Liver

K = Kidney

M = Muscle

AA = Atomic Absorption Spectroscopy

CHCs = Chlorinated hydrocarbons

COPs = Chlorinated organophosphates

PCBs = Polychlorinated biphenyls

GC = Gas Chromatography

MS = Mass Spectroscopy

GPC = Gel Permeation Chromatography

HPLC = High performance liquid chromatography

TLC = Thin Layer Chromatography

ECD = Electron Capture Detection

ELISA = Enzyme Linked Immunosorbent Assay

NA = not applicable

ppm = parts per million

ppb = parts per billion

APCI = Atmospheric Pressure Chemical Ionization

HPLC = High Performance Liquid Chromatography

TBD = To be determined

SIM = selected ion mode

Method detection limit = The lowest quantity of residue (or sample component) that can be reliably observed or found in the sample matrix by the analytical methodology used.

APPENDIX IV

STATISTICAL TABLE

Table AIV, *Statistical Table*, indicates the number of samples required to ensure detection of a violation that affects a given percentage of the sampled population.

**Table AIV
Statistical Table**

Percentage Violative in Sampled Population	Probability of Detection (Percent)			
	90	95	99	99.9
	Samples Required			
10	22	29	44	66
5	45	59	90	135
1	230	299	459	688
0.5	460	598	919	1,379
0.1	2,302	2,995	4,603	6,905
0.05	4,605	5,990	9,209	13,813