FOOD SAFETY AND INSPECTION SERVICE

2000 FSIS NATIONAL RESIDUE PROGRAM

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PREFACE

Welcome to the 2000 "Blue Book." This book presents the 2000 Food Safety and Inspection Service (FSIS) National Residue Program (NRP). [For those reading this electronically, this document has been commonly known as the "Blue Book" because the covers of the printed versions are blue.]

This text presents a comprehensive explanation of the process used to plan the NRP for 2000. In 1999, the NRP was modified to move towards a system of residue evaluation more consistent with modern risk assessment principles. The methodologies employed in the planning of the 2000 NRP, as described in this document, reflect these changes. Following the explanation of the planning process, this text provides a detailed description of the completed Domestic Monitoring Plan and Special Projects and Import Residue Plan for the 2000 FSIS NRP.

In addition to a description of the annual NRP, the Blue Book has traditionally included two very useful tables: a list of all established tolerances and action levels for drugs, pesticides and environmental contaminants in food animal tissues, and a list of all FSIS Official Methods for these compounds. Because of their continued utility, these tables have been updated and appear as the last two sections of this document.

The staff of the Residue Branch, Food Animal Sciences Division, Office of Public Health and Science, FSIS, hope that you will find this *2000 National Residue Program* to be every bit as useful and informative as it has been in past years. We would like to thank all of our predecessors for providing us with tables and information that they developed and that we continue to use.

CONTACTS AND COMMENTS

Questions about the FSIS NRP should be directed to the USDA-FSIS Food Animal Sciences Division, Residue Branch, 344 Aerospace Center, 1400 Independence Avenue, SW, Washington, DC 20250-3700, phone (202) 690-6566, fax (202) 690-6565.

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SECTION 1. THE FSIS NATIONAL RESIDUE PROGRAM

The regulatory system that enforces the U.S. food safety laws has been evolving since 1906. This system helps to protect the public from foodborne hazards and has enabled the food produced in the U.S. to be among the safest in the world. Nevertheless, maintaining the wholesomeness and safety of the food supply requires continued vigilance and the flexibility to adapt to changing conditions.

On July 25, 1996, the U. S. Department of Agriculture published the *Final Rule on Pathogen Reduction; Hazard Analysis and Critical Control Point (PR/HACCP) Systems*. The principal focus of this rule, which complements existing food safety laws and regulations, is to reduce both the pathogenic organisms on meat and poultry products and the incidence of foodborne illness associated with these products. The presence in food of chemical residues above permitted levels causes the food to be adulterated under the Federal Food, Drug, and Cosmetic Act (FFDCA). Under the Federal Meat Inspection Act (FMIA), the Poultry Products Inspection Act (PPIA), and the Egg Products Inspection Act (EPIA), slaughter and production establishments bear responsibility for ensuring that their product is not adulterated when it enters commerce. Part 417 of the PR/HACCP regulation requires meat and poultry establishments to develop and implement a system of preventive measures designed to ensure the safety of their products. In developing their HACCP plans, slaughter establishments must address all chemical, physical, and biological hazards that are reasonably likely to occur in the animals that enter their plants. Section 417.2 requires that slaughter establishments conduct a hazard analysis to determine the food safety hazards reasonably likely to occur before, during, and after entry into the establishment. The preamble of the rule describes the potential hazards that plants need to consider during a hazard analysis. These hazards include chemical residues resulting from use of or exposure to animal drugs, pesticides and environmental contaminants. The rule also provides a new framework for the modernization of the meat and poultry inspection system.

A vigilant chemical residue prevention program is essential to fostering the prudent use of drugs and pesticides in animals that enter the human food supply. The requirement that slaughter establishments implement HACCP systems is a significant step in this evolutionary process.

HACCP implementation does not remove or diminish the regulatory authority of FSIS. FSIS inspectors will continue to condemn animals for cause, and FSIS will continue to cooperate with the Food and Drug Administration (FDA) and/or the Environmental Protection Agency (EPA) as a part of follow-ups to residue violations. Any tissue containing a residue that exceeds its specified tolerance or action level, or that contains a residue that has been banned from use in food animals, is considered to be in violation of FFDCA.

When violative residues are detected in food-producing animals submitted for slaughter, FSIS notifies the producer and any parties involved in offering these animals for sale. These parties are subject to follow-up enforcement testing until compliance is demonstrated. Product found to contain violative levels of residues is considered adulterated and is subject to condemnation. If the product has been distributed into commerce, it may be subject to market recall. In addition, FDA and cooperating state agencies may make on-site visits to these firms. Typically, an educational visit by the state is the first step in attempting to correct a residue problem. If the problem is not corrected, subsequent visits, made by FDA, could result in enforcement action, including prosecution.

FSIS enforces the tolerances and action levels set by FDA and EPA. FDA has statutory authority for setting tolerances and/or action levels for veterinary drugs under the FFDCA, as codified under 21 CFR

Part 556 and 109. EPA has statutory authority for setting tolerances and/or action levels for pesticides under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and FFDCA, as modified by FQPA; codified under 40 CFR. Chemical hazards also may be associated with substances that occur in meat, poultry, and egg products as a result of environmental contamination. EPA reviews exposure and toxicology data and may make recommendations to FDA and FSIS on the appropriate action levels for canceled pesticides and other environmental contaminants present in the environment.

The cornerstone of FSIS residue prevention activities is the FSIS National Residue Program (NRP), a multi-component analytical testing program for residues in domestic and imported meat, poultry, and egg products.[1] The NRP provides a variety of sampling plans to verify that slaughter establishments are fulfilling their responsibilities under HACCP for preventing violative residues and develops national data for chemical residues to support risk assessment, enforcement and educational activities. The range of chemical compounds considered for inclusion in the various NRP testing programs is comprehensive in scope. It includes approved and unapproved pharmaceutical drugs and pesticides known or suspected to be present in food animals in the U.S. and in countries exporting products to the U.S. It also includes any other xenobiotic or naturally occurring compounds that may appear in meat, poultry and egg products and that may pose a potential human health hazard.

The prevention of illegal chemical residues in the food supply is an integral aspect of maintaining a high level of food safety. High consumer expectations necessitate that the U.S. thoroughly document the safety of our meat, poultry, and egg products. In addition, issues related to chemical residues in food may hinder the export of U.S. food products.

The NRP is designed to provide: (1) a structured process for identifying and evaluating compounds of concern by production class; (2) the capability to analyze for compounds of concern; (3) appropriate regulatory follow-up of reports of violative tissue residues; and (4) collection, statistical analysis, and reporting of the results of these activities.

The goals of the NRP to:

- Enforce Federal laws and regulations;
- Maintain consumer confidence by ensuring that meat, poultry, and egg products are not adulterated;
- Act as a deterrent against the slaughter of adulterated animals and the processing of adulterated eggs; and
- Assess and communicate human exposure to chemical residues.
- Provide verification of residue control in HACCP systems.

[1]The production classes for which FSIS has regulatory authority are: horses, bulls, beef cows, dairy cows, heifers, steers, bob veal calves, formula-fed veal, non-formula-fed veal, heavy calves, sheep, lambs, goats, market hogs (including roaster pigs), boars/stags, sows, young chickens, mature chickens, young turkeys, mature turkeys, ducks, geese, rabbits, and egg products (liquified eggs and dried eggs).

SECTION 2. COMPONENTS OF THE FSIS NATIONAL RESIDUE PROGRAM

DOMESTIC RESIDUE SAMPLING PROGRAM

The Food Safety and Inspection Service (FSIS) National Residue Program (NRP) provides a variety of sampling plans to verify and enforce that slaughter establishments are fulfilling their responsibilities under the Hazard Analysis and Critical Control Point (HACCP) regulation, and in accordance with Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) regulations, to prevent the occurrence of violative residues. The NRP also collects and uses national data on chemical residues to support risk assessment, enforcement, and educational activities. All residue data is collected and stored in the Microbiological and Residue Computer Information System (MARCIS). Detailed information on violations is immediately transferred to the Residue Violation Information System (RVIS), which facilitates regulatory follow-up on violations and tracking of residue violators by both FSIS and FDA.

Components of the NRP for domestically produced products include:

- Monitoring Plan– the random sampling of specified animal populations at time of slaughter to provide more information about the occurrence of residue violations on an annual, national basis.

- Special Projects – information gathering studies that do not meet the criteria for inclusion in the monitoring plan, e.g. when sampling will not be conducted over a full 12-month period, or when there is a lack of precise slaughter volume data on the production classes to be sampled. This designation is also used when it is not possible to define a "violation rate" for a compound because the violative level has not been defined. For example, when trace metals, such as cadmium or lead, are detected in edible tissues, a Special Project may be initiated to develop information on the frequency and concentration at which these residues occur.

- Surveillance Sampling – targeted sampling designed to distinguish components of livestock, poultry, and egg products in which residue problems exist, measure the extent of problems, and evaluate the impact of actions taken to reduce the occurrence of residues. Surveillance Sampling is considered a subset of Special Projects except that, unlike Special Projects, Surveillance Sampling sometimes employs on-site rapid screening tests.

- Enforcement Testing – the analysis of specimens collected from individual animals or lots that appear suspicious to FSIS in-plant inspectors, based on herd history or antemortem or postmortem inspection. Enforcement Testing is also used to follow up on producers that have marketed animals with violative concentrations of residues, to determine if the non-compliance has been corrected or to verify industry's HACCP system.

It is important to emphasize the differences between the types of samples collected under the Monitoring Plan and Special Projects, as compared with those collected under Enforcement Testing. Since the former are designed to collect information upon the rate of residue violations in the U.S. food supply, these plans sample only those carcasses that have been inspected and passed. In other words, Monitoring Plan and Special Project samples are collected only from animals that appear normal and healthy at time of slaughter, and are thus permitted entry to the food supply. By contrast, Enforcement Testing specifically targets animals that do not appear to be normal or healthy, or that show postmortem signs, and thus includes samples from animals that are condemned based on antemortem or postmortem inspection.

In addition, because carcasses sampled under Enforcement Testing are by definition "suspect," and because a principal goal of Enforcement Testing is to prevent adulterated meat from entering the food supply, all carcasses sampled under Enforcement Testing are held pending the results of official laboratory testing (unless on-site screening tests, described below, show them to be negative, or unless they have already been condemned by the inspector for other reasons). Carcasses found to contain violative concentrations of residues are considered adulterated and condemned. By contrast, carcasses sampled under the Monitoring Plan and Special Projects are not held pending the results of testing. This is because the primary purpose of these sampling plans is information gathering (and identification of emerging residue problems), rather than direct removal of violative product from the food supply. Additionally, carcasses tested under the Monitoring Plan and Special Projects are unlikely to be violative; the median violation rate across all combinations of compound classes and production classes for carcasses sampled in these plans is below 0.3%.

Finally, because the Monitoring Plan and Special Projects are designed to generate statistical data on nationwide residue violation rates, all samples collected under these plans must be sent directly to the FSIS laboratory for testing, without first being screened on-site by inspectors (if only screen-positive samples were sent to the laboratory, this would bias the results). By contrast, Enforcement Testing makes extensive use of rapid on-site screening tests. Because FSIS in-plant inspectors are required to subject all carcasses for which there is a suspicion of a residue violation to Enforcement Testing, a very large number of such tests are performed, typically between 100,000 and 200,000 annually. However, it is not practical for FSIS to carry out expensive and time-consuming laboratory tests on this many Enforcement samples each year. Therefore, to perform such a large number of tests efficiently, carcasses are first pre-screened on-site by FSIS inspectors using rapid screening tests, where such tests are available. In this way, only those samples that test positive by a screening test (again, where such tests are available) are sent to an official laboratory for follow-up testing. If an FSIS inspector suspects that a carcass may contain a violative level of a residue not detected by an official FSIS screening method (see below), a sample taken from that carcass is sent directly to an official laboratory for testing.

As explained above, the use of on-site rapid screening tests also facilitates rapid decisions on carcass disposition. A carcass that registers a positive result on the screening test is held pending the outcome of laboratory testing, while one that registers a negative result is permitted to enter the food supply (unless the FSIS inspector has condemned it for some other reason).

FSIS currently employs the following on-site rapid screening tests:

1. SOS (Sulfa-On-Site) – tests swine urine for sulfonamide residues.
2. CAST (Calf Antibiotic & Sulfonamide Test) – swab test on kidney or liver tissue of bob veal calves (less than 3 weeks of age and under 150 lbs.).
3. STOP (Swab Test on Premises) – tests for antibiotic residues in kidney tissue in all production classes of cows, chicken, hogs, turkeys and sheep.
4. FAST (Fast Antimicrobial Screen Test) – swab test on kidney or liver tissue of cows and bob veal for antibiotic and sulfonamide residues.

Contamination Response System

The Contamination Response System (CRS) is not a testing plan, but is rather an emergency response management system for FSIS, FDA, and EPA. There are certain pesticides and environmental contaminants whose detection may suggest the occurrence of a potential risk to consumers. To ensure against this, detection of these residues immediately initiates a rapid follow-up investigation to characterize and address the residue problem. Actions taken may include investigation of any entity from the producer to the retailer and, if needed, withdrawal of the product from the market. This system is also triggered following the detection of banned veterinary drugs.

IMPORT RESIDUE SAMPLING PROGRAM

The Federal Meat Inspection Act (FMIA), Poultry Products Inspection Act (PPIA), and Egg Products Inspection Act (EPIA) require foreign countries that export meat, poultry, or egg product to the U.S. to establish and maintain inspection systems that are equivalent to those of the United States. Countries must undergo a rigorous review process before they can become eligible to export meat, poultry and egg products to the U.S. Once a country is determined to be eligible, the foreign inspection system is responsible for certifying individual establishments to FSIS. FSIS periodically reviews the inspection program of the country to ensure it remains equivalent to the U.S. system. Reinspection of product at the U.S. port-of-entry, is an additional check on the effectiveness of the foreign country's inspection system.

The principle underlying FSIS import activities is a "*systems approach*," which focuses on whether the foreign country's overall inspection system is equivalent to the U.S. system. FSIS audits foreign systems to verify that the exporting country's sanitary measures achieve the U.S. inspection system's appropriate level of protection.

Residue control is a major feature of an inspection system that must be judged equivalent to the U.S. system before a country becomes eligible to export to the U.S. Foreign countries exporting to the U.S. are required to have residue control standards that lead to equivalent protection from food hazards as those of the U.S. These may include the following:

- Random sampling of animals at slaughter.
- Use of approved testing methods.
- Testing appropriate target tissues, even though such tissue may not be exported to the U.S.
- Testing for compounds identified as potential contaminants of meat exported to the U.S.
- Random sampling of eggs presented for processing

After a foreign country is determined to have an equivalent system of inspection and becomes eligible to export product to the U.S., FSIS relies on the country's national inspection authorities to certify that establishments meet all applicable standards and are authorized to export to the U.S. FSIS audits the foreign inspection system, depending on a country's performance history, including previous plant reviews and product reinspection at the port of entry. If a country does not continue to operate an inspection system equivalent to the U.S. system, including the 1996 *Final Rule on Pathogen Reduction; Hazard Analysis and Critical Control Point (HACCP) Systems*, it is removed from the official list of countries eligible to export to the U.S. This list is published in the Federal Register.

As a further check on the effectiveness of the foreign inspection system, FSIS randomly samples meat, poultry, and egg products for reinspection at the U.S. port of entry. Sampling at the port of entry is based on the Import Residue Plan designed by FSIS.

Reinspection of meat and poultry is directed by the Automated Import Information System (AIIS), which stores reinspection results from all port-of-entry samples for each country and for each plant.

Reinspection of products is performance-based, which means that better performing foreign establishments are subject to less frequent reinspection by FSIS inspectors at official import establishments. All shipments are reinspected for transportation damage, labeling, proper certification, general condition, and accurate count. The AIIS assigns a variety of types of sample inspections , which may include analysis for chemical residues. Residue analyses are not limited to those compounds included in the domestic residue program. FSIS can initiate a special sampling plan when there is a need to monitor a country for residues of a specific compound, based on detection of violative residues at port of entry, or other information concerning risk to human health. Decisions about product acceptability are based on U.S. tolerances or action levels.

For egg products, the first ten shipments from individual foreign establishments are subjected to 100 percent reinspection, to establish a history of compliance for each product category. This rate is reduced to a random selection of one reinspection out of eight shipments, which continues as long as the product is in compliance.

Shipments that are sampled during routine monitoring are eligible to be stamped with the U.S. mark of inspection and allowed to enter commerce prior to receipt of the results of the analysis. If the importer chooses to voluntarily hold the shipment until the results are received, the shipment is stamped "U.S. Refused Entry" when violative results are reported, and must be exported from the United States, destroyed, or converted to animal food if an appropriate approval is received from FDA. However, if violative results are reported, imported product bearing the U.S. mark of inspection will not be eligible for export from the U.S.

SECTION 3. PLANNING THE 2000 FSIS NATIONAL RESIDUE PROGRAM: INTRODUCTION

The Food Safety and Inspection Service (FSIS) has focused special attention on the planning of the Monitoring Plan and Special Projects for domestic products, and upon the Import Residue Plan for imported products, since these are the Agency's principal source of information on the occurrence of residues in meat, poultry, and egg products. The remainder of this document will explain how FSIS designed the 2000 FSIS National Residue Program (NRP) Domestic Monitoring Plan and Special Projects, and Import Residue Plan, and will provide a complete listing of the residues and production classes that are sampled under these programs.

The first step in the design of these sampling plans is to generate a comprehensive list of residues of concern in meat, poultry and egg products. To accomplish this, the Emerging Issues Branch (EIB), Chemistry and Toxicology Division[1], Office of Public Health and Science, FSIS, coordinates annual meetings of the Surveillance Advisory Team (SAT)[2], comprised of members from the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the Centers for Disease Control (CDC), and the United States Department of Agriculture (USDA). This interagency committee identifies the priority public health compounds of concern, and provides EIB with detailed information about each compound. EIB then combines this information with FSIS data on compound violation rates to develop the domestic Monitoring Plan and Special Projects and the Import Residue Plan. These sampling plans guide the allocation of FSIS laboratory and inspection resources.

Factors taken into consideration in developing the domestic Monitoring Plan and Special Projects are:

A. the relative public health concern of residues and their potential presence in meat, poultry, and egg products;
B. the production or product classes in which residues are of most concern;
C. the availability of analytical methods, which determines which compounds or compound classes can be analyzed; and
D. the analytical capacity of the FSIS laboratories, which determines how many analyses can be performed for each compound or compound class.

Thus the final form of the scheduled sampling plans are determined not only by the estimated relative public health risk represented by each combination of residue and production class, but also the availability of methods and resources to sample for these residues. FSIS attaches a high priority to obtaining new or improved methods for highly ranked residues.

The selection process used to design the Import Residue Plan is similar to that of the domestic plans, with two important exceptions.

First, since many countries ship processed products only, it is often not possible to test raw product at the U.S. Port of Entry. Further, even when raw product is shipped, it often consists of muscle tissue only. By contrast, domestic residue testing often is targeted towards organ tissues (typically kidney and liver). This is because many residues concentrate in organs, which makes them easier to detect. Further, because

1 On July16, 2000 Office of Public Health and Science, FSIS underwent a reorganization in which responsibility for the design of the residue program was shifted to the Residue Branch, Food Animal Sciences Division.
[2]A detailed list of SAT participants is provided at the end of this section.

of this concentration effect, FDA often bases its tolerances for veterinary drugs upon the levels found in kidney or liver.

Second, while countries are required to identify the animal species used in each product, they are not required to identify the production class. Testing on imported meat and poultry, while subdivided by animal species (e.g., chicken vs. pig), therefore cannot be further subdivided within a species (e.g., steer vs. heifer vs. dairy cow. vs. formula-fed veal). Egg products, however, can be distinguished as a separate category.

Finally, because different countries have different approved drugs and different drug use practices, the compounds analyzed in the Import Residue Plan are not necessarily the same those in the Domestic Monitoring Plan and Special Projects.

SURVEILLANCE ADVISORY TEAM (SAT)

PURPOSE

The SAT participants identify:

- The "universe" of compounds,
- Specific residues of public health concern,
- Analytical residue method development needs
- Emerging issues for chemical hazards

CHAIR

- Director, Chemistry and Toxicology Division, Office of Public Health and Science (OPHS), FSIS, USDA

PARTICIPANTS

- Health Effects Division, Office of Pesticides, Prevention, and Toxic Substances, EPA

- Center for Food Safety and Applied Nutrition, FDA, Department of Health and Human Services (HHS)
- Center for Veterinary Medicine, FDA, HHS
- Centers for Disease Control and Prevention, HHS

- Animal and Plant Health Inspection Service, USDA
- Science and Technology, Agricultural Marketing Service, USDA
- Agricultural Research Service, USDA

- Chemistry and Toxicology Division, OPHS, FSIS, USDA
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- Domestic Policy Development and Evaluation Division, OPPDE, FSIS, USDA
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SECTION 4. PLANNING THE 2000 FSIS DOMESTIC MONITORING PLAN AND SPECIAL PROJECTS: VETERINARY DRUGS

PHASE I - GENERATING AND RANKING LIST OF CANDIDATE COMPOUNDS

LIST OF CANDIDATE COMPOUNDS

The candidate veterinary drugs of concern selected by members of the Surveillance Advisory Team (SAT) are presented below. Since the Food Safety and Inspection Service (FSIS) wishes to prioritize which *analyses* should be conducted, compounds that are, or are likely to be, detected by the same analytical methodology have been grouped together:

--*Antibiotics:*[1]

- Those antibiotics quantitated by the FSIS Bioassay multiresidue method (MRM) and associated follow-up methodologies[2] [tetracycline, oxytetracycline, chlortetracycline, beta-lactams (penicillins and cephalosporins; not differentiated within this category), gentamicin, spectinomycin/streptomycin (not differentiated), erythromycin, tilmicosin, tylosin, neomycin, flavomycin, bacitracin, hygromycin, novobiocin, lincomycin*, pirlimycin*, clindamycin*, spiramycin*, oleandomycin*] *identification by mass spectrometry; not quantitated
- Amikacin (aminoglycoside)
- Apramycin (aminoglycoside)
- Kanamycin (aminoglycoside)
- Spectinomycin (aminoglycoside)
- Streptomycin (aminoglycoside)
- Ampicillin (beta lactam)

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[1] It can be seen that many of the compounds detected by the FSIS Bioassay (see footnote 2) are also listed separately. This was done because, even though these compounds could be detected by the Bioassay, FSIS also wished to consider the merits of implementing individual chemical methodologies (generally High Performance Liquid Chromatography [HPLC]) for their analysis. Compounds were considered for chemical analysis either because: (1) they could be detected by the Bioassay, but not distinguished from other compounds (e.g.., spectinomycin and streptomycin); or (2) they could be detected by the Bioassay, but the chemical method offered a significantly and usefully lower Limit of Quantitation (LOQ) (e.g., tilmicosin). [In this document, LOQ refers to the lowest level at which the residue can be quantitated. A lower LOQ results in more detailed low-level data on residue occurrences. Data on low-level residue occurrences is needed when generating exposure estimates for risk assessment, and is useful in planning future residue programs.]

[2] FSIS quantitates most antibiotics using a 7-plate Bioassay that measures microbial inhibition. The pattern of inhibition (i.e., the combination of plates showing inhibition) is used to identify the antibiotic. There are some antibiotics, however, that share the same pattern of inhibition. In these cases, it is necessary to undertake follow-up testing (High Performance Liquid Chromatography [HPLC] or mass spectrometry) to identify the compound, where such follow-up methodologies are available. The compounds that share patterns of inhibition, and which are individually identified through follow-up testing, are:

tetracycline/oxytetracycline/chlortetracycline - compounds individually identified by follow-up with HPLC method for tetracyclines

tilmicosin/tylosin - differentiated by mass spectrometry

- Amoxicillin (beta lactam)
- Cloxacillin (beta lactam)
- Hetacillin (beta lactam)
- Ticarcillin (beta lactam)
- Ceftiofur (cefalosporin)
- Cefazolin (synthetic cefalosporin)
- Chloramphenicol
- Florfenicol (chloramphenicol derivative)
- Thiamphenicol (chloramphenicol derivative)
- Fluoroquinolones in FSIS MRM (ciprofloxacin, desethyleneciprofloxacin, danofloxacin, difloxacin, enrofloxacin, marbofloxacin, orbifloxacin, and sarafloxacin)
- Avoparcin (glycopeptide)
- Vancomycin (glycopeptide)
- Clindamycin (lincosamide)
- Lincomycin (lincosamide)
- Pirlimycin (lincosamide)
- Oleandomycin (macrolide)
- Spiramycin (macrolide)
- Tilmicosin (macrolide)
- Tylosin (macrolide)
- Colistin (polypeptide antibiotic)
- Virginiamycin

--*Other Veterinary Drugs:*

- Amprolium (coccidiostat)
- Arsenicals (detected as elemental arsenic)
- Avermectins in FSIS MRM (doramectin, ivermectin, and moxidectin) (antiparasitics)
- Eprinomectin (avermectin)
- Benzimidazoles (anthelmintic)
- Berenil (antiprotozoal)
- Beta agonists, unapproved (incl. clenbuterol, cimaterol, fenoterol, mabuterol, salbutamol, brombuterol, and terbutaline) (growth promotants)
- Ractopamine (beta agonist)
- Carbadox (antimicrobial)
- Clorsulon (anthelmintic)
- Dexamethasone (glucocorticoid)
- Methyl prednisone (glucocorticoid)
- Prednisone (glucocorticoid)
- Halofuginone (antiprotozoal, coccidiostat)
- Hormones, naturally-occurring (17-β estradiol, progesterone, testosterone)
- DES (hormone, synthetic) (estrogenic)
- MGA (hormone, synthetic) (estrus regulator)
- Trenbolone (hormone, synthetic) (anabolic)
- Zeranol (hormone, synthetic) (anabolic)
- Lasalocid (coccidiostat)
- Levamisole (anthelmintic)
- Morantel and pyrantel (anthelmintic)
- Nicarbazin (coccidiostat)

- Nitrofurans (incl. furazolidone, nitrofurazone) (antimicrobial)
- Nitromidazoles in FSIS MRM (dimetridazole, ipronidazole) (antiprotozoals)
- Ronidazole (nitroimidazole) (antimicrobial)
- Etodolac (non-steroidal anti-inflammatory drug [NSAID])
- Flunixin (NSAID)
- Phenylbutazone (NSAID)
- Dipyrone (NSAID)
- Sulfonamides in FSIS MRM (incl. sulfapyridine, sulfadiazine, sulfathiazole, sulfamerazine, sulfamethazine, sulfachloropyridazine, sulfadoxine, sulfamethoxypyridazine, sulfaquinoxaline, sulfadimethoxine, sulfisoxazole, sulfacetamide, sulfamethoxazole, sulfamethizole, sulfanilamide, sulfaguanidine, sulfabromomethazine, sulfasalazine, sulfaethoxypyridazine, sulfaphenazole, and sulfatroxazole) (antibacterials, some are coccidiostats or anitmicrobials)
- Sulfanitran (antibacterial, coccidiostat)
- Thyreostats (incl. thiouracil)
- Veterinary tranquilizers in FSIS MRM (azaperone and its metabolite azaperol, xylazine, haloperidol, acetopromazine, propionylpromazine, and chlorpromazine)

RANKING OF CANDIDATE COMPOUNDS

COMPOUND SCORING

Using a simple 4-point scale (4 = high; 3 = moderate; 2 = low; 1 = none), the SAT scored each of the above veterinary drugs or drug classes in each of the following categories:

- FSIS Historical Testing Information on Violations
- Regulatory Concern
- Lack of FSIS Testing Information on Violations
- Withdrawal Time
- Impact on New and Existing Human Disease
- Relative Number of Animals Treated
- Acute or Chronic Toxicity Concerns

Definitions of each of these categories, and the criteria used for scoring, appear at the end of this section is the "*Scoring Key for Veterinary Drugs, 2000 Domestic Residue Program*."

The results of the compound scoring process are presented in Table 4.1, *Scoring Table for Veterinary Drugs*.

COMPOUND RANKING

Background

As stated above, FSIS chose to employ techniques and principles from the field of risk assessment to obtain a ranking of the relative public health concern represented by each of the above candidate compounds or compound classes.

If FSIS were in possession of detailed historical data on the distribution of levels of each of the candidate compounds or compound classes in meat, poultry, and egg products, then that information could be

combined with consumption data to estimate exposure. By combining these exposure data with toxicity information, risk estimates for each compound or compound class could be generated:

Risk = Exposure x Toxicity (4.1)
= Consumption x Residue Levels x Toxicity
= Consumption x "Risk Per Unit of Consumption"

Given the limited resources available for this priority-setting effort, FSIS did not attempt to associate different degrees of risk with different degrees of exceedance of the tolerance or action level. FSIS instead determined that the best available method for the measurement of relative toxicity is associated with the tolerance or action level. *Specifically, the frequency of violation of the tolerance or action level was used as an indicator of the risk per unit of consumption of a product.*

The first criterion evaluated in Table 4.1, "FSIS Historical Testing Information on Violations," is based on the percent of tested carcasses found to have residues in excess of the tolerance or action level. Specifically, compounds were scored by two methods: (a) the maximum violation rate seen in any production class (averaged over 1989 - 1998); and (b) the maximum, for any class, of the violation rate (again, averaged over 1989 - 1998), but weighted by the size of the production class. The final score for each drug was assigned based on the highest of these two scores.[3] Therefore, it can be seen from Equation (4.1) that the violation rate scores assigned in Table 4.1 represent a rough overall estimate of *relative* risk per unit of consumption.[4] However, for the many candidate compounds or compound classes of concern that have never been included in the FSIS NRP, data on violation rates is not available. It was therefore necessary to generate an estimate of the overall violation rate for each these untested compounds and compound classes.

Estimating the Violation Rate

"Regulatory Concern," "Withdrawal Time," and "Relative Number of Animals Treated" were chosen as scoring categories because it was expected that each of these would be positively correlated with the violation rate. Therefore, they might serve as predictors of violations in those compounds or compound classes for which no reliable historical testing information was available. As indicated in the *Scoring Key for Veterinary Drugs*, the "Regulatory Concern" category was designed to predict the "likelihood of occurrence of violations, based on regulatory intelligence information about possible misuse." "Withdrawal Time" is expected to correlate with "FSIS Historical Testing Information on Violations" because a longer withdrawal time is less likely to be properly observed. When the withdrawal time is not observed prior to slaughter, the carcass may contain violative levels of residues, since the time necessary for sufficient metabolism and/or elimination of the drug would not have passed. "Relative Number of Animals Treated" is expected to correlate with "FSIS Historical Testing Information on Violations" simply because heavy compound use increases the likelihood of violations.

Recall that violation rate data are available for selected compounds and compound classes. Using the scores assigned to these compounds and compound classes, it was possible to evaluate how well the above criteria were correlated. In an effort to impute values for the missing data, a linear regression

[3] For a more detailed explanation, refer the *Scoring Key for Veterinary Drugs*.

[4] While some consideration was given to the size of the production class in scoring "FSIS Historical Testing Information on Violations," no systematic weighting was applied to the scores in this category based upon consumption. Hence the scores assigned to this category represent relative risk *per unit of consumption*, rather than relative risk. To obtain values for relative risk, the scores in this category must be multiplied by the consumption data for each individual production class. This calculation is implemented subsequently, in Phase IV, Equation (4.6).

model was applied. The dependent variable in this model was the category “FSIS Historical Testing Information on Violations," while the only significant independent variable was the product of the “Regulatory Concern” and “Relative Number of Animals Treated.”

Table 4.1 lists 10 compounds or compound classes for which current, reliable data were available to score the category "FSIS Historical Testing Information on Violations," and 52 compounds or compound classes for which they were not. A least squares linear regression model, using the independent variable from the 10 scored compounds or compound classes, was used to predict scores in the category "FSIS Historical Testing Information on Violations" for remaining 52. The following equation was derived:

$$Vp = 0.20(R*N) + 0.73 \qquad (4.2)$$

where Vp= Predicted score for "FSIS Historical Testing Information on Violations"
R = score for "Regulatory Concern"
N = score for "Relative Number of Animals Treated"
R*N = product of R and N.

This model is the result of using a stepwise regression with several possible independent variables. The independent variables available for the stepwise regression were:

1. A score for Regulatory Concern (R)
2. A score for Withdrawal Time (W)
3. A score for Relative Number of Animals Treated (N)
4. R^2
5. W^2
6. N^2
7. The product of R and W
8. The product of R and N
9. The product of W and N.

No terms involving the withdrawal time were included in the final equation since none were found to be significant factors in the regression model.

The model represented by Equation (4.2) was significant, with an overall model p-value of 0.0001, and an R^2 value of 0.93, accounting for 93 percent of the variability in the data.

Where current, reliable historical testing data were available for a compound or compound class, FSIS used the score assigned in Table 4.1. Where current, reliable historical data were not available, FSIS used the predicted score generated by Equation (4.2).

Rating the Veterinary Drugs According to Relative Public Health Concern

As indicated above, the score for "FSIS Historical Testing Information on Violations," combines information on residue levels and toxicity, and thus represents a rough overall estimate of the relative risk per unit of consumption for each drug or drug class. Although this score, once multiplied by relative consumption data for each production class, would conform most closely to a purely risk-based ranking, FSIS believes that additional attributes should also be considered in the ranking. Thus, the ranking according to relative public health concern incorporates, as modifiers, the remaining scoring categories presented in Table 4.1:

Relative Public Health Concern = *Predicted* or *Actual* score for (4.3)
"FSIS Historical Testing Information on Violations" (Estimate of Relative Hazard)
x *modifier for* "Acute or Chronic Toxicity Concerns"
x *modifier for* "Impact on New and Existing Human Disease"
x *modifier for* "Lack of FSIS Testing Information on Violations"

The finding of a violation means that a compound was found at a level where the likelihood of a toxic effect exceeds the Food and Drug Administration's (FDA's) standards (typically 1 in 1,000,000). However, this does not address the *severity* of the effect associated with the toxic endpoint. To capture this concern FSIS has added a modifier for "Acute or Chronic Toxicity Concerns." Thus compounds whose toxic effect can be severe (such as chloramphenicol, exposure to which has been associated with aplastic anemia) are given a maximum score in this category.

A modifier has also been added for "Impact on New and Existing Human Disease." This represents the extent to which the use or misuse of this compound will contribute to new and existing human disease. For example, there is a possibility that the creation of antibiotic-resistant human pathogens may result from the use of antibiotics in animals. This represents a potential public health concern that is not captured by the violation rate.

Finally, the modifier for "Lack of FSIS Testing Information on Violations" has been incorporated because sparse or dated data, or a complete lack of data altogether, increase the relative public health need to obtain information on residue violations for a compound or compound class. In other words, consider two hypothetical compounds, A and B. Suppose FSIS has sampled extensively for compound A, and that A's violation rate earns it a score of "3" in that category. Further suppose that FSIS has never sampled for compound B but that, based on its scores in the “Regulatory Concern,” “Withdrawal Time,” and “Number of animals treated” categories, B has a *predicted* violation rate score of "3." Also assume that A and B have been assigned identical scores in all other categories. FSIS believes there is greater relative need to sample for B than for A, because FSIS has extensive information on A, but none on B.

The use of modifiers presents an element of arbitrariness, as there are no fundamentally "correct" assumptions for the appropriate weight that should be given to each. The approach of FSIS was to consider several alternative sets of weighting factors, and assess the robustness of the final ranking. In Table 4.2, *Veterinary Drug Residues Rated with Various Weighting Formulas*, the drugs are rated for relative public health concern by combining the scoring categories presented in Equation (4.3), above, using four different weighting formulas. In all of the formulas, the score for "FSIS Historical Testing Information on Violations" has been multiplied by a weighted average of the modifiers for "Acute or Chronic Toxicity Concerns" and "Impact on New and Existing Human Disease." These last two categories were combined because they both represent the negative potential public health effects associated with the use of a compound or compound class. The product of these three categories was then multiplied by a modifier for "Lack of FSIS Testing Information on Violations." The formulas differ in the relative weights given to "Acute or Chronic Toxicity Concerns" versus "Impact on New and Existing

Human Disease," and in the magnitude of the modifier for "Lack of FSIS Testing Information on Violations." FSIS chose to use the second of these formulas (bolded and italicized in Table 4.3), based on a consensus about the relative importance of each modifier, and of how much each modifier should be allowed to alter the underlying risk-based score, "V," in Equation (4.4), below. FSIS tested a variety of mathematical formulas to help guide this judgmental process. The value of the selected mathematical formula is that it formalizes the basis of FSIS's judgement. This enables others to observe and understand the adjustments that were made, and it ensures consistency in how these adjustments were applied across a wide range of compounds. Equation (4.4) summarizes the way final adjustments were made.

Relative public health concern rating, veterinary drugs (4.4)
$= V*((D+3*T)/4) *\{1+[(L-1)*0.05]\}$

Where: V = *Predicted* or *Actual* score for "FSIS Historical Testing Information on Violations "
D = score for "Impact on New and Existing Human Disease"
T = score for "Acute or Chronic Toxicity Concerns"
L = score for "Lack of FSIS Testing Information on Violations

In this formula, the category of "Acute or Chronic Toxicity Concerns" was given three times the weight of "Impact on New and Existing Human Disease," because the former represents known direct health effects, while the latter represents possible indirect health effects. In addition, in this formula, the final ratings of compounds or compound classes receiving scores of 4, 3, 2, and 1 in "Lack of FSIS Testing Information on Violations" would be increased by 15%, 10%, 5%, and 0% respectively. In other words, the rating of a compound or compound class that had never been tested by FSIS (in the production classes and matrices of concern) would be increased by 15%, while the rating of one that had been recently tested by FSIS (again, in the production classes and matrices of concern) would remain unchanged.

All of the formulas used here for the veterinary drugs, and below for the pesticides, have been normalized. For a given drug or drug class, this permits comparison of the scores generated by the four different weighting formulas presented in Table 4.2. Because the formulas for the pesticides use different terms (i.e., scoring categories) from those for the veterinary drugs, their scores are not precisely comparable. However, as a result of the normalization the scores for the pesticides and veterinary drugs are comparable in magnitude, thus enabling at least a rough comparison to be made across these two very different categories of compounds.

In Table 4.3, *Veterinary Drug Residues Rated with Various Weighting Formulas, Sorted by Rating*, the drugs are ranked by their rating scores, as generated using each of the four different weighting formulas (again, the results obtained with the selected formula are bolded and italicized). Inspection of this chart reveals the extent to which changes in the weighting formula result in changes in ranking. In this case, the results from the four formulas are similar. The scores presented in Table 4.3 enable FSIS to bring consistency, grounded in formal risk-based considerations, to its efforts to differentiate among a very diverse range of drugs and drug classes in a situation that is marked by minimal data on relative exposures**.** These rankings do not account for differences in exposure due to differences in overall consumption.[5] Data on relative consumption are applied subsequently, in Phase IV, when relative exposure values for each compound/production class (C/PC) pair are estimated.

A key to the abbreviations used in Table 4.3 is presented in Table 4.4, *Key to Abbreviations Used for Veterinary Drugs*.

[5] See footnote 4.

PHASE II - SELECTING DRUGS FOR INCLUSION IN THE 2000 NRP

Following the completion of the ranking of the veterinary drugs, FSIS (1) used these rankings to select those compounds and compound classes that should be included in the 2000 NRP, based purely on their relative public health concern and (2) determined which of these compounds and compound classes actually could be included in the 2000 NRP, based on the availability of laboratory resources.

The consensus of FSIS and FDA was that those compounds and compound classes ranked 34th or higher (out of a total of 62) represented a potential public health concern sufficient to justify their inclusion in the 2000 NRP. In addition, FDA expressed an interest in having FSIS perform limited testing on one compound that did not fall within this group of 34 (veterinary tranquilizers, ranked 56th, in market hogs). This compound was thus also identified as a candidate for inclusion.

Once the high-priority compounds and compound classes had been identified, it was necessary for FSIS to apply considerations beyond those related to public health to determine the compounds for which the Agency would sample. The principal consideration not related to public health was the availability of laboratory resources, especially the availability of appropriate analytical methods within the FSIS laboratories. Based on these considerations, FSIS plans to include the following veterinary drugs in the 2000 Monitoring Plan and Special Projects:

--*Antibiotics:*

- Those antibiotics quantitated by the FSIS Bioassay multiresidue method (MRM) and associated follow-up methodologies[6] [tetracycline, oxytetracycline, chlortetracycline, beta-lactams (penicillins and cephalosporins; not differentiated within this category), gentamicin, spectinomycin/streptomycin (not differentiated), erythromycin, tilmicosin, tylosin, neomycin, flavomycin, bacitracin, hygromycin, novobiocin, lincomycin*, pirlimycin*, clindamycin*, spiramycin*, oleandomycin*] *identification by mass spectrometry; not quantitated
- Spectinomycin (aminoglycoside)
- Chloramphenicol
- Florfenicol (chloramphenicol derivative)
- Fluoroquinolones in FSIS MRM (ciprofloxacin, desethyleneciprofloxacin, danofloxacin, difloxacin, enrofloxacin, marbofloxacin, orbifloxacin, and sarafloxacin)
- Tilmicosin (macrolide)

--*Other Veterinary Drugs:*

- Arsenicals (detected as elemental arsenic)
- Avermectins in FSIS multiresidue method (MRM) (incl. doramectin, ivermectin, moxidectin) (antiparasitics)
- Beta agonists, unapproved (incl. clenbuterol, cimaterol) (growth promotants)
- Ractopamine (beta agonist)
- Carbadox (antimicrobial)
- Dexamethasone (glucocorticoid)
- DES (hormone, synthetic) (estrogenic)
- MGA (hormone, synthetic) (estrus regulator)
- Zeranol (hormone, synthetic) (anabolic)

[6] See footnote 2.

- Nitromidazoles in FSIS MRM (dimetridazole, ipronidazole) (antiprotozoals)
- Flunixin (NSAID)
- Phenylbutazone (NSAID)
- Sulfonamides in FSIS MRM (incl. sulfapyridine, sulfadiazine, sulfathiazole, sulfamerazine, sulfamethazine, sulfachloropyridazine, sulfadoxine, sulfamethoxypyridazine, sulfaquinoxaline, sulfadimethoxine, sulfisoxazole, sulfacetamide, sulfamethoxazole, sulfamethizole, sulfanilamide, sulfaguanidine, sulfabromomethazine, sulfasalazine, sulfaethoxypyridazine, sulfaphenazole, and sulfatroxazole) (antibacterials, some are coccidiostats or anitmicrobials)
- Veterinary tranquilizers in FSIS MRM (azaperone and its metabolite azaperol, xylazine, haloperidol, acetopromazine, propionylpromazine, and chlorpromazine)

Thus, in the 2000 NRP, FSIS plans to employ 19 methodologies that analyze for veterinary drugs (DES and zeranol are detected by a single method). Ten are single-compound methodologies, and nine are MRM's (phenylbutazone is detected by the FSIS multi-residue method for chlorinated hydrocarbon and chlorinated organophosphate compounds). Together, these methodologies encompass approximately over 70 different compounds (groups of individual drugs that are not differentiated have been counted as only a single compound). Note that sampling plans for spectinomycin, DES, and zeranol are tentative, as FSIS is currently attempting to obtain suitable methodologies for these compounds.

Table 4.5, *Rank and Status for Veterinary Drugs*, lists all of the original candidate veterinary drugs in rank order. This table specifies whether each compound or compound class will be sampled under the 2000 Monitoring Plan or Special Projects, or will not be included in the 2000 NRP. For each highly ranked compound or compound class that was not included in the 2000 NRP, a brief explanation of the reason for its exclusion is provided. This table will be used to identify future method development needs for veterinary drugs for the FSIS NRP.

PHASE III - IDENTIFYING THE COMPOUND/PRODUCTION CLASS (C/PC) PAIRS

The SAT participants (principally those from FDA) identified the production classes of concern for each of the drugs and drug classes to be included in the 2000 NRP. These determinations were based upon professional judgment of the likelihood of finding violations within each production class (information examined included use approvals, extent of use, evidence of misuse and, if available, past violation history), combined with the proportion of total domestic meat consumption each production class represented. The results are presented in Table 4.6, *Production Classes Considered for Each Veterinary Drug/Drug Class*. C/PC pairs included in the 2000 NRP are designated by a "●." Those C/PC pairs that are of regulatory concern, but that could not be included in the 2000 NRP because of laboratory resource constraints, are marked with a "○." Since all production classes will be sampled by the chlorinated hydrocarbon/chlorinated organophosphate (CHC/COP) method (see Section 6), and since this method also detects phenylbutazone, the latter will, by default, likewise be sampled in all production classes. However, phenylbutazone is not of regulatory concern in all production classes. Those production classes in which phenylbutazone will be sampled, but where it is *not* of regulatory concern, are designated by a "**O**" (i.e., these production classes will be sampled for phenylbutazone, but only because it is automatically detected through the CHC/COP methodology).

PHASE IV - ALLOCATION OF SAMPLING RESOURCES

"FULL-RESOURCE" SAMPLING

Table 4.6 lists the estimated domestic consumption of each production class as a percentage of the total consumption of all the production classes in the table. To obtain these estimates, production data were employed as a surrogate for consumption. Specifically, as shown in Equation (4.5), the estimated relative percent of domestic consumption represented by each production class was obtained by dividing the estimated total annual U.S. domestic production (pounds dressed weight) for that class by the total poundage for all production classes listed in Table 6:

$$(\text{Est. rel. \% domestic consumption})_{PC} = \frac{(\text{Annual production, pounds dressed wt.})_{PC}}{\text{Total annual production, all production classes}} \qquad (4.5)$$

FSIS has sufficient analytical capability to consider sampling all production classes of concern for the following compound classes: antibiotics (by Bioassay); arsenicals; avermectins; sulfonamides; and phenylbutazone (via the CHC/COP methodology). To establish a relative sampling priority for each C/PC pair, the ranking score for each compound class (as calculated in Table 4.2) was multiplied by the estimated relative percent of domestic consumption for each production class (as calculated using Equation (4.5), and as presented in Table 4.6). This is shown in Equation (4.6):

$$(\text{Relative sampling priority})_{C/PC} = (\text{Ranking score})_{C} \times (\text{Rel. \% domestic consumption})_{PC} \qquad (4.6)$$

Equation (4.6) is analogous to the equation used to estimate risk (Equation (4.1)), in which risk per unit of consumption is multiplied by consumption. While the results of Equation (4.6) do not constitute an estimate of risk, they provide a numerical representation of the relative public health concern represented by each C/PC pair, and thus can be used to prioritize FSIS analytical sampling resources according to the latter. Note that the risk ranking provided by Equation (4.6) is based upon average consumption across the entire U.S. population, rather than upon maximally exposed individuals.

In Table 4.7, *Veterinary Drug Compound/Production Class Pairs, Sorted by Sampling Priority Score, "Full Resource" Sampling*, the calculation shown in Equation (4.6) has been carried out for the antibiotics, arsenicals, avermectins, and sulfonamides, for each production class in which the specified drug might appear (as indicated in Table 4.6). The C/PC pairs were sorted by their sampling priority scores, and roughly divided into quartiles. Initially, C/PC pairs in the first though fourth quartile were assigned sampling numbers of 460, 300, 230, and 90, respectively. These priority scores were combined with historical violation rate information for each individual C/PC pair, and information on laboratory sampling capacity to select, for each pairing, from among four different sampling options: very high regulatory concern (460 analyses/year); high regulatory concern (300 analyses/year); moderate regulatory concern (230 samples/year); low regulatory concern (90 samples/year).[7] For antibiotics, because of available laboratory capacity, it was possible to increase sampling of those production classes having the highest regulatory concern to 690 analyses/year. These sampling levels provide varying probabilities of detecting residue violations. Thus the larger sample sizes, which provide the greater chance of detecting violations, are directed towards those C/PC pairs that have been identified as representing higher levels of relative public health concern. Statistically, if the true violation rate is 1%, the probabilities of detecting at least one violation with sampling levels of 690, 460, 300, 230, and 90 are 99.9%, 99%, 95%, 90%, and 60% (85% at a 2% violation rate), respectively.

[7]For reasons explained below, arsenicals in young chickens were scheduled to be sampled at a still higher level of 1200/analyses per year.

ADJUSTING RELATIVE SAMPLING NUMBERS

Adjusting for historical data on violation rates of individual C/PC pairs

As described above, FSIS used "FSIS Historical Testing Information on Violations" as a critical factor in ranking the various drugs and drug classes according to their relative public health concern. Because this information is available for each production class individually, it can also be used to further refine the relative priority of sampling each C/PC pair. Table 4.8, *Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling*, lists the number of analyses assigned to each C/PC pair in Table 4.7. It also lists, for the period 1/1/89 - 12/31/98, the total number of samples analyzed by FSIS under its Monitoring Plan and Special Projects (i.e., random sampling only) for each C/PC pair, and the percent of samples found to be violative (i.e., present at a level in excess of the action level or regulatory tolerance; or, for those compounds that are prohibited, present at any detectable level). Using this data, the following rules were applied to adjust the sampling numbers:

1. C/PC pair never tested: +1 level (i.e., increase by one sampling level, e.g., from 230 samples to 300 samples)
2. At least 300 samples tested, violation rate $\geq$ 0.50%, but < 0.70%: +1 level
3. At least 300 samples tested, violation rate $\geq$ 0.70%: +2 levels
4. At least 300 samples tested, violation rate = 0.00%: -1 level
5. The maximum number of samples to be scheduled for testing is 460.

The two exceptions to this are:

1. Geese are never to be scheduled for more than 90 samples. Because very few geese are produced, and because virtually all geese are slaughtered by a very limited number of plants, it is impractical to collect a larger number of samples.
2. Sampling for antibiotics was permitted to rise to a fifth sampling level, of 690 analyses/year.

All of the above adjustments were applied, and the sampling numbers obtained following these adjustments are listed in Table 4.8 under the heading "INITIAL ADJ. #" (initial adjusted number of samples).

Adjusting for laboratory capacity

Following this, it was necessary to make a final set of adjustments to match the total sampling numbers for each compound class with the analytical capabilities of the FSIS laboratories. No adjustments were necessary for the avermectins or sulfonamides, since there was a close correspondence between the proposed number of samples listed in Table 4.8 and FSIS laboratory capacity.

For the antibiotics, FSIS laboratory capacity slightly exceeded the proposed number of samples. FSIS decided to use this excess capacity to improve the quality of information collected, by setting a 230-sample minimum for all production classes (except geese, as explained above). This additional laboratory capacity also explains why sampling for antibiotics was not restricted to a maximum of 460 samples per C/PC pair.

For the arsenicals, a judgement was made to increase the number of analyses in young chickens from 460 to 1200. The basis for this decision was that: (a) arsenical violations have averaged a relatively significant 0.41% between 1989 - 1998; (b) young chickens are the largest production class (constituting an estimated 41%, by weight, of total domestic consumption of meat, poultry and egg products), and

violations in young chickens thus represent a relatively larger public exposure than violations in smaller production classes; and (c) laboratory capacity for this increased sampling was available.

The sample numbers obtained following all needed adjustments for laboratory capacity are listed in the last column of Table 4.8, under the heading "FINAL ADJ. #" (final adjusted number of samples).

"LIMITED RESOURCE" SAMPLING

The 2000 NRP includes a number of compounds never before sampled by FSIS. In sampling these compounds, FSIS was most concerned with obtaining information on their occurrence in particular production classes where it was suspected they might be of concern. To enable FSIS to sample this entire range of compounds, it was necessary to limit the number of samples taken per compound. In apportioning this "limited resource" sampling among the production classes of concern, it was particularly important to ensure that a sufficient number of samples was taken from each production class analyzed. If too few samples were taken from a production class, and no violations were detected, it would be difficult to interpret such a result (the interpretation could not be informed by data from earlier sampling, because no such sampling exists). With a small number of samples, the lack of a detected violation might mean that the true violation rate was very low, or it might mean that the true violation rate was high but that too few samples were taken to detect a violation. Thus, as a general policy for all domestic sampling of new compounds, a minimum of 300 analyses was to be carried out in each production class sampled. This yields a 95% chance of detecting a violation, if the true violation rate were 1%.

For example, FSIS has the capacity to conduct 300 florfenicol analyses in 2000, and two production classes were identified as being of concern for this compound. Thus FSIS could carry out either 300 analyses in one of the production classes, or 150 analyses in each. However, since FSIS has not analyzed for florfenicol previously, and will analyze a minimum of 300 samples per production class for new compounds, the Agency can only analyze one production class for florfenicol. Thus FSIS chose to conduct domestic florfenicol sampling in the highest priority of the two production classes, which FDA designated as dairy cows.

Selection of production classes for the remainder of the limited resource compounds was made as follows:

Beta agonists are of concern in steers, formula-fed veal, and market hogs. The analytical capacity for beta agonists in 2000 is 900 samples. FSIS will work with FDA to conduct 300 analyses for beta agonists in each of these three production classes.

Carbadox is of concern in market hogs, roaster pigs, boars/stags, and sows. The analytical capacity for domestic sampling of carbadox in 2000 is 300 samples, and the top priority production class is roaster pigs. Thus FSIS will conduct 300 analyses for carbadox in roaster pigs.

DES is of concern in heifers, steers, and formula-fed veal, and zeranol is of concern in formula-fed veal and non-formula-fed veal. The top priority production class for both of these compounds is formula-fed veal. The number of analyses for DES and zeranol has not yet been determined, as sampling for these compounds is contingent upon improving the sensitivity of the current methodology to approximately 10 parts per trillion (ppt). FSIS will undertake sampling when this improved senstivity is achieved.

Dexamethasone is of concern in eight different production classes. The analytical capacity for domestic sampling of dexamethasone in 2000 is 300 analyses, and the top priority production class is dairy cows. Thus FSIS will conduct 300 analyses for dexamethasone in dairy cows.

Florfenicol is of concern in dairy cows and heavy calves. The analytical capacity florfenicol in 2000 is 300 analyses, and the top priority production class dairy cows. Thus, FSIS will conduct 300 analyses for florfenicol in dairy cows.

Flunixin is of concern in dairy cows, and the analytical capacity for domestic sampling of flunixin in 2000 is 300 analyses. FSIS will therefore conduct 300 analyses for flunixin in dairy cows.

Fluoroquinolones are of concern in seven different production classes. The analytical capacity for domestic sampling of fluoroquinolones in 2000 is 900 analyses, and the top three priority production classes are dairy cows, market hogs, and young chickens. FSIS will conduct 300 analyses for fluoroquinolones in each of these three production classes.

MGA is of concern in heifers, steers, formula-fed veal, and non-formula fed veal.. The analytical capacity for MGA in 2000 is 500 samples, and the top priority production classes are heifers and steers. FSIS will thus conduct 250 analyses for MGA in each of these two production classes.

Nitroimidazoles are of concern in formula-fed veal and market hogs. The analytical capacity for domestic sampling of nitroimidazoles in 2000 is 260 samples, and the top priority production class is formula-fed veal. Thus, FSIS will conduct 260 analyses for nitroimidazoles in formula-fed veal.

Ractopamine is of concern in market hogs and roaster pigs. The analytical capacity for domestic sampling of ractopamine in 2000 is 300 samples, and the top priority production class is market hogs. FSIS will conduct 300 analyses for ractopamine in market hogs.

Spectinomycin is of concern in dairy cows. Thus, FSIS plans to sample for spectinomycin in dairy cows. However, the number of analyses for spectinomycin has not yet been determined, as sampling is contingent upon successful optimization of the instrument needed to perform the analysis.

Tilmicosin is of concern in seven different production classes. The analytical capacity for tilmicosin in 2000 is 840 samples, and the top priority production classes are dairy cattle, beef cattle, and steers. FSIS will conduct 300 analyses for tilmicosin in each of dairy cattle and beef cattle, and 240 analyses in steers.

Veterinary tranquilizers are of concern in market hogs and dairy cows. The analytical capacity of veterinary tranquilizers in 2000 is 300 samples, and the top priority production class is market hogs. FSIS will therefore conduct 300 screening tests for veterinary tranquilizers in market hogs.

The above information is presented in tabular format at the end of Section 9 in Table 9.1, *Sampling Plan for All Veterinary Drug and Pesticide Compound/Production Class Pairs*, and in Table 9.3, *Summary, 2000 FSIS National Residue Program, Domestic Monitoring Plan and Special Projects and Import Residue Plan*.

NOTE ON SEASONALITY

Many of the residues sampled under the limited-resource category will be analyzed over a period of three to four months, rather than over an entire year. This was done because, to cover such a wide range of residues, it was necessary for FSIS to maximize laboratory efficiency. It is more efficient to dedicate instrumentation and analysts to a small number of compounds, finish those analyses, and then change to a

new set of analyses, rather than attempting to maintain analytical capacity for all of the above analytes simultaneously.

For those compounds where sampling was limited to a few months, and where usage was judged to be seasonal, sampling was scheduled to coincide with the period of greatest suspected usage.

SCORING KEY FOR VETERINARY DRUGS
2000 FSIS DOMESTIC RESIDUE PROGRAM

FSIS Historical Testing Information on Violations (1/1/89 - 12/31/98)

Violation rate scores were calculated by two different methods, A and B:

Method A: Maximum Violation Rate. Identify the production class exhibiting the highest average violation rate (the number of violations over the period from 1989 - 1998, divided by the total number of samples analyzed). Score as follows:

4 = > 1.0%
3 = 0.50% - 1.0 %
2 = 0.15% - 0.49%
1 = < 0.15%
NT = Not tested by FSIS
NA = Tested by FSIS, but violation information does not apply

Method B: Violation Rate Weighted by Size of Production Class. For each production class analyzed, multiply the average violation rate (defined above) by the relative consumption value for that class (weight annual U.S. production for that class, divided by total production for all classes for which FSIS has regulatory responsibility). Add together the values for all production classes. Score as follows:

4 = > 0.15%
3 = 0.076% - 0.15%
2 = 0.01% - 0.075%
1 = < 0.01%
NT = Not tested by FSIS
NA = Tested by FSIS, but violation information does not apply

Final score is determined by assigning, to each drug or drug class, the greater of the scores from Method A and Method B.

It can be seen that Method A identifies those drugs that are of regulatory concern because they exhibit high violation rates, independent of the relative consumption value of the production class in which the violations have occurred. Method B identifies those drugs that may not have the highest violation rates, but would nevertheless be of concern because they exhibit moderate violation rates in a relatively large proportion of the U.S. meat supply. By employing Methods A and B together, and assigning a final score based on the highest score received from each, both of the above concerns are captured.

Regulatory Concern

This consists of professional judgments made about the likelihood of occurrence of violations, based on regulatory intelligence information about possible misuse. Due to the public health significance of drug residue violations, surveillance data pertaining to a compound must meet only one of the requirements listed under each number below to receive that numerical ranking.

4 = Well-documented intelligence information gathered from a variety of reliable sources indicates possible widespread misuse of the compound, and/or this compound is banned, or is on the list of

compounds prohibited from use in food animals under AMDUCA, or is not approved for use in the U.S.

3 = Intelligence information gathered through a variety of sources indicates only occasional misuse of this compound. The dosage form/packaging of this compound has potential for misuse.

2 = Intelligence information rarely indicates misuse of this compound.

1 = Intelligence information has never indicated misuse of this compound.

Lack of FSIS Testing Information on Violations

This represents the extent to which FSIS analytical testing information on a residue is limited, absent or obsolete.

4 = FSIS has not included this compound in its sampling program within the past 10 years (1/1/89 - 12/31/98); or FSIS has included this compound within its program only between 6 and 10 years ago (1/1/89 - 12/31/93), but the sampling does not meet the criteria specified for a "3;" or FSIS has included this compound in its sampling program, but the information is not at all useful in predicting future violation rates, because of subsequent significant changes in the conditions of use of the compound (e.g., the reduction in withdrawal time for carbadox), or because regulatory intelligence information indicates that the situation has changed significantly since the last time the compound was sampled; or because the compound is of concern in several production classes of interest, but testing has been carried out in only one.

3 = FSIS has tested within the past 5 years (1/1/94 - 12/31/98), but in fewer than 75% of the production classes of interest; or the only testing was between 6 and 10 years ago, where FSIS has analyzed at least 75% of production classes of interest for at least 2 of these 5 years, with a total of at least 500 samples per production class during this 5-year period and, in the case of a multi-residue method, the method used covers all compounds of interest with the compound class; or, the compound would normally have qualified for a "1" or "2," but the method used was not sufficiently sensitive to permit accurate determination of the true violation rate.

2 = FSIS has included this compound in its sampling program within the past 5 years in at least 75%, but less than 100% of the production classes of interest; or 100% of the production classes of interest have been sampled, but the amount and duration of sampling has been insufficient to qualify for a "1."

1 = FSIS has included this compound in its sampling program within the past 5 years, and has analyzed each production class of interest for at least 2 of these 5 years, with a total of at least 500 samples per production class during this 5-year period, and in the case of a multi-residue method, the method used covers all compounds of interest with the compound class.

Withdrawal Time

Producers using approved animal drugs are required to follow approved "conditions of use." For each drug, in each production class in which it is approved, the conditions of use specify the dosing regimen and the withdrawal time. The withdrawal time is the number of days that must pass between completion of the dosing regimen and the time of slaughter. This allows sufficient time for the concentration of drug in the animal to decrease below the tolerance. For approved drugs, the following scores were used. For unapproved drugs, scores in this category were assigned based on estimates of their half-lives.

4 = Withdrawal time greater than 14 days

3 = Withdrawal time between 8 and 14 days

2 = Withdrawal time between 1 and 7 days

1 = Zero-day withdrawal time

Impact on New and Existing Human Disease

This represents the extent to which the use or misuse of this compound may contribute to new and existing human disease. Examples could include the possible creation of antibiotic-resistant human pathogens from the use of antibiotics in animals, or the potentiation of new zoonotic diseases (which might subsequently be altered and transferred to humans) following pesticide-induced immunosuppression.

4= Scientific information gathered from a variety of reliable sources indicate that possible widespread use of this compound might significantly modify drug resistance patterns of human pathogenic organisms.

3 = Limited scientific information is available to suggest or document public health risk but compound has the potential to affect microflora.

2 = No scientific information available to suggest or document public health risk.

1 = Current scientific information available suggests no public health risk.

Relative Number of Animals Treated

These scores are based on surveys of treatment practices in animal populations that are representative of national feedlot, dairy, and swine production.

4 = Products containing this drug fall within the top third of those administered to animals treated within a particular category and dosage form of active ingredient.

3 = Products containing this drug fall within the middle third of those administered to animals treated within a particular category and dosage form of active ingredient.

2 = Products containing this drug fall within the bottom third of those administered to animals treated within a particular category and dosage form of active ingredient (but have more usage than products given a score of "1," as defined below).

1 = Products containing this drug are estimated to have extremely limited usage. This category includes all drugs banned under AMDUCA.

Note: Where data were unavailable, scores were estimated, based on comparison to related drugs with known usage levels. Numbers estimated in this way are contained within parentheses.

Acute or Chronic Toxicity Concerns

This represents a combination of the toxicity of the compound and the severity associated with the compound's toxic endpoint

4 = Compound is a carcinogen, or potentially life threatening , or has significant acute effects including the anaphylactic response to an allergen.

3 = Systemic no observed effect levels (NOEL's) seen at intermediate to low doses in laboratory test animals. Antimicrobial effects with a high potential to alter intestinal microflora.

2 = Systemic NOEL's seen at high oral doses in laboratory test animals. Antimicrobial effects with a moderate potential to alter intestinal microflora.

1 = Compound generally shows no toxicity in laboratory test animals even at doses much higher than present in edible tissues at zero-day withdrawal.

Table 4.1
Scoring Table for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects
(1=none; 2=low; 3=moderate; 4=high)

COMPOUND/ COMPOUND CLASS	Historical Testing Info. on Viol. (FSIS)	Regula-tory Concern (CVM)	With-drawal Time (CVM)	Relative No. of Animals Treated (CVM)	Impact on New and Existing Human Disease (CDC)	Acute or Chronic Toxicity Concerns (CVM)	Lack of Testing Info. on Violations (FSIS)
Those antibiotics quantitated by the FSIS Bioassay MRM	4	4	4	4	3	4	1
Amikacin (aminoglycoside)	NT	3	4	2	3	2	4
Apramycin (aminoglycoside)	NT	4	4	2	3	2	4
Kanamycin (aminoglycoside)	NT	3	4	2	3	2	4
Spectinomycin (aminoglycoside)	NA-D, NA-M	4	4	3	3	2	4
Streptomycin (aminoglycoside)	NA-D	4	4	3	3	2	4
Ampicillin (beta lactam)	NT	3	2	2	3	4	4
Amoxicillin (beta lactam)	NT	3	2	2	3	4	4
Cloxacillin (beta lactam)	NT	3	2	2	3	4	4
Hetacillin (beta lactam)	NT	2	2	2	3	4	4
Ticarcillin (beta lactam)	NT	2	2	2	3	4	4
Ceftiofur (cefalosporin)	NT	3	2	3	4	2	4
Cefazolin (synthetic cefalosporin)	NT	3	2	(2)	3	2	4
Chloramphenicol	NA-N	4	2	1	4	4	4
Florfenicol (chloramphen. deriv.)	NT	3	4	4	3	3	4
Thiamphenicol (chloramphen. deriv.)	NT	3	2	1	3	3	4
Fluoroquinolones	NT	4	3	3	4	2	4
Avoparcin (glycopeptide)	NT	4	2	1	4	2	4
Vancomycin (glycopeptide)	NT	4	2	1	4	2	4
Clindamycin (lincosamide)	NA-Q	2	2	2	3	3	4
Lincomycin (lincosamide)	NA-Q	2	2	2	3	3	4
Pirlimycin (lincosamide)	NA-Q	3	4	3	4	2	4
Oleandomycin (macrolide)	NA-Q	2	2	2	3	3	4
Spiramycin (macrolide)	NA-Q	2	3	2	3	2	4
Tilmicosin (macrolide)	NA-D	4	2	3	3	3	4
Tylosin (macrolide)	NA-D	3	3	2	3	2	1
Colistin (polypeptide antibiotic)	NT	2	1	(2)	1	2	4
Virginiamycin	NT	1	1	3	3	1	4
Amprolium (coccidiostat)	NT	4	2	2	3	2	4
Arsenicals (detected as As)	4	4	2	4	3	2	1
Avermectins in FSIS MRM (incl. doramectin, ivermectin, moxidectin) (antiparasitics)	3*	3	4	4	2	3	2
Eprinomectin (avermectin)	NT	2	2	(3)	2	2	4

Table 4.1 - *Continued*
Scoring Table for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects
(1=none; 2=low; 3=moderate; 4=high)

COMPOUND/ COMPOUND CLASS	Historical Testing Info. on Viol. (FSIS)	Regula-tory Concern (CVM)	With-drawal Time (CVM)	Relative No. of Animals Treated (CVM)	Impact on New and Existing Human Disease (CDC)	Acute or Chronic Toxicity Concerns (CVM)	Lack of Testing Info. on Violations (FSIS)
Benzimidazoles (anthelmintic)	1	1	3	2	1	2	3
Berenil (antiprotozoal)	NA-G, Na-Mx	4	4	1	2	3	4
Beta agonists, unapproved (incl. clenbuterol) (growth promotants)	NA-C	4	2	1	1	4	4
Ractopamine (beta agonist)	NT	4	2	3	2	4	4
Carbadox (antimicrobial)	NA-W	4	4	(3)	3	4	4
Clorsulon (anthelmintic)	1	2	3	2	2	2	4
Dexamethasone (glucocorticoid)	NT	4	2	(2)	1	3	4
Methyl prednisone (glucocorticoid)	NT	4	2	(2)	1	3	4
Prednisone (glucocorticoid)	NT	2	2	1	1	3	4
Halofuginone (antiprotozoal, coccidiostat)	2	1	2	2	2	2	1
Hormones, naturally-occuring (17-β estradiol, progesterone, testosterone)	NT	2	1	(4)	2	2	4
DES (hormone, synthetic) (estrogenic)	NA-N	4	4	1	2	4	4
MGA (hormone, synthetic) (estrus regulator)	NA-N	3	1	4	2	3	4
Trenbolone (hormone, synthetic) (anabolic)	NT	3	3	(3)	2	3	4
Zeranol (hormone, synthetic) (anabolic)	NA-N	3	1	3	2	3	4
Lasalocid (coccidiostat)	NT	2	1	3	3	2	4
Levamisole (anthelmintic)	2	3	3	(2)	1	1	1
Morantel and pyrantel (anthelmintics)	1	1	1	(2)	2	1	2
Nicarbazin (coccidiostat)	1	2	2	1	2	1	3
Nitrofurans (incl. furazolidone, nitrofurazone) (antimicrobials)	NT	4	2	1	3	4	4
Nitromidazoles in FSIS MRM (dimetridazole, ipronidazole) (antiprotozoals)	NA-N	4	2	(1)	1	4	4
Ronidazole (nitroimidazole) (antimicrobial)	NT	2	2	(1)	1	4	4
Etodolac (NSAID)	NT	3	2	1	1	3	4
Flunixin (NSAID)	NT	3	2	3	1	3	4
Phenylbutazone (NSAID)	NT	4	3	2	1	3	4

Table 4.1 - *Continued*
Scoring Table for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects
(1=none; 2=low; 3=moderate; 4=high)

COMPOUND/ COMPOUND CLASS	Historical Testing Info. on Viol. (FSIS)	Regula-tory Concern (CVM)	With-drawal Time (CVM)	Relative No. of Animals Treated (CVM)	Impact on New and Existing Human Disease (CDC)	Acute or Chronic Toxicity Concerns (CVM)	Lack of Testing Info. on Violations (FSIS)
Dipyrone (NSAID)	NT	3	3	1	1	3	4
Sulfonamides in FSIS MRM (antibacterials, some are coccidiostats or anitmicrobials)	4	4	3	4	3	3	1
Sulfanitran (antibacterial, coccidiostat)	NT	4	3	4	3	3	4
Thyreostats (incl. thiouracil)	NT	4	3	(1)	2	4	4
Veterinary tranquilizers in FSIS MRM	NT	4	2	2	1	1	4

*Scoring based on ivermectin violations only; method not extended to other avermectin compounds until 1999.

Numbers surrounded by parentheses are estimates

Key:
NT = Not Tested by FSIS (1989-1998)
NA = Compound has been tested by FSIS (1989-1998), but the information is not applicable:
NA-M = Problem with method
NA-N = New information since last testing,
NA-W = Withdrawal time for drug has changed
NA-Q = Detected but not quantitated by method
NA-D = Detected and quantitated, but not uniquely identified, i.e., method cannot distinguish between this compound and one or more other compounds
NA-C = Compound is of concern in several production classes, but testing has been carried out in only one; 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-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
FSIS = Scores in this column supplied by FSIS
CVM = Scores in this column supplied by CVM
CDC = Sores in this column supplied by CDC;
MRM = Multi-residue method

Table 4.2
Veterinary Drug Residues Rated with Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/ COMPOUND CLASS	ACTUAL VIOLA-TION SCORE	PREDIC-TED VIOLA-TION SCORE	VIOLA-TION SCORE USED IN FORMULAS (V)	DIS-EASE (D)	TOX-ICITY (T)	LACK INFO. (L)	V*[(D+3*T)/4] *{1+[(L-1)*0.1]}	*V*[(D+3*T)/4] *{1+[(L-1)*0.05]}*	V*[(D+2*T)/3] *{1+[(L-1)*0.05]}	V*[(D+T)/2] *{1+[(L-1)*0.05]}
Those antibiotics quantitated by the FSIS Bioassay MRM	4	3.95	4.00	3	4	1	15.0	***15.0***	14.7	14.0
Amikacin (aminoglycoside)	NT	1.94	1.94	3	2	4	5.7	***5.0***	5.2	5.6
Apramycin (aminoglycoside)	NT	2.34	2.34	3	2	4	6.8	***6.1***	6.3	6.7
Kanamycin (aminoglycoside)	NT	1.94	1.94	3	2	4	5.7	***5.0***	5.2	5.6
Spectinomycin (aminoglycoside)	NA-D, M	3.14	3.14	3	2	4	9.2	***8.1***	8.4	9.0
Streptomycin (aminoglycoside)	NA-D	3.14	3.14	3	2	4	9.2	***8.1***	8.4	9.0
Ampicillin (beta lactam)	NT	1.94	1.94	3	4	4	9.5	***8.4***	8.2	7.8
Amoxicillin (beta lactam)	NT	1.94	1.94	3	4	4	9.5	***8.4***	8.2	7.8
Cloxacillin (beta lactam)	NT	1.94	1.94	3	4	4	9.5	***8.4***	8.2	7.8
Hetacillin (beta lactam)	NT	1.54	1.54	3	4	4	7.5	***6.6***	6.5	6.2
Ticarcillin (beta lactam)	NT	1.54	1.54	3	4	4	7.5	***6.6***	6.5	6.2
Ceftiofur (cefalosporin)	NT	2.54	2.54	4	2	4	8.3	***7.3***	7.8	8.8
Cefazolin (synthetic cefalosporin)	NT	1.94	1.94	3	2	4	5.7	***5.0***	5.2	5.6
Chloramphenicol	NA-N	1.54	1.54	4	4	4	8.0	***7.1***	7.1	7.1
Florfenicol (chloramphen. deriv.)	NT	3.14	3.14	3	3	4	12.3	***10.8***	10.8	10.8

Table 4.2 – *Continued*
Veterinary Drug Residues Rated with Various Weighting Formulas
1999 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/ COMPOUND CLASS	ACTUAL VIOLA-TION SCORE	PREDIC-TED VIOLA-TION SCORE	VIOLA-TION SCORE USED IN FORMULAS (V)	DIS-EASE (D)	TOX-ICITY (T)	LACK INFO. (L)	V*[(D+3*T)/4] *{1+[(L-1)*0.1]}	*V*[(D+3*T)/4] *{1+[(L-1)*0.05]}*	V*[(D+2*T)/3] *{1+[(L-1)*0.05]}	V*[(D+T)/2] *{1+[(L-1)*0.05]}
Thiamphenicol (chloramphen. deriv.)	NT	1.34	1.34	3	3	4	5.2	***4.6***	4.6	4.6
Fluoroquinolones	NT	3.14	3.14	4	2	4	10.2	***9.0***	9.6	10.8
Avoparcin (glycopeptide)	NT	1.54	1.54	4	2	4	5.0	***4.4***	4.7	5.3
Vancomycin (glycopeptide)	NT	1.54	1.54	4	2	4	5.0	***4.4***	4.7	5.3
Clindamycin (lincosamide)	NA-Q	1.54	1.54	3	3	4	6.0	***5.3***	5.3	5.3
Lincomycin (lincosamide)	NA-Q	1.54	1.54	3	3	4	6.0	***5.3***	5.3	5.3
Pirlimycin (lincosamide)	NA-Q	2.54	2.54	4	2	4	8.3	***7.3***	7.8	8.8
Oleandomycin (macrolide)	NA-Q	1.54	1.54	3	3	4	6.0	***5.3***	5.3	5.3
Spiramycin (macrolide)	NA-Q	1.54	1.54	3	2	4	4.5	***4.0***	4.1	4.4
Tilmicosin (macrolide)	NA-D	3.14	3.14	3	3	4	12.3	***10.8***	10.8	10.8
Tylosin (macrolide)	NA-D	1.94	1.94	3	2	1	4.4	***4.4***	4.5	4.8
Colistin (polypeptide antibiotic)	NT	1.54	1.54	1	2	4	3.5	***3.1***	2.9	2.7
Virginiamycin	NT	1.34	1.34	3	1	4	2.6	***2.3***	2.6	3.1
Amprolium (coccidiostat)	NT	2.34	2.34	3	2	4	6.8	***6.1***	6.3	6.7
Arsenicals (detected as As)	4	3.95	4.00	3	2	1	9.0	***9.0***	9.3	10.0

Table 4.2 – *Continued*
Veterinary Drug Residues Rated with Various Weighting Formulas
1999 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/ COMPOUND CLASS	ACTUAL VIOLA-TION SCORE	PREDIC-TED VIOLA-TION SCORE	VIOLA-TION SCORE USED IN FORMULAS (V)	DIS-EASE (D)	TOX-ICITY (T)	LACK INFO. (L)	V*[(D+3*T)/4] *{1+[(L-1)*0.1]}	*V*[(D+3*T)/4] *{1+[(L-1)*0.05]}*	V*[(D+2*T)/3] *{1+[(L-1)*0.05]}	V*[(D+T)/2] *{1+[(L-1)*0.05]}
Avermectins in FSIS MRM (incl. Doramectin, ivermectin, moxidectin) (antiparasitics)	3*	3.14	3.00	2	3	2	9.1	***8.7***	8.4	7.9
Eprinomectin (avermectin)	NT	1.94	1.94	2	2	4	5.0	***4.5***	4.5	4.5
Benzimidazoles (anthelmintic)	1	1.14	1.00	1	2	3	2.1	***1.9***	1.8	1.7
Berenil (antiprotozoal)	NA-G NA-Mx	1.54	1.54	2	3	4	5.5	***4.9***	4.7	4.4
Beta agonists, unapproved (incl. Clenbuterol) (growth promotants)	NA-C	1.54	1.54	1	4	4	6.5	***5.7***	5.3	4.4
Ractopamine (beta agonist)	NT	3.14	3.14	2	4	4	14.3	***12.7***	12.0	10.8
Carbadox	NA-W	3.14	3.14	3	4	4	15.3	***13.6***	13.3	12.7
Clorsulon (anthelmintic)	1	1.54	1.00	2	2	4	2.6	***2.3***	2.3	2.3
Dexamethasone (glucocorticoid)	NT	2.34	2.34	1	3	4	7.6	***6.7***	6.3	5.4
Methyl prednisone (glucocorticoid)	NT	2.34	2.34	1	3	4	7.6	***6.7***	6.3	5.4
Prednisone (glucocorticoid)	NT	1.14	1.14	1	3	4	3.7	***3.3***	3.0	2.6
Halofuginone (antiprotozoal)	2	1.14	2.00	2	2	1	4.0	***4.0***	4.0	4.0

Table 4.2 – *Continued*
Veterinary Drug Residues Rated with Various Weighting Formulas
1999 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/ COMPOUND CLASS	ACTUAL VIOLA-TION SCORE	PREDIC-TED VIOLA-TION SCORE	VIOLA-TION SCORE USED IN FORMULAS (V)	DIS-EASE (D)	TOX-ICITY (T)	LACK INFO. (L)	V*[(D+3*T)/4] *{1+[(L-1)*0.1]}	*V*[(D+3*T)/4] *{1+[(L-1)*0.05]}*	V*[(D+2*T)/3] *{1+[(L-1)*0.05]}	V*[(D+T)/2] *{1+[(L-1)*0.05]}
Hormones, naturally-occuring (17-β estradiol, progesterone, testosterone)	NT	2.34	2.34	2	2	4	6.1	***5.4***	5.4	5.4
DES (hormone, synthetic) (estrogenic)	NA-N	1.54	1.54	2	4	4	7.0	***6.2***	5.9	5.3
MGA (hormone, synthetic) (estrus regulator)	NA-N	3.14	3.14	2	3	4	11.2	***9.9***	9.6	9.0
Trenbolone (hormone, synthetic) (anabolic)	NT	2.54	2.54	2	3	4	9.1	***8.0***	7.8	7.3
Zeranol (hormone, synthetic) (anabolic)	NA-N	2.54	2.54	2	3	4	9.1	***8.0***	7.8	7.3
Lasalocid (coccidiostat)	NT	1.94	1.94	3	2	4	5.7	***5.0***	5.2	5.6
Levamisole (anthelmintic)	2	1.94	2.00	1	1	1	2.0	***2.0***	2.0	2.0
Morantel and pyrantel (anthelmintics)	1	1.14	1.00	2	1	2	1.4	***1.3***	1.4	1.6
Nicarbazin (coccidiostat)	1	1.14	1.00	2	1	3	1.5	***1.4***	1.5	1.7
Nitrofurans (incl. Furazolidone, nitrofurazone) (antimicrobials)	NT	1.54	1.54	3	4	4	7.5	***6.6***	6.5	6.2

Table 4.2 – *Continued*
Veterinary Drug Residues Rated with Various Weighting Formulas
1999 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/ COMPOUND CLASS	ACTUAL VIOLA-TION SCORE	PREDIC-TED VIOLA-TION SCORE	VIOLA-TION SCORE USED IN FORMULAS (V)	DIS-EASE (D)	TOX-ICITY (T)	LACK INFO. (L)	V*[(D+3*T)/4] *{1+[(L-1)*0.1]}	*V*[(D+3*T)/4] *{1+[(L-1)*0.05]}*	V*[(D+2*T)/3] *{1+[(L-1)*0.05]}	V*[(D+T)/2] *{1+[(L-1)*0.05]}
Nitromidazoles in FSIS MRM (dimetridazole, ipronidazole) (antiprotozoals)	NA-N	1.54	1.54	1	4	4	6.5	***5.7***	5.3	4.4
Ronidazole (nitroimidazole) (antimicrobial)	NT	1.14	1.14	1	4	4	4.8	***4.2***	3.9	3.3
Etodolac (NSAID)	NT	1.34	1.34	1	3	4	4.3	***3.8***	3.6	3.1
Flunixin (NSAID)	NT	2.54	2.54	1	3	4	8.3	***7.3***	6.8	5.8
Phenylbutazone (NSAID)	NT	2.34	2.34	1	3	4	7.6	***6.7***	6.3	5.4
Dipyrone (NSAID)	NT	1.34	1.34	1	3	4	4.3	***3.8***	3.6	3.1
Sulfonamides in FSIS MRM (antibacterials, some are coccidiostats or anitmicrobials)	4	3.95	4.00	3	3	1	12.0	***12.0***	12.0	12.0
Sulfanitran (antibacterial, coccidiostat)	NT	3.95	3.95	3	3	4	15.4	***13.6***	13.6	13.6
Thyreostats (incl. thiouracil)	NT	1.54	1.54	2	4	4	7.0	***6.2***	5.9	5.3
Veterinary tranquilizers in FSIS MRM	NT	2.34	2.34	1	1	4	3.0	***2.7***	2.7	2.7

Key:
V = Predicted or actual score for FSIS Historical Information on Violations
D = Impact on New and Existing Human Disease
T = Acute or Chronic Toxicity Concerns
L = Lack of FSIS Testing Information on Violations
MRM = Multi-residue method

Table 4.3
Veterinary Drug Residues Rated with Various Weighting Formulas, Sorted by Rating
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	DRUG	V*((D+3*T)/4)*{1+[(L-1)*0.1]}	DRUG	V*((D+3*T)/4)*{1+[(L-1)*0.05]}	DRUG	V*((D+2*T)/4)*{1+[(L-1)*0.05]}	DRUG	V*((D+T)/4) * {1+[(L-1)*0.05]}
1	Sulfntrn	15.39	**Antibiots**	**15.00**	Antibiots	14.67	Antibiots	14.00
2	Carbadx	15.32	**Sulfntrn**	**13.61**	Sulfntrn	13.61	Sulfntrn	13.61
3	Antibiots	15.00	**Carbadx**	**13.55**	Carbadx	13.25	Carbadx	12.65
4	Ractopa	14.30	**Ractopa**	**12.65**	Ractopa	12.05	Sulfas	12.00
5	Flofencl	12.26	**Sulfas**	**12.00**	Sulfas	12.00	Flofencl	10.84
6	Tilmicos	12.26	**Flofencl**	**10.84**	Flofencl	10.84	Fluorqns	10.84
7	Sulfas	12.00	**Tilmicos**	**10.84**	Tilmicos	10.84	Tilmicos	10.84
8	MGA	11.24	**MGA**	**9.94**	Fluorqns	9.64	Ractopa	10.84
9	Fluorqns	10.22	**Fluorqns**	**9.04**	MGA	9.64	Arsencls	10.00
10	Ampicil	9.45	**Arsencls**	**9.00**	Arsencls	9.33	Spectino	9.04
11	Amoxicil	9.45	**Avrmecs**	**8.66**	Spectino	8.43	Strepto	9.04
12	Cloxacil	9.45	**Ampicil**	**8.36**	Strepto	8.43	MGA	9.04
13	Spectino	9.19	**Amoxicil**	**8.36**	Avrmecs	8.40	Ceftiofur	8.77
14	Strepto	9.19	**Cloxacil**	**8.36**	Ampicil	8.17	Pirlimyc	8.77
15	Trenboln	9.08	**Spectino**	**8.13**	Amoxicil	8.17	Avrmecs	7.88
16	Zeranol	9.08	**Strepto**	**8.13**	Cloxacil	8.17	Ampicil	7.80
17	Avrmecs	9.08	**Trenboln**	**8.04**	Ceftiofur	7.79	Amoxicil	7.80
18	Arsencls	9.00	**Zeranol**	**8.04**	Pirlimyc	7.79	Cloxacil	7.80
19	Ceftiofur	8.26	**Ceftiofur**	**7.31**	Trenboln	7.79	Trenboln	7.31
20	Pirlimyc	8.26	**Pirlimyc**	**7.31**	Zeranol	7.79	Zeranol	7.31
21	Flunixin	8.26	**Flunixin**	**7.31**	Clfencl	7.07	Clfencl	7.07
22	Clfencl	7.99	**Clfencl**	**7.07**	Flunixin	6.82	Apramy	6.73
23	Dexamth	7.61	**Dexamth**	**6.73**	Hetacil	6.48	Amproli	6.73
24	MePred	7.61	**MePred**	**6.73**	Ticarcil	6.48	Hetacil	6.19
25	Phnlbute	7.61	**Phnlbute**	**6.73**	Nitrofrs	6.48	Ticarcil	6.19
26	Hetacil	7.49	**Hetacil**	**6.63**	Apramy	6.28	Nitrofrs	6.19
27	Ticarcil	7.49	**Ticarcil**	**6.63**	Amproli	6.28	Flunixin	5.84
28	Nitrofrs	7.49	**Nitrofrs**	**6.63**	Dexamth	6.28	Amikacn	5.57
29	DES	6.99	**DES**	**6.19**	MePred	6.28	Kanamy	5.57
30	Threos	6.99	**Threos**	**6.19**	Phnlbute	6.28	Cefazoln	5.57
31	Apramy	6.84	**Apramy**	**6.06**	DES	5.89	Lasalcid	5.57
32	Amproli	6.84	**Amproli**	**6.06**	Threos	5.89	Dexamth	5.38
33	BetaAgs	6.49	**BetaAgs**	**5.75**	Hrms,ntl	5.38	MePred	5.38
34	Nitroims	6.49	**Nitroims**	**5.75**	Clindmy	5.30	Hrms,ntl	5.38
35	Hrms,ntl	6.08	**Hrms,ntl**	**5.38**	Lincomy	5.30	Phnlbute	5.38
36	Clindmy	5.99	**Clindmy**	**5.30**	Olandmy	5.30	Avoparc	5.30
37	Lincomy	5.99	**Lincomy**	**5.30**	BetaAgs	5.30	Vacomy	5.30
38	Olandmy	5.99	**Olandmy**	**5.30**	Nitroims	5.30	Clindmy	5.30
39	Amikacn	5.67	**Amikacn**	**5.02**	Amikacn	5.20	Lincomy	5.30
40	Kanamy	5.67	**Kanamy**	**5.02**	Kanamy	5.20	Olandmy	5.30
41	Cefazoln	5.67	**Cefazoln**	**5.02**	Cefazoln	5.20	DES	5.30
42	Lasalcid	5.67	**Lasalcid**	**5.02**	Lasalcid	5.20	Threos	5.30
43	Berenil	5.50	**Berenil**	**4.86**	Avoparc	4.71	Tylosin	4.85

Table 4.3 - *Continued*
Veterinary Drug Residues Rated with Various Weighting Formulas, Sorted by Rating
2000 FSIS NRP, Monitoring Plan and Special Projects

44	Thifencl	5.21	**Thifencl**	**4.61**	Vacomy	4.71	Thifencl	4.61
45	Eprinom	5.04	**Eprinom**	**4.46**	Berenil	4.71	Eprinom	4.46
46	Avoparc	5.00	**Avoparc**	**4.42**	Thifencl	4.61	Spiramy	4.42
47	Vacomy	5.00	**Vacomy**	**4.42**	Tylosin	4.52	Berenil	4.42
48	Ronidzl	4.80	**Tylosin**	**4.36**	Eprinom	4.46	BetaAgs	4.42
49	Spiramy	4.50	**Ronidzl**	**4.24**	Spiramy	4.12	Nitroims	4.42
50	Tylosin	4.36	**Halofugi**	**4.00**	Halofugi	4.00	Halofugi	4.00
51	Etodolc	4.34	**Spiramy**	**3.98**	Ronidzl	3.92	Ronidzl	3.26
52	Dipyron	4.34	**Etodolc**	**3.84**	Etodolc	3.59	Virgnmy	3.07
53	Halofugi	4.00	**Dipyron**	**3.84**	Dipyron	3.59	Etodolc	3.07
54	Pred	3.69	**Pred**	**3.26**	Pred	3.05	Dipyron	3.07
55	Colistin	3.50	**Colistin**	**3.09**	Colistin	2.95	VetTrnks	2.69
56	VetTrnks	3.04	**VetTrnks**	**2.69**	VetTrnks	2.69	Colistin	2.65
57	Virgnmy	2.61	**Virgnmy**	**2.31**	Virgnmy	2.56	Pred	2.61
58	Clorsuln	2.60	**Clorsuln**	**2.30**	Clorsuln	2.30	Clorsuln	2.30
59	Benzims	2.10	**Levamsl**	**2.00**	Levamsl	2.00	Levamsl	2.00
60	Levamsl	2.00	**Benzims**	**1.93**	Benzims	1.83	Benzims	1.65
61	Nicarbzn	1.50	**Nicarbzn**	**1.38**	Nicarbzn	1.47	Nicarbzn	1.65
62	Mor,pyr	1.38	**Mor,pyr**	**1.31**	Mor,pyr	1.40	Mor,pyr	1.58

Key:
V = Predicted or actual score for FSIS Historical Information on Violations
D = Impact on New and Existing Human Disease
L = Lack of FSIS Testing Information on Violations
T = Acute or Chronic Toxicity Concerns
The two **bolded** columns show the results obtained with the formula chosen in consultation with FDA-CVM.

Table 4.4
Key to Abbreviations Used for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects

Rank	COMPOUND/CMPD. CLASS	ABBRV.	Rank	COMPOUND/CMPD. CLASS	ABBRV.
1	Antibiotics in FSIS Bioassay MRM	Antibiots	32	Apramycin (aminoglycoside)	Amproli
2	Sulfanitran (antibacterial, coccidiostat)	Sulfntrn	33	Beta agonists, unapproved, in FSIS MRM (incl. clenbuterol, cimaterol, and fenoterol) (growth promotant)	BetaAgs
3	Carbadox (antimicrobial)	Carbadx	34	Nitromidazoles in FSIS MRM (dimetridazole and ipronidazole) (antiprotozoal)	Nitroims
4	Ractopamine (beta agonist)	Ractopa	35	Hormones, naturally-occurring (17-. estradiol, testosterone, and progesterone)	Hrms,ntl
5	Sulfonamides in FSIS MRM	Sulfas	36	Clindamycin (lincosamide)	Clindmy
6	Florfenicol (chloramphenicol derivative)	Flofencl	37	Lincomycin (lincosamide)	Lincomy
7	Tilmicosin (macrolide)	Tilmicos	38	Oleandomycin (macrolide)	Olandmy
8	MGA (hormone, synthetic) (estrus regulator)	MGA	39	Amikacin (aminoglycoside)	Amikacn
9	Fluoroquinolones	Fluorqns	40	Cefazolin (synthetic cefalosporin)	Kanamy
10	Arsenicals (detected as As)	Arsencls	41	Kanamycin (aminoglycoside)	Cefazoln
11	Avermectins in FSIS MRM (doramectin, ivermectin, and moxidectin) (antiparasitic)	Avrmecs	42	Lasalocid (coccidiostat)	Lasalcid
12	Amoxicillin (beta lactam)	Ampicil	43	Berenil (antiprotozoal)	Berenil
13	Ampicillin (beta lactam)	Amoxicil	44	Thiamphenicol (chloramphenicol derivative)	Thifencl
14	Cloxacillin (beta lactam)	Cloxacil	45	Eprinomectin (avermectin)	Eprinom
15	Spectinomycin (aminoglycoside)	Spectino	46	Avoparcin (glycopeptide)	Avoparc
16	Streptomycin (aminoglycoside)	Strepto	47	Vancomycin (glycopeptide)	Vacomy
17	Trenbolone (hormone, synthetic) (anabolic)	Trenboln	48	Tylosin (macrolide)	Tylosin
18	Zeranol (hormone, synthetic) (anabolic)	Zeranol	49	Ronidazole (nitroimidazole) (antimicrobial)	Ronidzl
19	Ceftiofur (cefalosporin)	Ceftiofur	50	Halofuginone (antiprotozoal, coccidiostat)	Halofugi
20	Flunixin (NSAID)	Pirlimyc	51	Spiramycin (macrolide)	Spiramy
21	Pirlimycin (lincosamide)	Flunixin	52	Dipyrone (NSAID)	Etodolc
22	Chloramphenicol	Clfencl	53	Etodolac (NSAID)	Dipyron
23	Dexamethasone (glucocorticoid)	Dexamth	54	Prednisone (glucocorticoid)	Pred
24	Methyl prednisone (glucocorticoid)	MePred	55	Colistin (polypeptide antibiotic)	Colistin
25	Phenylbutazone (NSAID)	Phnlbute	56	Veterinary tranquilizers in FSIS MRM (azaperone and its metabolite azaperol, xylazine, haloperidol, acetopromazine, propionylpromazine, and chlorpromazine)	VetTrnks
26	Hetacillin (beta lactam)	Hetacil	57	Virginiamycin	Virgnmy
27	Nitrofurans (incl. furazolidone and nitrofurazone) (antimicrobial)	Ticarcil	58	Clorsulon (anthelmintic)	Clorsuln
28	Ticarcillin (beta lactam)	Nitrofrs	59	Levamisole (anthelmintic)	Levamsl
29	DES (hormone, synthetic) (estrogenic)	DES	60	Benzimidazoles (anthelmintic)	Benzims
30	Thyreostats (incl. thiouracil)	Threos	61	Nicarbazin (coccidiostat)	Nicarbzn
31	Amprolium (coccidiostat)	Apramy	62	Morantel and pyrantel (anthelmintic)	Mor,pyr

Table 4.5
Rank and Status for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects

Rank	DRUG	SCORE	STATUS IN 2000 NATIONAL RESIDUE PROGRAM
1	**Antibiotics in FSIS MRM (tetracycline, oxytetracycline, chlortetracycline, beta-lactams (penicillins and cephalosporins; not differentiated within this category), ,streptomycin/spectinomycin (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**	**15.00**	Monitoring Plan, MRM (Bioassay and associated follow-up methodologies), all domestic production classes except egg products.
2	Sulfanitran (antibacterial, coccidiostat)	**13.61**	NIP, **no method - need to add to sulfonamide MRM, or find new method.**
3	**Carbadox (antimicrobial)**	**13.55**	Special Project, roaster pigs and imp. fresh pork.
4	**Ractopamine (beta agonist)**	**12.65**	Special Project, market hogs and imp. fresh pork.
5	**Sulfonamides in FSIS MRM (sulfapyridine, sulfadiazine, sulfathiazole, sulfamerazine, sulfamethazine, sulfachloropyridazine, sulfadoxine, sulfamethoxypyridazine, sulfaquinoxaline, sulfadimethoxine, sulfisoxazole, sulfacetamide, sulfamethoxazole, sulfamethizole, sulfanilamide, sulfaguanidine, sulfabromomethazine, sulfasalazine, sulfaethoxypyridazine, sulfaphenazole, and sulfatroxazole) (antibacterial, some are coccidiostats or antimicrobials)**	**12.00**	Monitoring Plan, MRM, all domestic production classes except sheep, mature chickens, and rabbits.
6	**Florfenicol (chloramphenicol derivative)**	**10.84**	Special Project, dairy cattle; **new method** (NADA method)**, need analyst familiarization; ultimately want MRM for chloramphenicol, florfenicol, and thiamphenicol.**
7	**Tilmicosin (macrolide)**	**10.84**	Monitoring Plan, dairy cattle, beef cattle, steers.
8	**MGA (hormone, synthetic) (estrus regulator)**	**9.94**	Monitoring Plan, steers and heifers; **method not used in several years - need analyst familiarization. Should also be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.**
9	**Fluoroquinolones in FSIS MRM (ciprofloxacin, desethyleneciprofloxacin, danofloxacin, difloxacin, enrofloxacin, marbofloxacin, orbifloxacin, and sarafloxacin)**	**9.04**	Special Project, MRM, dairy cattle, young chicken, market hogs, imp. fresh chicken.
10	**Arsenicals (detected as As)**	**9.00**	Monitoring Plan, beef cows, goats, all porcine production classes, and all avian production classes (including egg products) except geese.

Table 4.5 - *Continued*
Rank and Status for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects

Rank	DRUG	SCORE	STATUS IN 2000 NATIONAL RESIDUE PROGRAM
11	**Avermectins in FSIS MRM (doramectin, ivermectin, and moxidectin) (antiparasitic)**	**8.66**	Monitoring Plan, MRM, all domestic production classes except bob veal calves and avians**; moxidectin analyst familiarization needed.**
12	Amoxicillin (beta lactam)	**8.36**	NIP, **no method - need MRM for beta-lactams.**
13	Ampicillin (beta lactam)	**8.36**	NIP, **no method - need MRM for beta-lactams.**
14	Cloxacillin (beta lactam)	**8.36**	NIP, **no method - need MRM for beta-lactams.**
15	Spectinomycin (aminoglycoside)	**8.13**	NIP, **method not operational - ultimately need MRM for aminoglycosides.**
16	Streptomycin (aminoglycoside)	**8.13**	NIP, **no method - need MRM for aminoglycosides; will need bridging data to use chemical method on streptomycin.**
17	Trenbolone (hormone, synthetic) (anabolic)	**8.04**	NIP, **method needs improvement. Should also be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.**
18	**Zeranol (hormone, synthetic) (anabolic)**	**8.04**	Special Project, MRM with DES, formula-fed veal, **contingent upon getting method to work at ppt level.**
19	Ceftiofur (cefalosporin)	**7.31**	NIP, **no method - need MRM for beta-lactams.**
20	**Flunixin (NSAID**)	**7.31**	Special Project, dairy cattle and imp. fresh beef.
21	Pirlimycin (lincosamide)	**7.31**	NIP, **method needs improvement.**
22	**Chloramphenicol**	**7.07**	Special Project, dairy cattle, formula-fed veal, bob veal, and imp. fresh beef and fresh veal; **, method not used in several years - need analyst familiarization; ultimately want MRM for chloramphenicol, florfenicol, and thiamphenicol**
23	**Dexamethasone (glucocorticoid)**	**6.73**	Special Project, dairy cattle and imp. fresh beef. **Should also be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.**
24	Methyl prednisone (glucocorticoid)	**6.73**	NIP, **no method, but should be analyzable by extension of FSIS DES/zeranol method, *or by adoption of Swiss MRM.**
25	**Phenylbutazone (NSAID)**	**6.73**	Monitoring Plan, all production classes except roaster pigs, as part of CHC method (**method extension work not yet completed by WL and QAB**).
26	Hetacillin (beta lactam)	**6.63**	NIP, **no method - need MRM for beta-lactams.**
27	Nitrofurans (incl. furazolidone and nitrofurazone) (antimicrobial)	**6.63**	NIP, **no viable method available.**
28	Ticarcillin (beta lactam)	**6.63**	NIP, **no method - need MRM for beta-lactams.**
29	**DES (hormone, synthetic) (estrogenic)**	**6.19**	Special Project, MRM with zeranol, formula-fed veal, **contingent upon getting method to work at ppt level.**
30	Thyreostats (incl. thiouracil)	**6.19**	NIP, **no method.**
31	Amprolium (coccidiostat)	**6.06**	NIP, **no method.**
32	Apramycin (aminoglycoside)	**6.06**	NIP, **no method - need MRM for aminoglycosides.**
33	**Beta agonists, unapproved, in FSIS MRM (incl. clenbuterol, cimaterol, and fenoterol) (growth promotant)**	**5.75**	Monitoring Plan, formula-fed veal, steers, market hogs, by multi-residue eyeball screen followed by determinative method for clenbuterol; **but need to test eyeball screen to extend to other beta agonists, and install NCTR confirmatory MRM for beta agonists.**
34	**Nitromidazoles in FSIS MRM (dimetridazole and ipronidazole) (antiprotozoal)**	**5.75**	Special Project, MRM, formula-fed veal, imp. fresh pork.

Table 4.5 - *Continued*
Rank and Status for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects

Rank	DRUG	SCORE	STATUS IN 2000 NATIONAL RESIDUE PROGRAM
BASED ON CONSULTATION WITH FDA, CDC AND OTHER AGENCIES, COMPOUNDS BELOW THIS POINT WERE NOT CONSIDER TO REPRESENT A BROAD POTENTIAL PUBLIC HEALTH RISK. HOWEVER, SOME OF THESE MAY BE SAMPLED ON A SPECIFIC, AS-NEEDED BASIS. THUS, NONE OF THE COMPOUNDS BELOW WAS SELECTED FOR INCLUSION INTO THE 2000 FSIS NRP, EXCEPT FOR VETERINARY TRANQILIZERS, WHICH WILL BE SAMPLED UNDER A LIMITED SPECIAL PROJECT IN MARKET HOGS.			
35	Hormones, naturally-occurring (17-. estradiol, testosterone, and progesterone)	**5.38**	NIP, no method, low priority, **but should be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.**
36	Clindamycin (lincosamide)	**5.30**	NIP, no method, low priority.
37	Lincomycin (lincosamide)	**5.30**	NIP, no method, low priority.
38	Oleandomycin (macrolide)	**5.30**	NIP, no method, low priority.
39	Amikacin (aminoglycoside)	**5.02**	NIP, **no method - need MRM for aminoglycosides.**
40	Cefazolin (synthetic cefalosporin)	**5.02**	NIP, **no method - need MRM for beta-lactams.**
41	Kanamycin (aminoglycoside)	**5.02**	NIP, **no method - need MRM for aminoglycosides.**
42	Lasalocid (coccidiostat)	**5.02**	NIP, Official FSIS Method available, low priority.
43	Berenil (antiprotozoal)	**4.86**	NIP, low priority, Official FSIS (determinative) Method available, but for plasma only. **Will need to extend the method to the target tissue and develop a confirmatory method.**
44	Thiamphenicol (chloramphenicol derivative)	**4.61**	NIP, **no method - ultimately would like MRM for chloramphenicol, florfenciol, and thiamphenicol.**
45	Eprinomectin (avermectin)	**4.46**	NIP, no method, low priority.
46	Avoparcin (glycopeptide)	**4.42**	NIP, no method, low priority.
47	Vancomycin (glycopeptide)	**4.42**	NIP, no method, low priority.
48	Tylosin (macrolide)	**4.36**	NIP, no method, low priority.
49	Ronidazole (nitroimidazole) (antimicrobial)	**4.24**	NIP - **may be able to extend MRM for nitroimidazoles to capture this compound.**
50	Halofuginone (antiprotozoal, coccidiostat)	**4.00**	NIP, Official FSIS Method available, low priority.
51	Spiramycin (macrolide)	**3.98**	NIP, low priority.
52	Dipyrone (NSAID)	**3.84**	NIP, no method, low priority, **but MRM for all NSAID's may be desirable.**
53	Etodolac (NSAID)	**3.84**	NIP, no method, low priority, **but MRM for all NSAID's may be desirable.**
54	Prednisone (glucocorticoid)	**3.26**	NIP, no method, low priority, **but should be analyzable by extension of FSIS DES/zeranol method, or by adoption of Swiss MRM.**
55	Colistin (polypeptide antibiotic)	**3.09**	NIP, no method, low priority.
56	**Veterinary tranquilizers in FSIS MRM (azaperone and its metabolite azaperol, xylazine, haloperidol, acetopromazine, propionylpromazine, and chlorpromazine)**	**2.69**	Special Project, MRM, market hogs, ***contingent upon QAB approval for use of method as screen; need determinative and confirmatory methods.***
57	Virginiamycin	**2.31**	NIP, no method, low priority.
58	Clorsulon (anthelmintic)	**2.30**	NIP, Official FSIS Method available, low priority.
59	Levamisole (anthelmintic)	**2.00**	NIP, Official FSIS Method available, low priority.

Table 4.5 - *Continued*
Rank and Status for Veterinary Drugs
2000 FSIS NRP, Monitoring Plan and Special Projects

Rank	DRUG	SCORE	STATUS IN 2000 NATIONAL RESIDUE PROGRAM
60	Benzimidazoles (anthelmintic)	**1.93**	NIP, Official FSIS Method available, low priority.
61	Nicarbazin (coccidiostat)	**1.38**	NIP, no method, low priority.
62	Morantel and pyrantel (anthelmintic)	**1.31**	NIP, Official FSIS Method available, low priority.

Key:
MRM = Multi-residue method
NIP = Not included in 2000 FSIS National Residue Program
In the second column, compounds/compound classes included in the 2000 NRP have been bolded.
In the last column, statements describing actions needed are bolded.

Table 4.6
Production Classes to be Considered for Each Veterinary Drug/Drug Class
2000 FSIS NRP, Monitoring Plan and Special Projects

Est. Rel. % Dom. Cons.	DRUG->	Anti-biots	Car-badx	Rac-topa	Sul-fas	Flo-fencl	Til-mic	MGA	Fluo-rqns	Ar-sencls	Av-mecs	Spec-tin	Zer-anol	Flu-nixin	Clf-encl	Dex	Phnl-bute	DES	Beta Ags	Nitro-ims	Vet. Trks
	DRUG SCORE->	15.0	13.6	12.7	12.0	10.8	10.8	9.9	9.0	9.0	8.7	8.1	8.0	7.3	7.1	6.7	6.7	6.2	5.8	5.8	2.7
0.041	Horses	●			●						●					○	●				
0.598	Bulls	●			●						●					○	●				
1.797	Beef cows	●			●		●			●	●	○				○	●				
1.800	Dairy cows	●			●	●	●		●		●	●		●	●	●	●				○
8.479	Heifers	●			●		○	●			●						●	○			
14.128	Steers	●			●		●	●			●						●	○	●		
0.059	Bob veal calves	●			●		○								●		⭘				
0.194	Formula-fed veal	●			●		○	○			●		●		●	○	⭘	●	●	●	
0.009	Non-formula-fed veal	●			●			○			●		○				⭘				
0.017	Heavy calves	●			●	○	○				●						●				
0.012	Sheep	●									●					○	⭘				
0.250	Lambs	●			●						●						⭘				
0.023	Goats	●			●					●	●						⭘				
18.839	Market hogs	●	○	●	●				●	●	●						⭘		●	○	●
0.012	Roaster pigs	●	●	○	●					●	●										
0.170	Boars/Stags	●	○		●					●	●					○	●				
1.064	Sows	●	○		●					●	●					○	●				
40.817	Young chickens	●			●				●	●							⭘				
0.919	Mature chickens	●							○	●							⭘				
7.342	Young turkeys	●			●				○	●							⭘				
0.087	Mature turkeys	●			●				○	●							⭘				
0.169	Ducks	●			●					●							⭘				
0.003	Geese	●			●												⭘				
0.019	Other fowl	●			●					●							⭘				
0.002	Rabbits	●									●						⭘				
3.149	Egg products	○			●				○	●							⭘				

Key:

Est. Rel. % Dom. Cons. = Estimated relative percent of domestic consumption. 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.

● = Scheduled for sampling under the 2000 FSIS NRP.

○ = Of potential regulatory concern, but could not be sampled under the 2000 FSIS NRP because of laboratory resource constraints.

⭘ = Since all production classes will be sampled with the CHC/COP method (see Section 6), and since this method also detects phenylbutazone, the latter will, by default, likewise be sampled in all production classes. However, phenylbutazone is not of regulatory concern in all production class. Thus, this designation indicates those production classes in which phenylbutazone will be sampled because it is detected as part of the CHC/COP method, but where it is NOT of regulatory concern.

Table 4.7
Veterinary Drug Compound/Production Class Pairs,
Sorted by Sampling Priority Score, "Full-Resource" Sampling
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND CLASS	COMPOUND PRIORITY RATING (P)	PRODUCTION CLASS	EST. RELATIVE % DOMESTIC CONSUMPTION (D)	C/PC PAIR PRIORITY SCORE (P x D)	# SAMPLES
1	Antibiotics	15.00	Young chickens	40.817	612.262	460
2	Sulfonamides	12.00	Young chickens	40.817	489.809	460
3	Arsenicals	9.00	Young chickens	40.817	367.357	460
4	Antibiotics	15.00	Market hogs	18.839	282.583	460
5	Sulfonamides	12.00	Market hogs	18.839	226.066	460
6	Antibiotics	15.00	Steers	14.128	211.923	460
7	Arsenicals	9.00	Market hogs	18.839	169.550	460
8	Avermectins	9.00	Market hogs	18.839	169.550	460
9	Sulfonamides	12.00	Steers	14.128	169.538	460
10	Antibiotics	15.00	Heifers	8.479	127.180	460
11	Avermectins	9.00	Steers	14.128	127.154	460
12	Antibiotics	15.00	Young turkeys	7.342	110.133	460
13	Sulfonamides	12.00	Heifers	8.479	101.744	460
14	Sulfonamides	12.00	Young turkeys	7.342	88.106	460
15	Avermectins	9.00	Heifers	8.479	76.308	460
16	Arsenicals	9.00	Young turkeys	7.342	66.080	460
17	Antibiotics	15.00	Eggs	3.149	47.233	460
18	Sulfonamides	12.00	Eggs	3.149	37.786	460
19	Arsenicals	9.00	Eggs	3.149	28.340	460
20	Antibiotics	15.00	Dairy cows	1.800	26.995	300
21	Antibiotics	15.00	Beef cows	1.797	26.962	300
22	Sulfonamides	12.00	Dairy cows	1.800	21.596	300
23	Sulfonamides	12.00	Beef cows	1.797	21.570	300
24	Avermectins	9.00	Dairy cows	1.800	16.197	300
25	Arsenicals	9.00	Beef cows	1.797	16.177	300
26	Avermectins	9.00	Beef cows	1.797	16.177	300
27	Antibiotics	15.00	Sows	1.064	15.956	300
28	Antibiotics	15.00	Mature chickens	0.919	13.792	300
29	Sulfonamides	12.00	Sows	1.064	12.765	300
30	Arsenicals	9.00	Sows	1.064	9.574	300
31	Avermectins	9.00	Sows	1.064	9.574	300
32	Antibiotics	15.00	Bulls	0.598	8.973	300
33	Arsenicals	9.00	Mature chickens	0.919	8.275	300
34	Sulfonamides	12.00	Bulls	0.598	7.178	300
35	Avermectins	9.00	Bulls	0.598	5.384	300
36	Antibiotics	15.00	Lambs	0.250	3.754	300
37	Sulfonamides	12.00	Lambs	0.250	3.003	300
38	Antibiotics	15.00	Formula-fed	0.194	2.912	300
39	Antibiotics	15.00	Boars/Stags	0.170	2.546	300
40	Antibiotics	15.00	Ducks	0.169	2.533	300

Table 4.7 - *Continued*
Veterinary Drug Compound/Production Class Pairs,
Sorted by Sampling Priority Score, "Full-Resource" Sampling
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND CLASS	COMPOUND PRIORITY RATING (P)	PRODUCTION CLASS	EST. RELATIVE % DOMESTIC CONSUMPTION (D)	C/PC PAIR PRIORITY SCORE (P x D)	# SAMPLES
41	Sulfonamides	12.00	Formula-fed	0.194	2.329	230
42	Avermectins	9.00	Lambs	0.250	2.252	230
43	Sulfonamides	12.00	Boars/Stags	0.170	2.037	230
44	Sulfonamides	12.00	Ducks	0.169	2.026	230
45	Avermectins	9.00	Formula-fed	0.194	1.747	230
46	Arsenicals	9.00	Boars/Stags	0.170	1.528	230
47	Avermectins	9.00	Boars/Stags	0.170	1.528	230
48	Arsenicals	9.00	Ducks	0.169	1.520	230
49	Antibiotics	15.00	Mature turkeys	0.087	1.304	230
50	Sulfonamides	12.00	Mature turkeys	0.087	1.043	230
51	Antibiotics	15.00	Bob calves	0.059	0.890	230
52	Arsenicals	9.00	Mature turkeys	0.087	0.783	230
53	Sulfonamides	12.00	Bob calves	0.059	0.712	230
54	Antibiotics	15.00	Horses	0.041	0.609	230
55	Sulfonamides	12.00	Horses	0.041	0.487	230
56	Avermectins	9.00	Horses	0.041	0.366	230
57	Antibiotics	15.00	Goats	0.023	0.339	230
58	Antibiotics	15.00	Other fowl	0.019	0.288	230
59	Sulfonamides	12.00	Goats	0.023	0.271	230
60	Antibiotics	15.00	Heavy calves	0.017	0.262	230
61	Sulfonamides	12.00	Other fowl	0.019	0.230	230
62	Sulfonamides	12.00	Heavy calves	0.017	0.209	230
63	Arsenicals	9.00	Goats	0.023	0.204	230
64	Avermectins	9.00	Goats	0.023	0.204	230
65	Antibiotics	15.00	Roaster pigs	0.012	0.187	230
66	Antibiotics	15.00	Sheep	0.012	0.187	230
67	Arsenicals	9.00	Other fowl	0.019	0.173	230
68	Avermectins	9.00	Heavy calves	0.017	0.157	230
69	Sulfonamides	12.00	Roaster pigs	0.012	0.150	90
70	Antibiotics	15.00	Non-formula	0.009	0.131	90
71	Arsenicals	9.00	Roaster pigs	0.012	0.112	90
72	Avermectins	9.00	Roaster pigs	0.012	0.112	90
73	Avermectins	9.00	Sheep	0.012	0.112	90
74	Sulfonamides	12.00	Non-formula	0.009	0.105	90
75	Avermectins	9.00	Non-formula	0.009	0.079	90
76	Antibiotics	15.00	Geese	0.003	0.039	90
77	Sulfonamides	12.00	Geese	0.003	0.031	90
78	Antibiotics	15.00	Rabbits	0.002	0.027	90
79	Avermectins	9.00	Rabbits	0.002	0.016	90

Table 4.8
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2000 FSIS NRP Monitoring Plan and Special Projects

COMPOUND CLASS	PRODUCTION CLASS	SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Antibiotics	Young chickens	612.262	3848	0.03	460		460		**460**
Antibiotics	Market hogs	282.583	4779	0.50	460	+1	690		**690**
Antibiotics	Steers	211.923	2789	0.07	460		460		**460**
Antibiotics	Heifers	127.180	2214	0.09	460		460		**460**
Antibiotics	Young turkeys	110.133	3968	0.23	460		460		**460**
Antibiotics	Eggs	47.233	NT	NT	460	+1	690		**690**
Antibiotics	Dairy cows	26.995	4507	0.89	300	+2	690		**690**
Antibiotics	Beef cows	26.962	3872	0.23	300		300		**300**
Antibiotics	Sows	15.956	4351	0.28	300		300		**300**
Antibiotics	Mature chickens	13.792	3422	0.00	300	-1	230		**230**
Antibiotics	Bulls	8.973	1848	0.00	300	-1	230		**230**
Antibiotics	Lambs	3.754	3816	0.24	300		300		**300**
Antibiotics	Formula-fed	2.912	7326	0.71	300	+2	690		**690**
Antibiotics	Boars/Stags	2.546	2660	0.26	300		300		**300**
Antibiotics	Ducks	2.533	3213	0.12	300		300		**300**
Antibiotics	Mature turkeys	1.304	1911	0.10	230		230		**230**
Antibiotics	Bob calves	0.890	5242	1.34	230	+2	460		**460**
Antibiotics	Horses	0.609	1957	3.78	230	+2	460		**460**
Antibiotics	Goats	0.339	2895	0.24	230		230		**230**
Antibiotics	Other fowl	0.288	NT	NT	230	+1	300		**300**
Antibiotics	Heavy calves	0.262	3380	0.38	230		230		**230**
Antibiotics	Roaster pigs	0.187	NT	NT	230	+1	300		**300**
Antibiotics	Sheep	0.187	2058	0.05	230		230		**230**
Antibiotics	Non-formula	0.131	3142	0.45	90	min. 230	230		**230**
Antibiotics	Geese	0.039	343	0.29	90	NO ADJ	90		**90**
Antibiotics	Rabbits	0.027	1293	5.10	90	+2	300		**300**
TOTAL # SAMPLES					**7570**		**9620**		**9620**

Table 4.8 - *Continued*
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2000 FSIS NRP Monitoring Plan and Special Projects

COMPOUND CLASS	PRODUCTION CLASS	SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Avermectins	Market hogs	169.550	3179	0.00	460	NO ADJ	460		**460**
Avermectins	Steers	127.154	2923	0.03	460		460		**460**
Avermectins	Heifers	76.308	1848	0.00	460	NO ADJ	460		**460**
Avermectins	Dairy cows	16.197	2553	0.16	300		300		**300**
Avermectins	Beef cows	16.177	3155	0.22	300		300		**300**
Avermectins	Sows	9.574	2752	0.04	300		300		**300**
Avermectins	Bulls	5.384	1373	0.29	300		300		**300**
Avermectins	Lambs	2.252	2675	0.07	230		230		**230**
Avermectins	Formula-fed	1.747	3009	0.13	230		230		**230**
Avermectins	Boars/Stags	1.528	1459	0.00	230	NO ADJ	230		**230**
Avermectins	Horses	0.366	1357	0.59	230	+1	300		**300**
Avermectins	Goats	0.204	2838	0.70	230	+2	460		**460**
Avermectins	Heavy calves	0.157	3084	0.45	230		230		**230**
Avermectins	Roaster pigs	0.112	NT	NT	90	+1	230		**230**
Avermectins	Sheep	0.112	1601	0.19	90		90		**90**
Avermectins	Non-formula	0.079	2447	0.45	90		90		**90**
Avermectins	Rabbits	0.016	0	NT	90	+1	230		**230**
TOTAL # SAMPLES					**4320**		**4900**		**4900**

Table 4.8 - *Continued*
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2000 FSIS NRP Monitoring Plan and Special Projects

COMPOUND CLASS	PRODUCTION CLASS	SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Sulfonamides	Young chickens	489.809	4387	0.11	460		460		**460**
Sulfonamides	Market hogs	226.066	17280	0.78	460	+2	460		**460**
Sulfonamides	Steers	169.538	2445	0.12	460		460		**460**
Sulfonamides	Heifers	101.744	2181	0.05	460		460		**460**
Sulfonamides	Young turkeys	88.106	4366	0.21	460		460		**460**
Sulfonamides	Eggs	37.786	NT	NT	460	+1	460		**460**
Sulfonamides	Dairy cows	21.596	4129	0.36	300		300		**300**
Sulfonamides	Beef cows	21.570	3520	0.14	300		300		**300**
Sulfonamides	Sows	12.765	4564	0.79	300	+2	460		**460**
Sulfonamides	Bulls	7.178	1866	0.05	300		300		**300**
Sulfonamides	Lambs	3.003	2919	0.31	300		300		**300**
Sulfonamides	Formula-fed	2.329	6032	0.07	230		230		**230**
Sulfonamides	Boars/Stags	2.037	2811	0.92	230	+2	460		**460**
Sulfonamides	Ducks	2.026	2623	0.08	230		230		**230**
Sulfonamides	Mature turkeys	1.043	1995	0.55	230	+1	300		**300**
Sulfonamides	Bob calves	0.712	4399	0.73	230	+2	460		**460**
Sulfonamides	Horses	0.487	1590	0.25	230		230		**230**
Sulfonamides	Goats	0.271	2182	0.32	230		230		**230**
Sulfonamides	Other fowl	0.230	NT	NT	230	+1	300		**300**
Sulfonamides	Heavy calves	0.209	3551	0.20	230		230		**230**
Sulfonamides	Roaster pigs	0.150	NT	NT	90	+1	230		**230**
Sulfonamides	Non-formula	0.105	3182	0.57	90	+1	230		**230**
Sulfonamides	Geese	0.031	350	0.29	90		90		**90**
TOTAL # SAMPLES					**6600**		**7640**		**7640**

Table 4.8 - *Continued*
Adjusted Number of Analyses for Each Veterinary Drug Compound/Production Class Pair, "Full Resource" Sampling
2000 FSIS NRP Monitoring Plan and Special Projects

COMPOUND CLASS	PRODUCTION CLASS	SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
Arsenicals	Young chickens	367.357	3199	0.41	460		460	+740	**1200**
Arsenicals	Market hogs	169.550	2538	0.00	460	-1	300		**300**
Arsenicals	Young turkeys	66.080	2601	0.19	460		460		**460**
Arsenicals	Eggs	28.340	NT	NT	460	+1	460		**460**
Arsenicals	Beef cows	16.177	765	0.13	300		300		**300**
Arsenicals	Sows	9.574	946	0.00	300	-1	230		**230**
Arsenicals	Mature chickens	8.275	934	0.00	300	-1	230		**230**
Arsenicals	Boars/Stags	1.528	777	0.00	230	-1	90		**90**
Arsenicals	Ducks	1.520	89	0.00	230		230		**230**
Arsenicals	Mature turkeys	0.783	450	0.00	230	-1	90		**90**
Arsenicals	Goats	0.204	944	0.64	230	+1	300		**300**
Arsenicals	Other fowl	0.173	NT	NT	230	+1	300		**300**
Arsenicals	Roaster pigs	0.112	NT	NT	90	+1	230		**230**
TOTAL # SAMPLES					**3980**		**3680**		**4420**

Key:
#SAMP. = Total number of samples analyzed by the FSIS Monitoring Plan and/or Special Projects (i.e., random sampling only), 1/1/89 - 12/31/98.
%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.

SECTION 5. PLANNING THE 2000 FSIS IMPORT RESIDUE PLAN: VETERINARY DRUGS

PHASE I - GENERATING AND RANKING LIST OF CANDIDATE COMPOUNDS

LIST OF CANDIDATE COMPOUNDS

The candidate veterinary drugs of concern selected by members of the Surveillance Advisory Team (SAT) for the import residue plan are the same as those listed in Section 4.

RANKING OF CANDIDATE COMPOUNDS

Compound Scoring and Ranking

Using a simple 4-point scale (4 = high; 3 = moderate; 2 = low; 1 = none), the SAT scored each of the above veterinary drugs or drug classes in each of the following categories:

- Food Safety and Inspection Service (FSIS) Historical Testing Information on Violations
- Regulatory Concern
- Lack of FSIS Testing Information on Violations
- Withdrawal Time
- Impact on New and Existing Human Disease
- Acute or Chronic Toxicity Concerns

Categories used to score the veterinary drugs for the import residue plan parallel those for the domestic plan. However, two categories are different:

1. **FSIS Historical Testing Information on Violations**: The FSIS historical testing information for imported products is different from that for the domestic products.

2. **Relative Number of Animals Treated**: This category was not used in the design of the import residue plan because it is not possible to obtain detailed information on treatment practices in the animal populations of each country.

Definitions of each of these categories and the criteria used for scoring, appear at the end of this section, "*Scoring Key for Veterinary Drugs, 2000 Import Residue Plan.*"

The results of the scoring process are presented in Table 5.1, *Scoring Table for Veterinary Drugs.*

Background

As stated in Section 3, FSIS chose to employ techniques and principles from the field of risk assessment to obtain a ranking of the relative public health concern represented by each of the candidate compounds or compound classes.

The equation used to measure hazard is the same as that in the domestic plan:

Risk = Exposure x Toxicity (5.1)
= Consumption x Residue Levels x Toxicity
= Consumption x "Risk Per Unit of Consumption"

As stated in Section 4, given the limited resources available for this priority-setting effort, FSIS did not attempt to associate different degrees of risk with different degrees of exceedance of the tolerance or action level. The FSIS instead determined that the best available method for the measurement of relative toxicity is associated with the tolerance or action level. *Specifically, the frequency of violation of the tolerance or action level was used as an indicator of the risk per unit of consumption of a product.*

The categories of " FSIS Historical Testing Information on Violations " represent the percent of tested product found to have residues in excess of the tolerance or action level. Therefore, based on this equation, it can be seen that the violation rate scores assigned in Table 5.1 represent a rough overall estimate of *relative* risk per unit consumption. However, since most of the candidate compounds or compound classes of concern are ones that have not yet been included in the FSIS National Residue program (NRP), data on violation rates is not available for them. Therefore, it was necessary to generate an estimate of the overall violation rate for each these untested compounds and compound classes.

Estimating the Violation Rate

In the domestic residue plan, based on those drugs for which "Historical Testing Information" was available, a regression equation was developed to predict violation history scores for those veterinary drugs that had not been tested. However, in the import residue plan the data from FSIS testing is not sufficient to independently develop a similar predictive formula. Since it would be expected that similar underlying data on usage should lead to similar violation rate in foreign countries, the SAT decided to predict the score for “FSIS Historical Testing Information on Violations” using the regression equation obtained from the domestic values. Therefore, for purpose of planning the import residue plan, it was assumed that the relationship among the categories of “Regulatory Concern," "Withdrawal Time,” "Relative Number of Animals Treated" and “FSIS Historical Testing Information on Violations,” in foreign countries is similar to that in the U.S. The "Regulatory Concern" scores used for each drug or drug class in the import plan were the same as those in the domestic plan, because the veterinary control practices in foreign countries were judged to be approximately similar to those in the U.S. However, if the veterinary control practices in foreign countries were known to be different from those in U.S., the "Regulatory Concern" scores for a drug or drug class in the import plan would reflect such differences. The “Withdrawal Time” is based upon the pharmacokinetic properties of the drug in the animal. Therefore, “Withdrawal Time” score for each drug in the import residue plan is the same as that used in the domestic residue plan.

As stated in section 4 the regression equation (Equation 4.2) used to predict the violation rate for the 2000 FSIS domestic plan used two variables "Regulatory Concern" and "Numbers of Animals Treated." The equation did not use the values of the "Withdrawal Time."

$$Vp = 0.20(R*N) + 0.73 \qquad (4.2)$$

where Vp = Predicted score for "FSIS Historical Testing Information on Violations"
R = score for "Regulatory Concern"
N = score for "Relative Number of Animals Treated"

In import residue plan, no data was available for the “Relative Number of Animals Treated." Therefore, to calculate the predicted violation rate for the import residue plan using equation 4.2 the "Regulatory

Concern" variable is multiplied and added to a constant. It was therefore decided to use the values of the regulatory concern as the predicted violation rate.

Thus, the equation used to predict the violation rate for the import residue plan is:

$$V_P = R \qquad (5.2)$$

V_P = Predicted Violation Rate
R = Regulatory Concern

Rating the Veterinary Drugs According to Relative Public Health Concern

As stated in Section 4, the scores for predicted violation rate combines information on residue levels and toxicity, and thus represents a rough overall estimate of the relative risk per unit of consumption for each drug or drug class. Although this score, once multiplied by relative consumption data for each production class, would conform most closely to a purely risk-based ranking, the RPC believes that additional attributes should also be considered in the ranking. Thus, the ranking according to relative public health concern incorporates, as modifiers, the remaining scoring categories presented in Table 5.3, *Drug Residues Rated with Various Weighting Formulas.* The equation used is similar to the equation in, Section 4.

Relative Public Health Concern = *Predicted* score for "FSIS Historical testing information on violations" (Estimate of Relative Hazard)
x *modifier for* "Acute or chronic toxicity concerns"
x *modifier for* "Impact on new and existing human disease" (5.3)
x *modifier for* "Lack of FSIS testing information on violations"

The discussion on the use of modifiers is presented in Section 4 and following the same concept, the RPC decided to use the same weighting factors used in the domestic plan to calculate the relative public health concern for the import plan. In Table 5.2, *Drug Residues Rated with Various Weighting Formulas, 2000 Import Residue Plan*, the drugs are rated for relative public health concern by combining the scoring categories presented in Equation (3), above, using four different weighting formulas. As in the domestic plan, FSIS chose to use the second of these formulas (bolded and italicized in Table 5.2), based on a consensus about the relative importance of each modifier, and of how much each modifier should be allowed to alter the underlying risk-based score, "V_P," in Equation (5.4), below. Equation (5.4) summarizes the way final adjustments were made.

Thus, a similar equation as in Section 4 was used to calculate the relative public health concern.

$$\text{Relative Public Health Concern, veterinary drugs} = V_P*((D+3*T)/4) *\{1+[(L-1)*0.05]\} \qquad (5.4)$$

Where: V_P = *Predicted score for "FSIS Historical Information on Violations"*
D = score for "Impact on New and Existing Human Disease"
T = score for "Acute or Chronic Toxicity Concerns"
L = score for "Lack of FSIS Testing Information on Violations

In Table 5.4, *Drug Residues Rated with Various Weighting Formulas, Sorted by Rating,* the drugs are ranked by their rating scores using the four different weighting formulas as discussed in Section 4. Results obtained with the selected formula are bolded. Inspection of this chart reveals the extent to which changes in the weighting formula result in changes in ranking. In this case, the results from all four formulas are relatively similar.

The rating scores and rankings presented in Table 5.4 enables FSIS to bring consistency, grounded in formal risk-based considerations, to its efforts to differentiate among a very diverse range of drugs and drug classes in a situation that is marked by minimal data on relative exposures.

PHASE II - SELECTING DRUGS FOR INCLUSION IN THE 2000 NRP

As stated in Section 4, after the completion of the ranking of the veterinary drugs, FSIS used these rankings to select those compounds and compound classes that should be included in the 2000 NRP, based purely on their relative public health concern. It also determined which of these compounds and compound classes actually could be included in the 2000 NRP, based on the availability of laboratory resources.

The consensus of FSIS and FDA was that those compounds and compound classes ranked 39th or higher represented a potential public health concern sufficient to justify their inclusion in the 2000. In addition, FDA expressed interest in having FSIS test for veterinary tranquilizers, a compound class that did not fall within this group of 39. Veterinary tranquilizers ranked 54.

Once the high-priority compounds and compound classes had been identified, it was necessary for FSIS to apply non-public health considerations to determine the compounds for which FSIS would actually sample. The principal consideration not related to public health was the availability of laboratory resources, especially the availability of appropriate analytical methods within the FSIS laboratories. When the laboratory resource was limited, FSIS decided that more resources be used to test for the domestic products since the import residue plan is the recheck of the product at the port of entry. Based on these considerations, the following compounds will be included in the 2000 FSIS Import Residue Plan.

--Antibiotics:

- those antibiotics quantitated by the FSIS Bioassay and associated follow-up methodologies[1] [tetracycline, oxytetracycline, chlortetracycline, beta-lactams (penicillins and cephalosporins; not differentiated within this category), gentamicin, streptomycin/spectinomycin (not differentiated), erythromycin, tilmicosin, tylosin, neomycin, flavomycin, bacitracin, hygromycin, novobiocin, lincomycin*, pirlimycin*, clindamycin*, spiramycin*, oleandomycin*] *identification by mass spectrometry; not quantitated
- Choramphenicol
- Fluoroquinolones

--Other Veterinary Drugs:

- Arsenicals (detected as elemental arsenic)
- Avermectins in FSIS multi-residue method (doramectin and ivermectin)
- Carbadox
- Dexamethazone
- Flunixin
- Nitroimidazoles (ronidazole, dimetridazole and ipronidazole)

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[1] FSIS quantitates most antibiotics using a 7-plate Bioassay that measures microbial inhibition. The pattern of inhibition (i.e., the combination of plates showing inhibition) is used to identify the antibiotic. However, there are some antibiotics that share the same pattern of inhibition. In these cases, it is necessary to undertake follow-up testing (HPLC or mass spectrometry) to identify the compound. The compounds that share patterns of inhibition, and which are thus individually identified through follow-up testing, are:
tetracycline/oxytetracycline/chlortetracycline - compounds individually identified by follow-up with HPLC method for tetracyclines
tilmicosin/tylosin - differentiated by mass spectrometry

- Phenylbutazone (detected in the CHC3 method)
- Ractopamine (beta agonist)
- Sulfonamides (sulfapyridine, sulfadiazine, sulfathiazole, sulfamerazine, sulfamethazine, sulfachloropyridazine, sulfadoxine, sulfamethoxypyridazine, sulfaquinoxaline, sulfadimethoxine, sulfisoxazole, sulfacetamide, sulfamethoxazole, sulfamethizole, sulfanilamide, sulfaguanidine, sulfabromomethazine, sulfasalazine, sulfaethoxypyridazine, sulfaphenazole, and sulfatroxazole)

In 2000, FSIS will employ 12 methodologies that analyze for over 50 veterinary drugs in the Import Residue Plan. Six of these are single-compound methodology, and six are multi-residue methods (phenylbutazone is detected by the FSIS multi-residue method for chlorinated hydrocarbon and chlorinated organophosphate compounds).

PHASE III - IDENTIFYING THE COMPOUND/PRODUCT CLASS PAIRS

FDA participants of SAT identified, for each of the drugs and drug classes to be included in the 2000 NRP, the product classes in which they might be of concern. The results are presented in Table 5.5, *Product Classes Considered for Each Drug/Drug Class.* Compound/product class pairs included in the 2000 NRP are designated by a "●." Those compound/product class pairs that are of potential public health concern, but that could not be included in the 2000 NRP because of laboratory resource constraints, are marked with a "○." Since all product classes will be sampled by the chlorinated hydrocarbon/chlorinated organophosphate (CHC/COP) method (see Section 7), and since this method also detects phenylbutazone, the latter, by default, will be sampled in all product classes. However, phenylbutazone is not of regulatory concern in all product classes. Those product classes in which phenylbutazone will be sampled, but where it is NOT of regulatory concern, are designated by a "**O** "

PHASE IV - ALLOCATION OF SAMPLING RESOURCES

ALLOCATION OF SAMPLING RESOURCES AMONG DIFFERENT PRODUCTION CLASSES

The samples for residue analysis for imported egg products are selected in a different manner than the other product classes

EGG PRODUCTS

As stated in Section 2, for egg products, the first ten shipments from individual foreign establishments are subjected to 100 % reinspection, to establish a history of compliance with the U.S. requirements for each egg product category. This rate is reduced to a random selection of one reinspection out of eight product lots from each foreign establishment, which will continue as long as the product is in compliance. During 2000, imported egg products will be tested for arsenic and sulfonamides. Egg whites are included in the random selection for testing arsenic and sulfonamides.

ANIMAL PRODUCT CLASSES

Table-5.6**,** *Estimated Annual Amount of Product Imported,* lists the estimated amount of all the product classes imported into US and the percentage of each of the product classes. The percent of each product class imported annually is calculated using the following formula:

$$\% \text{ Product Class Imported } (P_C) = \frac{\text{Amount Product Class Imported}}{\text{Total Product Imported}} \times 100 \qquad (5.5)$$

The relative sampling priority is obtained by multiplying the percent product class (P_C) by the drug scores obtained in Phase I, using the following equation

Relative Sampling Priority = (P_C) X Drug Score (5.6)

Based on the scores, four different sampling options were chosen; very high regulatory concern (460 analyses/year); high regulatory concern (300 analyses/year); moderate regulatory concern (230 samples/year); low regulatory concern (90 samples/year). This is indicated in Table 5.9, *Number of Drug Samples/Product Class,* in the column labeled "Number of Samples."

If a product class represents less than one percent (by weight) of total combined U.S. imports of meat, poultry and egg products, then the total number of samples analyzed for any compound or compound class is eight times the number of countries from which that product is imported. For example, fresh goat is imported from only three countries. The amount imported is 0.27 % relative to the total U.S. import. Therefore, twenty four samples of fresh goat would be taken for each analysis, eight from each country.

In case of carbadox, chloramphenicol, dexamethazone, flunixin, nitroimidazoles, and ractopamine based on the laboratory capacity, the number of samples was adjusted downwards.

The adjusted numbers of samples is listed in Table 5.9, *Number of Drug Samples/Product Class,* in the column labeled "Adjusted Number of Samples." The final number of samples for a compound/product class is obtained after the allocation of samples among different countries is completed. The final number of samples is listed in Table 5.9 in the column labeled "Final Number of Samples." The numbers in the column labeled "Adjusted Number of Samples" and "Final Number of Samples" may vary slightly because of the rounding upwards or downwards of the samples.

ALLOCATION OF SAMPLES AMONG DIFFERENT COUNTRIES

The total number of samples chosen for each compound/product class pair was subdivided among the different countries. The number of samples for each country was based on the relative amount of total product class imported: less than one percent and greater than one percent.

Allocation of Samples in Product Classes Whose Total Volume Imported is less than 1%

As stated above, if the amount of an import product class was less than 1%, eight samples per compound/compound class were taken from each country. The relative amounts of fresh goat, fresh chicken, beef/pork processed, turkey fresh and processed, other fowl fresh and processed, lamb/mutton processed, and veal processed were less than 1%. The numbers of samples per country per product class for each compound/compound class are listed in Tables 5.10-5.19.

Allocation of Samples in Product Classes Whose Total Volume Imported is Greater Than 1%

For major product classes, the number of samples was allocated to each country depending upon the relative amount of product imported from that country. Table 5.8, *Estimated Annual Volume of Import Product/Country,* lists the amount of product imported from each country. The percent of a product class imported from a country was calculated as follows and is in Table 5.9, *Relative Annual Amount of Import Product /Country.*

$$\text{Percent Product Class Imported per Country } (P_{C/C}) = \frac{\text{Amount of Product Class from Country}}{\text{Total Amount of Product Class}} \times 100 \quad (5.7)$$

Based upon the relative amount of product class imported per country, the number of samples that should be taken at the port of entry was calculated using the following formula:

$$\text{Unadjusted Number of Samples per Country } (U_{C/S}) = \text{Total Number of Samples} \times \frac{(P_{C/C})}{100} \quad (5.8)$$

This is indicated in the column labeled "Unadjusted Number of Samples ($U_{C/S}$)," in Tables 5.20 to 5.26 (except 2.22b and 5.24b).

After the determination of the number of samples from each country, each country with less than eight samples was assigned a minimum of eight samples. This is indicated in the column labeled "Adjustment #1" in Tables 5.20 to 5.26(except 2.22b and 5.24b). The results of this adjustment are in the column labeled "Initial Adj #." After this adjustment, the total number of samples for a compound/product class resulted in more than the total number of samples allocated to that compound/product class pair. A second adjustment then had to be made, so that the total number of samples would be within an allocated number. This adjustment was made only to those countries from which greater than eight samples were to be taken. This was accomplished using the following equations:

$$\text{Number of Samples after Adjustment \#2} = (U_{C/S}) - \frac{(N \times P_{C/C})}{(P_{T/C})} \quad (5.9)$$

where ,

$N = (N_1) - (N_T)$
N_1 = Total Number of Samples after Adjustment #1
N_T = Total Number of Samples Allocated
$P_{T/C}$ = Total Percent of Product Class from the Countries That Had Greater Than Eight Samples
$P_{C/C}$ = Percent Product Class Imported Per Country
$U_{C/S}$ = Unadjusted Number of Samples

The final numbers of product sampled are indicated in Tables 5.20 to 5.26 (except 5.22b and 5.24b)in the column labeled "Final Adj.#."

Notes:

Because of limited laboratory resources twenty-four samples were allocated for chloramphenicol in fresh veal.

Since US imports processed pork from sixteen countries, the total number of samples were adjusted from 90 to 128, i.e. 8 samples/country.

Phenylbuatzone is detected by the FSIS CHC/COP method. Therefore, all product classes that are sampled for CHC/COP are sampled for phenylbutazone. The number of samples/product class/country is discussed in Section 7.

SCORING KEY FOR VETERINARY DRUGS
2000 FSIS IMPORT RESIDUE PLAN

FSIS Historical Testing Information on Violations

Information based on the testing performed by FSIS on the imported product collected at port of entry from 1989 to 1998

4 = More than 5 violations detected over all years of sampling.

3 = Total of three to five violations detected over all years of sampling

2 = Total of one or two violations detected over all years of sampling

1 = No violations detected over all years of sampling

NT = Not tested by FSIS

NA = Tested by FSIS but the violation information does not apply because of change in withdrawal time, or new information

Regulatory Concern

This consists of professional judgments made about the likelihood of occurrence of violations, based on regulatory intelligence information about possible misuse. Due to the public health significance of drug residue violations, surveillance data pertaining to a compound must meet only one of the requirements listed under each number below to receive that numerical ranking.

4 = Well-documented intelligence information gathered from a variety of reliable sources indicates possible widespread misuse of the compound, and/or this compound is banned, or is on the list of compounds prohibited from use in food animals under AMDUCA, or is not approved for use in the U.S.

3 = Intelligence information gathered through a variety of sources indicates only occasional misuse of this compound. The dosage form/packaging of this compound has potential for misuse.

2 = Intelligence information rarely indicates misuse of this compound.

1 = Intelligence information has never indicated misuse of this compound.

Lack of FSIS Testing Information on Violations

Represents the extent to which FSIS analytical testing information (1989 to 1998) on a residue is lacking.

1 = FSIS has included this compound in its sampling program within the past 5 years

2 = FSIS has included this compound in its sampling program within the past 8 years

3 = FSIS has included this compound in its sampling program within the past 10 years

4 = FSIS has never included this compound in its sampling program or has included it in its sampling program but the data is not relevant because of change in method, tolerance, etc.

Withdrawal Time

Producers using approved animal drugs are required to follow approved "conditions of use." For each drug, in each production class in which it is approved, the conditions of use specify the dosing regimen and the withdrawal time. The withdrawal time is the number of days that must pass between completion of the dosing regimen and the time of slaughter. This allows sufficient time for the concentration of drug in the animal to decrease below the tolerance. For approved drugs, the following scores were used. For unapproved drugs, scores in this category were assigned based on estimates of their half-lives.

4 = Withdrawal time greater than 14 days

3 = Withdrawal time between 8 and 14 days

2 = Withdrawal time between 1 and 7 days

1 = Zero-day withdrawal time

Impact on New and Existing Human Disease

This represents the extent to which the use or misuse of this compound may contribute to new and existing human disease. Examples could include the possible creation of antibiotic-resistant human pathogens from the use of antibiotics in animals, or the potentiation of new zoonotic diseases (which might subsequently be altered and transferred to humans) following pesticide-induced immunosuppression.

4 = Scientific information gathered from a variety of reliable sources indicate that possible widespread use of this compound might significantly modify drug resistance patterns of human pathogenic organisms.

3 = Limited scientific information is available to suggest or document public health risk but compound has the potential to affect microflora.

2 = No scientific information available to suggest or document public health risk.

1 = Current scientific information available suggests no public health risk.

Acute or Chronic Toxicity Concerns

This represents a combination of the toxicity of the compound and the severity associated with the compound’s toxic endpoint

4 = Compound is a carcinogen, or potentially life threatening, or has significant acute effects including the anaphylactic response to an allergen.

3 = Systemic no observed effect levels (NOEL's) seen at intermediate to low doses in laboratory test animals. Antimicrobial effects with a high potential to alter intestinal microflora.

2 = Systemic NOEL's seen at high oral doses in laboratory test animals. Antimicrobial effects with a moderate potential to alter intestinal microflora.

1 = Compound generally shows no toxicity in laboratory test animals even at doses much higher than present in edible tissues at zero-day withdrawal.

Table 5.1
Scoring Table for Veterinary Drugs
2000 FSIS Import Residue Plan

COMPOUND/ COMPOUND CLASS	HISTORICAL TESTING INFORMATION ON VIOLATION (FSIS)	REGULATORY CONCERN (CVM)	WITHDRAWAL TIME (CVM)	IMPACT ON NEW AND EXISTING HUMAN DISEASE (CDC)	ACUTE OR CHRONIC TOXICITY CONCERNS (CVM)	LACK OF TESTING INFORMATION ON VIOLATIONS (FSIS)
Those antibiotics quantitated by the FSIS Bioassay	3	4	4	3	4	1
Amikacin (aminoglycoside)	NT	3	4	3	2	4
Apramycin (aminoglycoside)	NT	4	4	3	2	4
Kanamycin (aminoglycoside)	NT	3	4	3	2	4
Spectinomycin (aminoglycoside)	NA	4	4	3	2	4
Streptomycin (aminoglycoside)	NA	4	4	3	2	4
Ampicillin (beta lactam)	NT	3	2	3	4	4
Amoxicillin (beta lactam)	NT	3	2	3	4	4
Cloxacillin (beta lactam)	NT	3	2	3	4	4
Hetacillin (beta lactam)	NT	2	2	3	4	4
Ticarcillin (beta lactam)	NT	2	2	3	4	4
Ceftiofur (cefalosporin)	NT	3	2	4	2	4
Cefazolin (synthetic cefalosporin)	NT	3	2	3	2	4
Chloramphenicol	NA	4	2	4	4	4
Florfenicol (chloramphen. deriv.)	NT	3	4	3	3	4
Thiamphenicol (chloramphen. deriv.)	NT	3	2	3	3	4
Fluoroquinolones	NT	4	3	4	2	4
Avoparcin (glycopeptide)	NT	4	2	4	2	4
Vancomycin (glycopeptide)	NT	4	2	4	2	4
Clindamycin (lincosamide)	NA	2	2	3	3	4
Lincomycin (lincosamide)	NA	2	2	3	3	4
Pirlimycin (lincosamide)	NA	3	4	4	2	4
Oleandomycin (macrolide)	NA	2	2	3	3	4
Spiramycin (macrolide)	NA	2	3	3	2	4
Tilmicosin (macrolide)	NA	4	2	3	3	4
Tylosin (macrolide)	NA	3	3	3	2	4
Colistin (polypeptide antibiotic)	NT	2	1	1	2	4
Virginiamycin	NT	1	1	3	1	4
Amprolium (coccidiostat)	NT	4	2	3	2	4
Arsenicals (detected as As)	1	4	2	3	2	1
Avermectins in FSIS multi-residue method (incl. doramectin, ivermectin, moxidectin) (antiparasitic)	1*	3	4	2	3	2
Eprinomectin (avermectin)	NT	2	2	2	2	4
Benzimidazoles (anthelmintic)	1	1	3	1	2	3
Berenil (antiprotozoal, Histomonas)	NT	4	4	2	3	4
Beta agonists, unapproved (incl. clenbuterol) (growth promotant)	NT	4	2	1	4	4
Ractopamine (beta agonist)	NT	4	2	2	4	4
Carbadox (antimicrobial)	NA	4	4	3	4	4
Clorsulon (anthelmintic,	1	2	3	2	2	3

Table 5.1- *Continued*
Scoring Table for Veterinary Drugs
2000 FSIS Import Residue Plan

COMPOUND/ COMPOUND CLASS	HISTORICAL TESTING INFORMATION ON VIOLATION (FSIS)	REGULATORY CONCERN (CVM)	WITHDRAWAL TIME (CVM)	IMPACT ON NEW AND EXISTING HUMAN DISEASE (CDC)	ACUTE OR CHRONIC TOXICITY CONCERNS (CVM)	LACK OF TESTING INFORMATION ON VIOLATIONS (FSIS)
Dexamethasone (glucocorticoid)	NT	4	2	1	3	4
Methyl prednisone (glucocorticoid)	NT	4	2	1	3	4
Prednisone (glucocorticoid)	NT	2	2	1	3	4
Halofuginone (antiprotozoal, coccidiostat)	1	1	2	2	2	1
Hormones, naturally-occuring	NT	2	1	2	2	4
DES (hormone, synthetic) (estrogenic)	NA	4	4	2	4	4
MGA (hormone, synthetic) (estrus regulator)	NA	3	1	2	3	4
Trenbolone (hormone, synthetic) (anabolic)	NT	3	3	2	3	4
Zeranol (hormone, synthetic) (anabolic)	NA	3	1	2	3	4
Lasalocid (coccidiostat)	NT	2	1	3	2	4
Levamisole (anthelmintic, Nematodes)	1	3	3	1	1	1
Morantel and pyrantel (anthelmintic)	1	1	1	2	1	3
Nicarbazin (coccidiostat)	1	2	2	2	1	3
Nitrofurans (incl. furazolidone, nitrofurazone) (antimicrobial)	NT	4	2	3	4	4
Nitromidazoles in FSIS Multiresidue Method (dimetridazole, ipronidazole) (antiprotozoal, Histomonas)	NA	4	2	1	4	4
Ronidazole (nitroimidazole) (antimicrobial)	NT	2	2	1	4	4
Etodolac (NSAID)	NT	3	2	1	3	4
Flunixin (NSAID)	NT	3	2	1	3	4
Phenylbutazone (NSAID)	NT	4	3	1	3	4
Dipyrone (NSAID)	NT	3	3	1	3	4
Sulfonamides (antibacterial, some are coccidiostats or anitmicrobials)	4	4	3	3	3	1
Sulfanitran (antibacterial, coccidiostat)	NT	4	3	3	3	4
Thyreostats (incl. thiouracil)	NT	4	3	2	4	4
Veterinary tranquilizers	NT	4	2	1	1	4

Key: NT = Not Tested by FSIS (1989-1998): NA = Compound has been tested by FSIS (1989-1998), but the information is Not Applicable;FSIS = Scores in this column supplied by FSIS; CVM = Scores in this column supplied by CVM; CDC = Sores in this column supplied by CDC; *Scoring based on ivermectin violations only

Table 5.2
Drugs Residues Rated with Various Weighting Formula
2000 FSIS Import Residue Plan

COMPOUND/ COMPOUND CLASS	Regulatory Concern (R) or Predicted Violation Rate (V_P)	Impact on New and Existing Human Disease (D)	Acute or Chronic Toxicity Concerns (T)	Lack of Testing Info. on Violations (L)	V_P*(.25D +0.75T)* {1+[(L-1)*0.1]}	***V_P*(.25* D+.75*T) *{1+[(L-1)*0.05]}***	V_P*((0.33 *D+0.67* T)*{1+[(L-1)*0.05]}	V_P*(0.5* D+0.5*T) *{1+[(L-1)*0.05]}
Those antibiotics quantitated by the FSIS Bioassay	4	3	4	1	15.00	***15.00***	14.68	14.00
Amikacin (aminoglycoside)	3	3	2	4	8.78	***7.76***	8.04	8.63
Apramycin (aminoglycoside)	4	3	2	4	11.70	***10.35***	10.72	11.50
Kanamycin (aminoglycoside)	3	3	2	4	8.78	***7.76***	8.04	8.63
Spectinomycin (aminoglycoside)	4	3	2	4	11.70	***10.35***	10.72	11.50
Streptomycin (aminoglycoside)	4	3	2	4	11.70	***10.35***	10.72	11.50
Ampicillin (beta lactam)	3	3	4	4	14.63	***12.94***	12.66	12.08
Amoxicillin (beta lactam)	3	3	4	4	14.63	***12.94***	12.66	12.08
Cloxacillin (beta lactam)	3	3	4	4	14.63	***12.94***	12.66	12.08
Hetacillin (beta lactam)	2	3	4	4	9.75	***8.63***	8.44	8.05
Ticarcillin (beta lactam)	2	3	4	4	9.75	***8.63***	8.44	8.05
Ceftiofur (cefalosporin)	3	4	2	4	9.75	***8.63***	9.18	10.35
Cefazolin (synthetic cefalosporin)	3	3	2	4	8.78	***7.76***	8.04	8.63
Chloramphenicol	4	4	4	4	20.80	***18.40***	18.40	18.40
Florfenicol (chloramphen. deriv.)	3	3	3	4	11.70	***10.35***	10.35	10.35
Thiamphenicol (chloramphen. deriv.)	3	3	3	4	11.70	***10.35***	10.35	10.35
Fluoroquinolones	4	4	2	4	13.00	***11.50***	12.24	13.80
Avoparcin (glycopeptide)	4	4	2	4	13.00	***11.50***	12.24	13.80
Vancomycin (glycopeptide)	4	4	2	4	13.00	***11.50***	12.24	13.80
Clindamycin (lincosamide)	2	3	3	4	7.80	***6.90***	6.90	6.90
Lincomycin (lincosamide)	2	3	3	4	7.80	***6.90***	6.90	6.90
Pirlimycin (lincosamide)	3	4	2	4	9.75	***8.63***	9.18	10.35
Oleandomycin (macrolide)	2	3	3	4	7.80	***6.90***	6.90	6.90
Spiramycin (macrolide)	2	3	2	4	5.85	***5.18***	5.36	5.75
Tilmicosin (macrolide)	4	3	3	4	15.60	***13.80***	13.80	13.80
Tylosin (macrolide)	3	3	2	4	8.78	***7.76***	8.04	8.63
Colistin (polypeptide antibiotic)	2	1	2	4	4.55	***4.03***	3.84	3.45
Virginiamycin	1	3	1	4	1.95	***1.73***	1.91	2.30
Amprolium (coccidiostat)	4	3	2	4	11.70	***10.35***	10.72	11.50
Arsenicals (detected as As)	4	3	2	1	9.00	***9.00***	9.32	10.00
Avermectins in FSIS multi-residue method (incl. doramectin, ivermectin, moxidectin) (antiparasitic)	3	2	3	2	9.08	***8.66***	8.41	7.88
Eprinomectin (avermectin)	2	2	2	4	5.20	***4.60***	4.60	4.60
Benzimidazoles (anthelmintic)	1	1	2	3	2.10	***1.93***	1.84	1.65
Berenil (antiprotozoal,)	4	2	3	4	14.30	***12.65***	12.28	11.50
Beta agonists, unapproved (incl. clenbuterol)	4	1	4	4	16.90	***14.95***	13.85	11.50
Ractopamine (beta agonist)	4	2	4	4	18.20	***16.10***	15.36	13.80

Table 5.2 - *Continued*
Drugs Residues Rated with Various Weighting Formula
2000 FSIS Import Residue Plan

COMPOUND/ COMPOUND CLASS	Regulatory Concern (R) or Predicted Violation Rate (V_P)	Impact on New and Existing Human Disease (D)	Acute or Chronic Toxicity Concerns (T)	Lack of Testing Info. on Violations (L)	V_P*(.25D +0.75T)* {1+[(L-1)*0.1]}	***V_P*(.25* D+.75*T) *{1+[(L-1)*0.05]}***	V_P*((0.33 *D+0.67* T)*{1+[(L-1)*0.05]}	V_P*(0.5* D+0.5*T) *{1+[(L-1)*0.05]}
Carbadox (antimicrobial)	4	3	4	4	19.50	***17.25***	16.88	16.10
Clorsulon (anthelmintic,)	2	2	2	3	4.80	***4.40***	4.40	4.40
Dexamethasone (glucocorticoid)	4	1	3	4	13.00	***11.50***	10.76	9.20
Methyl prednisone (glucocorticoid)	4	1	3	4	13.00	***11.50***	10.76	9.20
Prednisone (glucocorticoid)	2	1	3	4	6.50	***5.75***	5.38	4.60
Halofuginone (antiprotozoal, coccidiostat)	1	2	2	1	2.00	***2.00***	2.00	2.00
Hormones, naturally-occuring	2	2	2	4	5.20	***4.60***	4.60	4.60
DES (hormone, synthetic)	4	2	4	4	18.20	***16.10***	15.36	13.80
MGA (hormone, synthetic)	3	2	3	4	10.73	***9.49***	9.21	8.63
Trenbolone (hormone, synthetic) (anabolic)	3	2	3	4	10.73	***9.49***	9.21	8.63
Zeranol (hormone, synthetic) (anabolic)	3	2	3	4	10.73	***9.49***	9.21	8.63
Lasalocid (coccidiostat)	2	3	2	4	5.85	***5.18***	5.36	5.75
Levamisole (anthelmintic)	3	1	1	1	3.00	***3.00***	3.00	3.00
Morantel and pyrantel (anthelmintic)	1	2	1	3	1.50	***1.38***	1.46	1.65
Nicarbazin (coccidiostat)	2	2	1	3	3.00	***2.75***	2.93	3.30
Nitrofurans (incl. Furazolidone, nitrofurazone) (antimicrobial)	4	3	4	4	19.50	***17.25***	16.88	16.10
Nitromidazoles in FSIS Multiresidue Method (dimetridazole, ipronidazole) (antiprotozoal, Histomonas)	4	1	4	4	16.90	***14.95***	13.85	11.50
Ronidazole (nitroimidazole) (antimicrobial)	2	1	4	4	8.45	***7.48***	6.92	5.75
Etodolac (NSAID)	3	1	3	4	9.75	***8.63***	8.07	6.90
Flunixin (NSAID)	3	1	3	4	9.75	***8.63***	8.07	6.90
Phenylbutazone (NSAID)	4	1	3	4	13.00	***11.50***	10.76	9.20
Dipyrone (NSAID)	3	1	3	4	9.75	***8.63***	8.07	6.90
Sulfonamides (antibacterial, some are coccidiostats or anitmicrobials)	4	3	3	1	12.00	***12.00***	12.00	12.00
Sulfanitran (antibacterial, coccidiostat)	4	3	3	4	15.60	***13.80***	13.80	13.80
Thyreostats (incl. Thiouracil)	4	2	4	4	18.20	***16.10***	15.36	13.80
Veterinary tranquilizers	4	1	1	4	5.20	***4.60***	4.60	4.60

Table 5.3
Key to Abbreviations Used for Veterinary Drugs
2000 FSIS Import Residue Plan

ABBREVIATION	DRUG
Antibiots	Those antibiotics quantitated by the FSIS Bioassay
Amikacn	Amikacin (aminoglycoside)
Apramy	Apramycin (aminoglycoside)
Kanamy	Kanamycin (aminoglycoside)
Spectino	Spectinomycin (aminoglycoside)
Strepto	Streptomycin (aminoglycoside)
Ampicil	Ampicillin (beta lactam)
Amoxicil	Amoxicillin (beta lactam)
Cloxacil	Cloxacillin (beta lactam)
Hetacil	Hetacillin (beta lactam)
Ticarcil	Ticarcillin (beta lactam)
Ceftiofur	Ceftiofur (cefalosporin)
Cefazoln	Cefazolin (synthetic cefalosporin)
Clfencl	Chloramphenicol
Flofencl	Florfenicol (chloramphen. deriv.)
Thifencl	Thiamphenicol (chloramphen. deriv.)
Fluorqns	Fluoroquinolones
Avoparc	Avoparcin (glycopeptide)
Vacomy	Vancomycin (glycopeptide)
Clindmy	Clindamycin (lincosamide)
Lincomy	Lincomycin (lincosamide)
Pirlimyc	Pirlimycin (lincosamide)
Olandmy	Oleandomycin (macrolide)
Spiramy	Spiramycin (macrolide)
Tilmicos	Tilmicosin (macrolide)
Tylosin	Tylosin (macrolide)
Colistin	Colistin (polypeptide antibiotic)
Virgnmy	Virginiamycin
Amproli	Amprolium (coccidiostat)
Arsencls	Arsenicals (detected as As)
Avrmecs	Avermectins in FSIS multi-residue method (incl. doramectin, ivermectin, moxidectin) (antiparasitic)
Eprinom	Eprinomectin (avermectin)
Benzims	Benzimidazoles (anthelmintic)
Berenil	Berenil (antiprotozoal)
BetaAgs	Beta agonists, unapproved (incl. clenbuterol)
Ractopa	Ractopamine (beta agonist)
Carbadx	Carbadox (antimicrobial)
Clorsuln	Clorsulon (anthelmintic)
Dexamth	Dexamethasone (glucocorticoid)
MePred	Methyl prednisone (glucocorticoid)
Pred	Prednisone (glucocorticoid)
Halofugi	Halofuginone (antiprotozoal, coccidiostat)
Hrms,ntl	Hormones, naturally-occuring
DES	DES (hormone, synthetic)
MGA	MGA (hormone, synthetic)
Trenboln	Trenbolone (hormone, synthetic) (anabolic)
Zeranol	Zeranol (hormone, synthetic) (anabolic)
Lasalcid	Lasalocid (coccidiostat)

Table 5.3 - *Continued*
Key to Abbreviations Used for Veterinary Drugs
2000 FSIS Import Residue Plan

ABBREVIATION	DRUG
Levamsl	Levamisole (anthelmintic)
Mor,pyr	Morantel and pyrantel (anthelmintic)
Nicarbzn	Nicarbazin (coccidiostat)
Nitrofrs	Nitrofurans (incl. furazolidone, nitrofurazone) (antimicrobial)
Nitroims	Nitromidazoles in FSIS Multiresidue Method (dimetridazole, ipronidazole) (antiprotozoal)
Ronidzl	Ronidazole (nitroimidazole) (antimicrobial)
Etodolc	Etodolac (NSAID)
Flunixin	Flunixin (NSAID)
Phnlbute	Phenylbutazone (NSAID)
Dipyron	Dipyrone (NSAID)
Sulfas	Sulfonamides (antibacterial, some are coccidiostats or anitmicrobials)
Sulfntrn	Sulfanitran (antibacterial, coccidiostat)
Threos	Thyreostats (incl. thiouracil)
VetTrnks	Veterinary tranquilizers

Table 5.4
Drugs Residues Rated with Various Weighting Formula
Sorted by Rating
2000 FSIS Import Residue Plan

	Drugs	R*(.25D+0.75T) *{1+[(L-1)*0.1]}	***Drugs***	***R*(.25*D+.75*T) *{1+[(L-1)*0.05]}***	Drugs	R*((0.33*D+0.67*T)*{1+[(L-1)*0.05]}	Drugs	R*(0.5*D+0.5*T) *{1+[(L-1)*0.05]}
1	Clfencl	20.80	***Clfencl***	***18.40***	Clfencl	18.40	Clfencl	18.4
2	Carbadx	19.50	***Carbadx***	***17.25***	Carbadx	16.88	Carbadx	16.1
3	Nitrofrs	19.50	***Nitrofrs***	***17.25***	Nitrofrs	16.88	Nitrofrs	16.1
4	Ractopa	18.20	***Ractopa***	***16.10***	Ractopa	15.36	Antibiots	14
5	DES	18.20	***DES***	***16.10***	DES	15.36	Fluorqns	13.8
6	Threos	18.20	***Threos***	***16.10***	Threos	15.36	Avoparc	13.8
7	BetaAgs	16.90	***Antibiots***	***15.00***	Antibiots	14.68	Vacomy	13.8
8	Nitroims	16.90	***BetaAgs***	***14.95***	BetaAgs	13.85	Tilmicos	13.8
9	Tilmicos	15.60	***Nitroims***	***14.95***	Nitroims	13.85	Ractopa	13.8
10	Sulfntrn	15.60	***Tilmicos***	***13.80***	Tilmicos	13.80	DES	13.8
11	Antibiots	15.00	***Sulfntrn***	***13.80***	Sulfntrn	13.80	Sulfntrn	13.8
12	Ampicil	14.63	***Ampicil***	***12.94***	Ampicil	12.66	Threos	13.8
13	Amoxicil	14.63	***Amoxicil***	***12.94***	Amoxicil	12.66	Ampicil	12.075
14	Cloxacil	14.63	***Cloxacil***	***12.94***	Cloxacil	12.66	Amoxicil	12.075
15	Berenil	14.30	***Berenil***	***12.65***	Berenil	12.28	Cloxacil	12.075
16	Fluorqns	13.00	***Sulfas***	***12.00***	Fluorqns	12.24	Sulfas	12
17	Avoparc	13.00	***Fluorqns***	***11.50***	Avoparc	12.24	Apramy	11.5
18	Vacomy	13.00	***Avoparc***	***11.50***	Vacomy	12.24	Spectino	11.5
19	Dexamth	13.00	***Vacomy***	***11.50***	Sulfas	12.00	Strepto	11.5
20	MePred	13.00	***Dexamth***	***11.50***	Dexamth	10.76	Amproli	11.5
21	Phnlbute	13.00	***MePred***	***11.50***	MePred	10.76	Berenil	11.5
22	Sulfas	12.00	***Phnlbute***	***11.50***	Phnlbute	10.76	BetaAgs	11.5
23	Apramy	11.70	***Apramy***	***10.35***	Apramy	10.72	Nitroims	11.5
24	Spectino	11.70	***Spectino***	***10.35***	Spectino	10.72	Ceftiofur	10.35
25	Strepto	11.70	***Strepto***	***10.35***	Strepto	10.72	Flofencl	10.35
26	Flofencl	11.70	***Flofencl***	***10.35***	Amproli	10.72	Thifencl	10.35
27	Thifencl	11.70	***Thifencl***	***10.35***	Flofencl	10.35	Pirlimyc	10.35
28	Amproli	11.70	***Amproli***	***10.35***	Thifencl	10.35	Arsencls	10
29	MGA	10.73	***MGA***	***9.49***	Arsencls	9.32	Dexamth	9.2
30	Trenboln	10.73	***Trenboln***	***9.49***	MGA	9.21	MePred	9.2
31	Zeranol	10.73	***Zeranol***	***9.49***	Trenboln	9.21	Phnlbute	9.2
32	Hetacil	9.75	***Arsencls***	***9.00***	Zeranol	9.21	Amikacn	8.625
33	Ticarcil	9.75	***Avrmecs***	***8.66***	Ceftiofur	9.18	Kanamy	8.625
34	Ceftiofur	9.75	***Hetacil***	***8.63***	Pirlimyc	9.18	Cefazoln	8.625
35	Pirlimyc	9.75	***Ticarcil***	***8.63***	Hetacil	8.44	Tylosin	8.625
36	Etodolc	9.75	***Ceftiofur***	***8.63***	Ticarcil	8.44	MGA	8.625
37	Flunixin	9.75	***Pirlimyc***	***8.63***	Avrmecs	8.41	Trenboln	8.625
38	Dipyron	9.75	***Etodolc***	***8.63***	Etodolc	8.07	Zeranol	8.625
39	Avrmecs	9.08	***Flunixin***	***8.63***	Flunixin	8.07	Hetacil	8.05
40	Arsencls	9.00	***Dipyron***	***8.63***	Dipyron	8.07	Ticarcil	8.05
41	Amikacn	8.78	***Amikacn***	***7.76***	Amikacn	8.04	Avrmecs	7.875
42	Kanamy	8.78	***Kanamy***	***7.76***	Kanamy	8.04	Clindmy	6.9
43	Cefazoln	8.78	***Cefazoln***	***7.76***	Cefazoln	8.04	Lincomy	6.9
44	Tylosin	8.78	***Tylosin***	***7.76***	Tylosin	8.04	Olandmy	6.9
45	Ronidzl	8.45	***Ronidzl***	***7.48***	Ronidzl	6.92	Etodolc	6.9
46	Clindmy	7.80	***Clindmy***	***6.90***	Clindmy	6.90	Flunixin	6.9
47	Lincomy	7.80	***Lincomy***	***6.90***	Lincomy	6.90	Dipyron	6.9

Table 5.4- *Continued*
Drugs Residues Rated with Various Weighting Formula
Sorted by Rating
2000 FSIS Import Residue Plan

	Drugs	R*(.25D+0.75T) *{1+[(L-1)*0.1]}	***Drugs***	***R*(.25*D+.75*T) *{1+[(L-1)*0.05]}***	Drugs	R*((0.33*D+0.67*T)*{1+[(L-1)*0.05]}	Drugs	R*(0.5*D+0.5*T) *{1+[(L-1)*0.05]}
48	Olandmy	7.80	***Olandmy***	***6.90***	Olandmy	6.90	Spiramy	5.75
49	Pred	6.50	***Pred***	***5.75***	Pred	5.38	Lasalcid	5.75
50	Spiramy	5.85	***Spiramy***	***5.18***	Spiramy	5.36	Ronidzl	5.75
51	Lasalcid	5.85	***Lasalcid***	***5.18***	Lasalcid	5.36	Eprinom	4.6
52	Eprinom	5.20	***Eprinom***	***4.60***	Eprinom	4.60	Pred	4.6
53	Hrms,ntl	5.20	***Hrms,ntl***	***4.60***	Hrms,ntl	4.60	Hrms,ntl	4.6
54	VetTrnks	5.20	***VetTrnks***	***4.60***	VetTrnks	4.60	VetTrnks	4.6
55	Clorsuln	4.80	***Clorsuln***	***4.40***	Clorsuln	4.40	Clorsuln	4.4
56	Colistin	4.55	***Colistin***	***4.03***	Colistin	3.84	Colistin	3.45
57	Levamsl	3.00	***Levamsl***	***3.00***	Levamsl	3.00	Nicarbzn	3.3
58	Nicarbzn	3.00	***Nicarbzn***	***2.75***	Nicarbzn	2.93	Levamsl	3
59	Benzims	2.10	***Halofugi***	***2.00***	Halofugi	2.00	Virgnmy	2.3
60	Halofugi	2.00	***Benzims***	***1.93***	Virgnmy	1.91	Halofugi	2
61	Virgnmy	1.95	***Virgnmy***	***1.73***	Benzims	1.84	Benzims	1.65
62	Mor,pyr	1.50	***Mor,pyr***	***1.38***	Mor,pyr	1.46	Mor,pyr	1.65

Table 5.5
Product Classes Considered for Each Drug/Drug Class
2000 Import Residue Plan

DRUG->	ANTIBIOTS	ARSENCLS	AVERMECS	CARBADX	CLFENCL	DEXAMTH	FLUNIXIN	FLUORQNS	NITROIMS	SULFAS	PHNLBUTE	RACTOPA
Beef, fresh	●		●	○	●	●	●	○		●	●	
Beef, processed			○	○						●	●	
Pork, fresh	●		●	●					●	●	●	●
Pork, processed		●	○	○					○	●	●	○
Beef/Pork, processed		●	○	○					○	●	●	○
Veal, fresh	●		●		●			○		●	●	
Veal, processed			○							●	●	
Mutton/Lamb, fresh	●		●							●	●	
Mutton/Lamb, processed			○							●	●	
Goat, fresh	●									●	●	
Chicken, fresh	●	●						●		●	◉	
Chicken, processed		●						○		●	◉	
Turkey, fresh	●	●						○		●	◉	
Turkey, processed		●						○		●	◉	
Other Fowl, fresh	●	●								●	◉	
Other Fowl, processed	●	●								●	◉	
Eggs, processed	○	○								○	◉	

Key
● = Compound/product class sampled in the 2000 FSIS Import Residue Plan
○ = Compound/product class pair of regulatory concern but not included in the plan because of lab resources
◉ = Since all product classes will be sampled by the CHC/COP method (see Section 7), and since this method also detects phenylbutazone, the latter, by default, will be sampled in all product classes. However, phenylbutazone is not of regulatory concern in all product classes. Those product classes in which phenylbutazone will be sampled, but where it is NOT of regulatory concern.

Table 5.6
Estimated Amount of Product Imported During Twelve Month
2000 Import Residue Plan

PRODUCT CLASS	PRODUCT IMPORTED IN POUNDS	%PRODUCT IMPORTED
Beef fresh	1,942,567,849	61.00
Beef, processed	202,317,691	6.35
Pork, fresh	604,611,813	18.99
Pork, processed	201,534,439	6.33
Beef/Pork, processed	4,151,335	0.13
Veal, fresh	44,693,494	1.40
Veal, processed	50,759	0.00
Mutton/Lamb, fresh	108,791,308	3.42
Mutton/Lamb, processed	708,356	0.02
Goat, fresh	8,757,316	0.27
Chicken, fresh	13,876,207	0.44
Chicken, processed	39,709,634	1.25
Turkey, fresh	341,068	0.01
Turkey, processed	3,188,096	0.10
Other Fowl, fresh	539,843	0.02
Other Fowl, processed	2,161,139	0.07
Varied combination, processed	1,687,857	0.05
Eggs, processed	4,914,625	0.15
Total/country	3,184,602,829	100

Table 5.7
Estimated Annual Amount (in lbs.) of Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Argentina	Australia	Austria	Belgium	Brazil	Canada	CostaRica	Croatia
Beef, fresh	37,590,895	665,328,285				775,163,680	22,656,081	
Beef, processed	57,948,969	2,021,885			88,519,366	42,444,668	95,627	867,092
Pork, fresh		93,638				514,683,959		
Pork, processed			6,157	8,769,194		99,754,515	2,529	1,711,703
Beef/Pork, processed		7,555	1,134			3,954,420	73,148	6,614
Veal, fresh		4,969,362				17,154,330		
Veal, processed						50,759		
Mutton/Lamb, fresh		69,165,248				588,115		
Mutton/Lamb, processed		294,503				277,176		
Goat, fresh		7,731,448				1,227		
chicken, fresh						13,876,207		
chicken, processed						39,200,687		
Turkey, fresh						341,068		
Turkey, processed						2,185,711		
Other Fowl, fresh						421,021		
Other Fowl, processed						2,099,298		
Varied combination, processed		34,980				1,574,613		
Eggs, processed						4,914,625		
Total/country	95,539,864	749,646,904	7,291	8,769,194	88,519,366	1,518,686,079	22,827,385	2,585,409

Table 5.7 - *Continued*
Estimated Annual Amount (in lbs.) of Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Denmark	Finland	France	Germany	Honduras	Hong Kong	Hungary
Beef, fresh					1,011,169		
Beef, processed				7,001			
Pork, fresh	74,129,113	693,190					
Pork, processed	54,206,213		781,077	275,706			6,662,154
Beef/Pork, processed	76,608						
Veal, fresh							
Veal, processed							
Mutton/Lamb, fresh							
Mutton/Lamb, processed							
Goat, fresh							
Chicken, fresh							
Chicken, processed			205			96,062	
Turkey, fresh							
Turkey, processed						649,216	
Other Fowl, fresh			118,822				
Other Fowl, processed			61,729				
Varied combination, processed			33,365				
Eggs, processed							
Total/country	128,411,934	693,190	995,198	282,707	1,011,169	745,278	6,662,154

Table 5.7 - *Continued*
Estimated Annual Amount (in lbs.) of Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Iceland	Ireland	Israel	Italy	Japan	Mexico	Netherlands	New Zealand
Beef, fresh		50,510			23,125	6,029,876		380,403,252
Beef, processed				144,778		4,281,063		1,559,798
Pork, fresh		6,173,998				218,047		
Pork, processed		854,303		3,451,569		356,127	11,128,177	
Beef/Pork, processed							31,810	46
Veal, fresh								22,569,802
Veal, processed								
Mutton/Lamb, fresh	65,636					44		38,850,783
Mutton/Lamb, processed								97,819
Goat, fresh								1,024,641
Chicken, fresh								
Chicken, processed			412,680					
Turkey, fresh								
Turkey, processed			353,169					
Other Fowl, fresh								
Other Fowl, processed			112					
Varied combination, processed								44,899
Eggs, processed								
Total/country	65,636	7,078,811	765,961	3,596,347	23,125	10,885,157	11,159,987	444,551,040

Table 5.7 - *Continued*
Estimated Annual Amount (in lbs.) of Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Nicaragua	Poland	Spain	Sweden	Switzerland	UK	Uruguay
Beef, fresh	13,631,809						40,679,167
Beef, processed					37,227		4,390,217
Pork, fresh				871,144		7,748,724	
Pork, processed		13,291,432	278,353		5,230		
Beef/Pork, processed							
Veal, fresh							
Veal, processed							
Mutton/Lamb, fresh							121,482
Mutton/Lamb, processed							38,858
Goat, fresh							
Chicken, fresh							
Chicken, processed							
Turkey, fresh							
Turkey, processed							
Other Fowl, fresh							
Other Fowl, processed							
Varied combination, processed							
Eggs, processed							
Total/country	13,631,809	13,291,432	278,353	871,144	42,457	7,748,724	45,229,724

Table 5.8
Relative Annual Amount Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Argentina	Australia	Austria	Belgium	Brazil	Canada	CostaRica	Croatia
Beef, fresh	1.94	34.25	-	-	-	39.90	1.17	-
Beef, processed	28.64	1.00	-	-	43.75	20.98	0.05	0.43
Pork, fresh	-	0.02	-	-	-	85.13	-	-
Pork, processed	-	-	0.00	4.35	-	49.50	0.00	0.85
Beef/Pork, processed	-	0.18	0.03	-	-	95.26	1.76	0.16
Veal, fresh	-	11.12	-	-	-	38.38	-	-
Veal, processed	-	-	-	-	-	100.00	-	-
Mutton/Lamb, fresh	-	63.58	-	-	-	0.54	-	-
Mutton/Lamb, processed	-	41.58	-	-	-	39.13	-	-
Goat, fresh	-	88.29	-	-	-	0.01	-	-
Chicken, fresh	-	-	-	-	-	100.00	-	-
Chicken, processed	-	-	-	-	-	98.72	-	-
Turkey, fresh	-	-	-	-	-	100.00	-	-
Turkey, processed	-	-	-	-	-	68.56	-	-
Other Fowl, fresh	-	-	-	-	-	77.99	-	-
Other Fowl, processed	-	-	-	-	-	97.14	-	-
Varied combination, processed	-	2.07	-	-	-	93.29	-	-
Eggs, processed	-	-	-	-	-	100.00	-	-

Table 5.8 - *Continued*
Relative Annual Amount Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Denmark	Finland	France	Germany	Honduras	Hong Kong	Hungary
Beef, fresh	-	-	-	-	0.05	-	-
Beef, processed	-	-	-	0.00	-	-	-
Pork, fresh	12.26	0.11	-	-	-	-	-
Pork, processed	26.90	-	0.39	0.14	-	-	3.31
Beef/Pork, processed	1.85	-	-	-	-	-	-
Veal, fresh	-	-	-	-	-	-	-
Veal, processed	-	-	-	-	-	-	-
Mutton/Lamb, fresh	-	-	-	-	-	-	-
Mutton/Lamb, processed	-	-	-	-	-	-	-
Goat, fresh	-	-	-	-	-	-	-
Chicken, fresh	-	-	-	-	-	-	-
Chicken, processed	-	-	0.00	-	-	0.24	-
Turkey, fresh	-	-	-	-	-	-	-
Turkey, processed	-	-	-	-	-	20.36	-
Other Fowl, fresh	-	-	22.01	-	-	-	-
Other Fowl, processed	-	-	2.86	-	-	-	-
Varied combination, processed	-	-	1.98	-	-	-	-
Eggs, processed	-	-	-	-	-	-	-

Table 5.8 - *Continued*
Relative Annual Amount Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Iceland	Ireland	Israel	Italy	Japan	Mexico	Netherlands	New Zealand
Beef, fresh	-	0.00	-	-	0.00	0.31	-	19.58
Beef, processed	-	-	-	0.07	-	2.12	-	0.77
Pork, fresh	-	1.02	-	-	-	0.04	-	-
Pork, processed	-	0.42	-	1.71	-	0.18	5.52	-
Beef/Pork, processed	-	-	-	-	-	-	0.77	0.00
Veal, fresh	-	-	-	-	-	-	-	50.50
Veal, processed	-	-	-	-	-	-	-	-
Mutton/Lamb, fresh	0.06	-	-	-	-	0.00	-	35.71
Mutton/Lamb, processed	-	-	-	-	-	-	-	13.81
Goat, fresh	-	-	-	-	-	-	-	11.70
Chicken, fresh	-	-	-	-	-	-	-	-
Chicken, processed	-	-	1.04	-	-	-	-	-
Turkey, fresh	-	-	-	-	-	-	-	-
Turkey, processed	-	-	11.08	-	-	-	-	-
Other Fowl, fresh	-	-	-	-	-	-	-	-
Other Fowl, processed	-	-	0.01	-	-	-	-	-
Varied combination, processed	-	-	-	-	-	-	-	2.66
Eggs, processed	-	-	-	-	-	-	-	-

Table 5.8 - *Continued*
Relative Annual Amount Product Imported/Country
2000 Import Residue Plan

PRODUCT CLASS	Nicaragua	Poland	Spain	Sweden	Switzerland	UK	Uruguay
Beef, fresh	0.70	-	-	-	-	-	2.09
Beef, processed	-	-	-	-	0.02	-	2.17
Pork, fresh	-	-	-	0.14	-	1.28	-
Pork, processed	-	6.60	0.14	-	0.00	-	-
Beef/Pork, processed	-	-	-	-	-	-	-
Veal, fresh	-	-	-	-	-	-	-
Veal, processed	-	-	-	-	-	-	-
Mutton/Lamb, fresh	-	-	-	-	-	-	0.11
Mutton/Lamb, processed	-	-	-	-	-	-	5.49
Goat, fresh	-	-	-	-	-	-	-
Chicken, fresh	-	-	-	-	-	-	-
Chicken, processed	-	-	-	-	-	-	-
Turkey, fresh	-	-	-	-	-	-	-
Turkey, processed	-	-	-	-	-	-	-
Other Fowl, fresh	-	-	-	-	-	-	-
Other Fowl, processed	-	-	-	-	-	-	-
Varied combination, processed	-	-	-	-	-	-	-
Eggs, processed	-	-	-	-	-	-	-

Table 5.9
Number of Drug Samples/Product Class
2000 Import Residue Plan

NO. COUNTRIES	PRODUCT CLASS	DRUG	DRUG SCORE	PERCENT PRODUCT	RELATIVE SAMPLING PRIORITY	NUMBER OF SAMPLES	ADJUSTED NUMBER OF SAMPLES	FINAL NUMBER OF SAMPLES
11	Beef, Fresh	Chloramphenicol	18.40	61.00	1122.38	460	460	459
11	Beef, Fresh	Antibiotics	15.00	61.00	914.98	460	460	459
11	Beef, Fresh	Sulfonamides	12.00	61.00	731.98	460	460	459
11	Beef, Fresh	Dexamethazone	11.50	61.00	701.49	460	90	92
11	Beef, Fresh	Avermectins	8.66	61.00	528.40	460	460	459
11	Beef, Fresh	Flunixin	8.63	61.00	526.11	460	90	92
8	Pork, Fresh	Carbadox	17.25	18.99	327.50	300	90	93
8	Pork, Fresh	Ractopamine	16.10	18.99	305.67	300	90	93
8	Pork, Fresh	Antibiotics	15.00	18.99	284.78	300	300	300
8	Pork, Fresh	Nitroimidazoles	14.95	18.99	283.83	300	90	93
8	Pork, Fresh	Sulfonamides	12.00	18.99	227.83	300	300	300
8	Pork, Fresh	Arsenicals	9.00	18.99	170.87	300	300	300
8	Pork, Fresh	Avermectins	8.66	18.99	164.46	300	300	300
12	Beef, Processed	Sulfonamides	12.00	6.35	76.24	230	230	230
16	Pork, Processed	Sulfonamides	12.00	6.33	75.94	230	230	232
16	Pork, Processed	Arsenicals	9.00	6.33	56.96	90	128	128
6	Mutton/Lamb, Fresh	Antibiotics	15.00	3.42	51.24	90	90	90
6	Mutton/Lamb, Fresh	Sulfonamides	12.00	3.42	40.99	90	90	90
6	Mutton/Lamb, Fresh	Avermectins	8.66	3.42	29.59	90	90	90
3	Veal, Fresh	Chloramphenicol	18.40	1.40	25.82	90	24	24
3	Veal, Fresh	Antibiotics	15.00	1.40	21.05	90	90	90
3	Veal, Fresh	Sulfonamides	12.00	1.40	16.84	90	90	90
4	Chicken, Processed	Sulfonamides	12.00	1.25	14.96	90	90	90
3	Veal, Fresh	Avermectins	8.66	1.40	12.16	90	90	45
4	Chicken, Processed	Arsenicals	9.00	1.25	11.22	90	90	90
1	Chicken, Fresh	Antibiotics	15.00	0.44	6.54	90	8	8
1	Chicken, Fresh	Sulfonamides	12.00	0.44	5.23	90	8	8
1	Chicken, Fresh	Fluroquinolones	11.50	0.44	5.01	90	8	8
3	Goat, Fresh	Antibiotics	15.00	0.27	4.12	90	24	24
1	Chicken, Fresh	Arsenicals	9.00	0.44	3.92	90	8	8
3	Goat, Fresh	Sulfonamides	12.00	0.27	3.30	90	24	24
3	Goat, Fresh	Arsenicals	9.00	0.27	2.47	90	24	24
3	Goat, Fresh	Avermectins	8.66	0.27	2.38	90	24	24

Table 5.9 - *Continued*
Number of Drug Samples/Product Class
2000 Import Residue Plan

NO. COUNTRIES	PRODUCT CLASS	DRUG	DRUG SCORE	PERCENT PRODUCT	RELATIVE SAMPLING PRIORITY	NUMBER OF SAMPLES	ADJUSTED NUMBER OF SAMPLES	FINAL NUMBER OF SAMPLES
8	Beef/Pork, Processed	Sulfonamides	12.00	0.13	1.56	90	64	64
3	Turkey, Processed	Sulfonamides	12.00	0.10	1.20	90	24	24
8	Beef/Pork, Processed	Arsenicals	9.00	0.13	1.17	90	64	64
3	Turkey, Processed	Arsenicals	9.00	0.10	0.90	90	24	24
3	Other fowl, Processed	Sulfonamides	12.00	0.07	0.81	90	24	24
3	Varied Combination, Processed	Sulfonamides	12.00	0.05	0.64	90	24	24
4	Mutton/Lamb, Processed	Sulfonamides	12.00	0.02	0.27	90	32	32
2	Other Fowl, Fresh	Antibiotics	15.00	0.02	0.25	90	16	16
2	Other Fowl, Fresh	Sulfonamides	12.00	0.02	0.20	90	16	16
1	Turkey, Fresh	Antibiotics	15.00	0.01	0.16	90	8	8
1	Turkey, Fresh	Sulfonamides	12.00	0.01	0.13	90	8	8
1	Turkey, Fresh	Arsenicals	9.00	0.01	0.10	90	8	8
1	Veal, Processed	Sulfonamides	12.00	0.00	0.02	90	8	8
						8110	5270	5236

Phenylbutazone is detected by the CHC/COP method hence the "No. of Samples/Product Class" for phenylbutazone is the same as that for the CHC's/COP's. (See Section 7).

Table 5.10
Number of Samples/Product Class-Goat, Fresh
2000 FSIS Import Residue Plan

GOAT, FRESH/ ANTIBIOTICS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	88.29	8
Canada	0.01	8
New Zealand	11.70	8
Total		24
GOAT, FRESH/ ARSENIC		
Australia	88.29	8
Canada	0.01	8
New Zealand	11.70	8
Total		24
GOAT, FRESH/ AVERMECTINS		
Australia	88.29	8
Canada	0.01	8
New Zealand	11.70	8
Total		24
GOAT, FRESH/ SULFONAMIDES		
Australia	88.29	8
Canada	0.01	8
New Zealand	11.70	8
Total		24

Table 5.11
Number of Samples/Product Class-Chicken, Fresh
2000 FSIS Import Residue Plan

CHICKEN, FRESH/ ANTIBIOTICS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100	8
Total		8
CHICKEN, FRESH/ ARSENICALS		
Canada	100	8
Total		8
CHICKEN, FRESH/ FLUOROQUINOLONES		
Canada	100	8
Total		8
CHICKEN, FRESH/ SULFONAMIDES		
Canada	100	8
Total		8

Table 5.12
Number of Samples/Product Class-Turkey, Fresh
2000 FSIS Import Residue Plan

TURKEY, FRESH/ ANTIBIOTICS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100	8
Total		8
TURKEY, FRESH/ ARSENICALS		
Canada	100	8
Total		8
TURKEY, FRESH/SULFONAMIDES		
Canada	100	8
Total		8

Table 5.13
Number of Samples/Product Class-Turkey, Processed
2000 FSIS Import Residue Plan

TURKEY, PROCESSED/ ARSENICALS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	68.56	8
Hong Kong	20.36	8
Israel	11.08	8
Total		24
TURKEY, PROCESSED/SULFONAMIDES		
Canada	68.56	8
Hong Kong	20.36	8
Israel	11.08	8
Total		24

Table 5.14
Number of Samples/Product Class-Varied Combination, Processed
2000 FSIS Import Residue Plan

VARIED COMBINATION, PROCESSED/SULFONAMIDES	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	2.07	8
Canada	93.29	8
France	1.98	8
Total		24

Table 5.15
Number of Samples/Product Class-Other, Fowl, Processed
2000 FSIS Import Residue Plan

OTHER, FOWL, PROCESSED/SULFONAMIDES	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	97.14	8
France	2.86	8
Israel	0.01	8
Total		24

Table 5.16
Number of Samples/Product Class-Other, Fowl, Fresh
2000 FSIS Import Residue Plan

OTHER FOWL, FRESH/ ANTIBIOTICS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	77.99	8
France	22.01	8
Total		24
OTHER FOWL, FRESH/ SULFONAMIDES		
Canada	77.99	8
France	22.01	8
Total		24

Table 5.17
Number of Samples/Product Class-Lamb/Mutton, Processed
2000 FSIS Import Residue Plan

LAMB/MUTTON, PROCESSED/ SULFONAMIDES	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	41.58	8
Canada	39.13	8
New Zealand	13.81	8
Uruguay	5.49	8
Total		32

Table 5.18
Number of Samples/Product Class-Veal, Processed
2000 FSIS Import Residue Plan

VEAL, PROCESSED/ SULFONAMIDES	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100	8
Total		8

Table 5.19
Number of Samples/Product Class-Beef/Pork, Processed
2000 FSIS Import Residue Plan

BEEF ,PORK, PROCESSED/ARSENIC	**PERCENT PRODUCT**	**FINAL NUMBER OF SAMPLES**
Australia	0.18	8
Austria	0.03	8
Canada	95.26	8
Costa Rica	1.76	8
Croatia	0.16	8
Denmark	1.85	8
Netherlands	0.77	8
New Zealand	0.001	80
Total		64
BEEF ,PORK, PROCESSED/SULFONAMIDES		
Australia	0.18	8
Austria	0.03	8
Canada	95.26	8
Costa Rica	1.76	8
Croatia	0.16	8
Denmark	1.85	8
Netherlands	0.77	8
New Zealand	0.001	80
Total		64

Table 5.20
Number of Samples/Product Class-Beef, Processed
2000 FSIS Import Residue Plan

BEEF, PROCESSED/ SULFONAMIDES	**PERCENT PRODUCT ($P_{C/C}$)**	**UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100)**	**ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)**	**INITIAL ADJ. NUMBER**	**ADJUST. # 2**	**FINAL NUMBER OF SAMPLES**
Argentina	28.64	66		66	51	49
Australia	1.00	2	8	8		8
Brazil	43.75	101		101	78	74
Canada	20.98	48		48	37	35
Costa Rica	0.05	0	8	8		8
Croatia	0.43	1	8	8		8
Germany	0.00	0	8	8		8
Italy	0.07	0	8	8		8
Mexico	2.12	5	8	8		8
New Zealand	0.77	2	8	8		8
Switzerland	0.02	0	8	8		8
Uruguay	2.17	5	8	8		8
Total		230		279		230

Table 5.21
Number of Samples/Product Class-Beef, Fresh
2000 FSIS Import Residue Plan

BEEF, FRESH/ ANTIBIOTICS	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)	INITIAL ADJ NUMBER	ADJUST. # 2	FINAL NUMBER OF SAMPLES
Argentina	1.94	9		9	8	8
Australia	34.25	158		158	144	144
Canada	39.90	184		184	168	168
Costa Rica	1.17	5	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	1	8	8		8
New Zealand	19.58	90		90	82	82
Nicaragua	0.70	3	8	8		8
Uruguay	2.09	10		10	9	9
Total		460		499	460	459
BEEF, FRESH/ AVERMECTINS		**UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)**				
Argentina	1.94	9		9	8	8
Australia	34.25	158		158	144	144
Canada	39.90	184		184	168	168
Costa Rica	1.17	5	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	1	8	8		8
New Zealand	19.58	90		90	82	82
Nicaragua	0.70	3	8	8		8
Uruguay	2.09	10		10	9	9
Total		460		499	460	459
BEEF, FRESH/ CHLORAMPHENICOL		**UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)**				
Argentina	1.94	9		9	8	8
Australia	34.25	158		158	144	144
Canada	39.90	184		184	168	168
Costa Rica	1.17	5	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	1	8	8		8
New Zealand	19.58	90		90	82	82
Nicaragua	0.70	3	8	8		8
Uruguay	2.09	10		10	9	9
Total		460		499	460	459

Table 5.21-*Continued*
Number of Samples/Product Class-Beef, Fresh
2000 FSIS Import Residue Plan

BEEF, FRESH/ DEXAMETHAZONE	**PERCENT PRODUCT ($P_{C/C}$)**	**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)**	**ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)**	**INITIAL ADJ. NUMBER**	**ADJUST. # 2**	**FINAL NUMBER OF SAMPLES**
Argentina	1.94	2	8	8		8
Australia	34.25	31		31	9	9
Canada	39.90	36		36	11	11
Costa Rica	1.17	1	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	0	8	8		8
New Zealand	19.58	18		18	6	8
Nicaragua	0.70	1	8	8		8
Uruguay	2.09	2	8	8		8
Total		90		149		92
BEEF, FRESH/ FLUNIXIN		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)**				
Argentina	1.94	2	8	8		8
Australia	34.25	31		31	9	9
Canada	39.90	36		36	11	11
Costa Rica	1.17	1	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	0	8	8		8
New Zealand	19.58	18		18	6	8
Nicaragua	0.70	1	8	8		8
Uruguay	2.09	2	8	8		8
Total		90		149		92
BEEF, FRESH/ SULFONAMIDES		**UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)**				
Argentina	1.94	9		9	8	8
Australia	34.25	158		158	144	144
Canada	39.90	184		184	168	168
Costa Rica	1.17	5	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	1	8	8		8
New Zealand	19.58	90		90	82	82
Nicaragua	0.70	3	8	8		8
Uruguay	2.09	10		10	9	9
Total		460		499	460	459

Table 5.22a
Number of Samples/Product Class-Veal, Fresh
2000 Import Residue Plan

VEAL, FRESH/ ANTIBIOTICS	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)	INITIAL ADJ.	ADJUST. # 2	FINAL ADJ.
Australia	11.12	10	10	10	10	10
Canada	38.38	35	35	35	35	35
New Zealand	50.50	45	45	45	45	45
Total		90				90
VEAL, FRESH/ AVERMECTIN		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	11.12	10	10	10	10	10
Canada	38.38	35	35	35	35	35
New Zealand[1]	50.50	45	45	45	45	0
Total		90	90	90	90	45
VEAL, FRESH/ SULFONAMIDES		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	11.12	10	10	10	10	10
Canada	38.38	35	35	35	35	35
New Zealand	50.50	45	45	45	45	45
Total		90	90	90	90	90

Table 5.22b
Number of Samples/Product Class-Veal, Fresh
2000 Import Residue Plan

VEAL, FRESH/ CHLORAMPHENICOL	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	11.12	8
Canada	38.38	8
New Zealand	50.50	8
Total		24

[1] Consistent with the domestic plan for bob veal, no samples will be taken from New Zealand bob veal shipments for avermectin.

Table 5.23
Number of Samples/Product Class-Pork, Fresh
2000 Import Residue Plan

PORK, FRESH/ ANTIBIOTICS/	**PERCENT PRODUCT ($P_{C/C}$)**	**UNADJUSTED NUMBER OF SAMPLES (U) =240*(($P_{C/C}$)/100)**	**ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)**	**INITIAL ADJ.#**	**ADJUST. # 2**	**FINAL ADJ.#**
Australia	0.02	0	8	8		8
Canada	85.13	255		255	220	220
Denmark	12.26	37		37	32	32
Finland	0.11	0	8	8		8
Ireland	1.02	3	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	4	8	8		8
Total		300		340		300
PORK, FRESH/ ARSENIC		**UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100**				
Australia	0.02	0	8	8		8
Canada	85.13	255		255	220	220
Denmark	12.26	37		37	32	32
Finland	0.11	0	8	8		8
Ireland	1.02	3	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	4	8	8		8
Total		300		340		300
PORK, FRESH/ AVERMECTINS		**UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100)**				
Australia	0.02	0	8	8		8
Canada	85.13	255		255	220	220
Denmark	12.26	37		37	32	32
Finland	0.11	0	8	8		8
Ireland	1.02	3	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	4	8	8		8
Total		300		340		300

Table 5.23 - *Continued*
Number of Samples/Product Class-Pork, Fresh
2000 Import Residue Plan

PORK, FRESH/ CARBADOX	**PERCENT PRODUCT ($P_{C/C}$)**	**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)**	**ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)**	**INITIAL ADJ.#**	**ADJUST. # 2**	**FINAL ADJ.#**
Australia	0.02	0	8	8		8
Canada	85.13	77		77	37	37
Denmark	12.26	11		11	5	8
Finland	0.11	0	8	8		8
Ireland	1.02	1	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	1	8	8		8
Total		90		136		93
PORK, FRESH/ NITROIMIDAZOLES		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	0.02	0	8	8		8
Canada	85.13	77		77	37	37
Denmark	12.26	11		11	5	8
Finland	0.11	0	8	8		8
Ireland	1.02	1	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	1	8	8		8
Total		90		136		93
PORK, FRESH/ RACTOPAMINE		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	0.02	0	8	8		8
Canada	85.13	77		77	37	37
Denmark	12.26	11		11	5	8
Finland	0.11	0	8	8		8
Ireland	1.02	1	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	1	8	8		8
Total		90		136		93

Table 5.23 - *Continued*
Number of Samples/Product Class-Pork, Fresh
2000 Import Residue Plan

PORK, FRESH/ SULFONAMIDES	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Australia	0.02	0	8	8		8
Canada	85.13	255		255	220	220
Denmark	12.26	37		37	32	32
Finland	0.11	0	8	8		8
Ireland	1.02	3	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	0	8	8		8
UK	1.28	4	8	8		8
Total		300		340		300

Table 5.24a
Number of Samples/Product Class-Pork, Processed
2000 Import Residue Plan

PORK, PROCESSED/ SULFONAMIDES	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 230*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Austria	0.003	0	8	8		8
Belgium	4.35	10		10	7	8
Canada	49.50	114		114	76	76
Costa Rica	0.001	0	8	8		8
Croatia	0.85	2	8	8		8
Denmark	26.90	62	8	62	41	41
France	0.39	1	8	8		8
Germany	0.14	0	8	8		8
Hungary	3.31	8	8	8		8
Ireland	0.42	1	8	8		8
Italy	1.71	4	8	8		8
Mexico	0.18	0	8	8		8
Netherlands	5.52	13		13	9	9
Poland	6.60	15		15	10	10
Spain	0.14	0	8	8		8
Switzerland	0.003	0	8	8		8
Total		230		302		232

Table 5.24b
Number of Samples/Product Class-Pork, Processed
2000 Import Residue Plan

PORK, PROCESSED/ ARSENICALS	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Austria	0.003	8
Belgium	4.35	8
Canada	49.50	8
Costa Rica	0.001	8
Croatia	0.85	8
Denmark	26.90	8
France	0.39	8
Germany	0.14	8
Hungary	3.31	8
Ireland	0.42	8
Italy	1.71	8
Mexico	0.18	8
Netherlands	5.52	8
Poland	6.60	8
Spain	0.14	8
Switzerland	0.003	8
Total		128

Table 5.25
Number of Samples/Product Class-Chicken, Processed
2000 Import Residue Plan

CHICKEN, PROCESSED/ ARSENICALS	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Canada	98.72	89		89	66	66
France	0.001	0	8	8		8
Hong Kong	0.24	0	8	8		8
Israel	1.04	1	8	8		8
Total		90	24	113		90
CHICKEN, PROCESSED/ SULFONAMIDES		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Canada	98.72	89		89	66	66
France	0.001	0	8	8		8
Hong Kong	0.24	0	8	8		8
Israel	1.04	1	8	8		8
Total		90	24	113		90

Table 5.26
Number of Samples/Product Class-Lamb/Mutton, Fresh
2000 Import Residue Plan

LAMB/MUTTON, FRESH/ ANTIBIOTICS	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100)	ADJUST. #1 (MIN. 8 SAMPLES / COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Australia	63.58	57		57	37	37
Canada	0.54	0	8	8		8
Iceland	0.06	0	8	8		8
Mexico	0.00004	0	8	8		8
New Zealand	35.71	32		32	21	21
Uruguay	0.11	0	8	8		8
Total		90		121		90
LAMB/MUTTON, FRESH/ AVERMECTINS		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	63.58	57		57	37	37
Canada	0.54	0	8	8		8
Iceland	0.06	0	8	8		8
Mexico	0.00004	0	8	8		8
New Zealand	35.71	32		32	21	21
Uruguay	0.11	0	8	8		8
Total		90		121		90
LAMB/MUTTON, FRESH/ SULFONAMIDES		**UNADJUSTED NUMBER OF SAMPLES (U) = 90*(($P_{C/C}$)/100**				
Australia	63.58	57		57	37	37
Canada	0.54	0	8	8		8
Iceland	0.06	0	8	8		8
Mexico	0.00004	0	8	8		8
New Zealand	35.71	32		32	21	21
Uruguay	0.11	0	8	8		8
Total		90		121		90

SECTION 6. PLANNING THE 2000 FSIS DOMESTIC MONITORING PLAN AND SPECIAL PROJECTS: PESTICIDES

PHASE I - GENERATING AND RANKING LIST OF CANDIDATE COMPOUNDS

LIST OF CANDIDATE COMPOUNDS

The candidate pesticides of concern selected by the Environmental Protection Agency (EPA) members of the Surveillance Advisory Team (SAT) is presented in Table 6.1, *Scored Pesticide Residues, Rated with Various Weighting Formulas*. Since the Food Safety and Inspection Service (FSIS) wishes to prioritize which *analyses* should be conducted, compounds that are, or are likely to be, detected by the same analytical methodology have been grouped together.

RANKING OF CANDIDATE COMPOUNDS

COMPOUND SCORING

Using a simple 4-point scale (4 = high; 3 = moderate; 2 = low; 1 = none), members of the SAT scored each of the pesticides in each of the following categories. Note that some of these categories differ from those used for the veterinary drugs:

- FSIS Historical Testing Information on Violations
- Regulatory Concern
- Lack of FSIS Testing Information on Violations
- Pre-slaughter Interval
- Bioconcentration Factor
- Endocrine Disruption
- Toxicity

Definitions of each of these categories, and the criteria used for scoring, appear at the end of this section in the "*Scoring Key for Pesticides, FSIS 2000 Domestic Residue Program*."

The results of the compound scoring process are presented in Table 6.1. Where compounds were grouped together, the score assigned to each category is the highest score for all members of the group.

COMPOUND RANKING

Background

Repeating Equation (4.1), we have:

$$\begin{aligned} \text{Risk} &= \text{Exposure x Toxicity} \\ &= \text{Consumption x Residue Levels x Toxicity} \end{aligned} \qquad (6.1)$$

= Consumption x "Risk Per Unit of Consumption"

As stated above, FSIS chose to employ techniques and principles from the field of risk assessment to obtain a ranking of the relative public health concern represented by each of the candidate compounds or compound classes. However, unlike the case with veterinary drugs (see Section 4), FSIS does not have historical data on a sufficient range of different pesticide compounds or compound classes to predict violation scores (and thus risk per unit of consumption) using a regression equation. Therefore a somewhat different approach (although related to that used for the veterinary drugs) was necessary to estimate the "Risk Per Unit of Consumption" term.

Rating the Pesticides According to Relative Public Health Concern

The categories of "Regulatory Concern," "Pre-slaughter Interval," and "Bioconcentration Factor" were employed as predictors of risk per unit of consumption from pesticides in animal products. As indicated above, the "Regulatory Concern" category reflects EPA's professional judgment that a compound or compound class will exceed the Reference Dose. Thus, it combines residue level and toxicity information. As with the “Withdrawal Time” category for veterinary drugs, the “Pre-slaughter Interval” category is expected to correlate with residue level because longer pre-slaughter intervals are less likely to be properly observed. When the pre-slaughter interval is not observed, the carcass may contain violative levels of residues, since the time necessary for sufficient metabolism and/or elimination of the pesticide may not have passed. Bioconcentration is a measure of the extent to which a pesticide concentrates within the fat deposits of animals. Pesticides that bioconcentrate are more likely to accumulate to higher levels within animal tissue, thus increasing the potential for human exposure.

The "Toxicity" category reflects both the dose required to achieve a toxic effect and the severity of that effect. It can thus be used directly as a term in Equation (6.1).

By multiplying toxicity times a weighted average of those categories used as indicators of potential residue level, we can obtain a rough estimate of the relative risk per unit of consumption represented by each compound or compound class. And as with the veterinary drugs, we can refine the equation somewhat by adding a modifier for "Lack of FSIS Testing Information on Violations." Thus, with appropriate substitution, we obtain the following equation:

Relative Public Health Concern (6.2)
= Estimated relative risk per unit of consumption
x *modifier for* "Lack of FSIS Testing Information on Violations"
= Estimated relative exposure x Relative toxicity
x *modifier for* "Lack of FSIS Testing Information on Violations"
= Weighted average of {"Regulatory Concern," "Pre-slaughter Interval," "Bioconcentration factor"} x "Toxicity" x *modifier for* "Lack of FSIS Testing Information on Violations"

In comparing Equation 6.2, above, to Equation 4.3, it can be seen that the "Weighted average of {'Regulatory Concern,' 'Pre-slaughter Interval,' "Bioconcentration factor'}" has been used in place of "Predicted or Actual Score for 'FSIS Historical Testing Information on Violations.'" "Endocrine Disruption" was not included in Equation 6.2, because scores for this category were not available for most of the pesticides.

The pesticides are rated for relative public health concern by combining the scoring categories presented in Equation (6.2). Rating numbers have been generated using four different weighting formulas, and are presented in Table 6.1. Inspection of this table reveals the extent to which changes in the weighting formula result in changes in rating score. In this case, the four formulas generate relatively similar

results, indicating that the rating scores are not highly sensitive to the formula variations shown here. The SAT chose to use the second formula (bolded in Table 6.1):

Relative public health concern rating, pesticides = {[(2*R+P+B)/4]*T}*{[(L-1)*0.05]+1} (6.3)

Where:
R = score for "Regulatory Concern"
P = score for "Pre-slaughter Interval"
B = score for "Bioconcentration Factor"
T = score for "Toxicity"
L = score for "Lack of FSIS Testing Information on Violations

In this formula, "Regulatory Concern" was weighted twice as heavily as both "Pre-slaughter Interval" and "Bioconcentration Factor," because “Regulatory Concern” was considered to be a more direct measure of exposure. Moreover, as with the veterinary drugs, the final ratings of compounds or compound classes receiving scores of 4, 3, 2, and 1 in "Lack of FSIS Testing Information on Violations" are increased by 15%, 10%, 5%, and 0% respectively. In other words, the rating of a compound or compound class that had never been tested by FSIS (in the production classes and matrices of concern) would be increased by 15%, while the rating of one that had been recently tested by FSIS (again, in the production classes and matrices of concern) would remain unchanged.

All of the formulas used here for the pesticides, and in Section 4 for the veterinary drugs, have been normalized. In other words, the veterinary drug and pesticide weighting formulas have been adjusted to give the same maximum value. For a given pesticide or pesticide class, this permits comparison of the scores generated by the four different weighting formulas presented in Table 6.1. Because the formulas for veterinary drugs use different terms from those for pesticides, the scores cannot be precisely compared across these two different types of residues. However, because of this normalization, the scores for pesticides and veterinary drugs are comparable in magnitude, permitting a rough comparison of relative public health concern scores to be made across these two very different categories of compounds.

In Table 6.2, *Rank and Status for Pesticides*, the pesticides are ranked by their rating scores, as generated using the selected weighting formula (Equation (6.3), above). The scores presented in Table 6.2 enable FSIS to bring consistency, grounded in formal risk-based considerations, to its efforts to differentiate among a very diverse range of pesticides and pesticide classes in a situation that is marked by minimal data on relative exposures**.** These rankings do not account for differences in exposure due to differences in overall consumption. Data on relative consumption are applied subsequently, in Phase IV, when relative exposure values for each compound/production class (C/PC) pair are estimated.

PHASE II - SELECTING PESTICIDES FOR INCLUSION IN THE 2000 NRP

Following the completion of the ranking of the pesticides, the SAT (1) used these rankings to select those compounds and compound classes that should be included in the 2000 NRP, based purely on their relative public health concern and (2) determined which of these compounds and compound classes actually could be included in the 2000 NRP, based on the availability of laboratory resources.

The consensus of the SAT participants was that those compounds and compound classes ranked tenth or higher represented a potential public health concern sufficient to justify their inclusion in the 2000 FSIS National Residue Program (NRP).

Once these high-priority compounds and compound classes had been identified, it was necessary for FSIS to apply considerations beyond those related to public health to determine the compounds that would be sampled. The principal consideration not related to public health was the availability of laboratory resources, especially the availability of appropriate analytical methods within the FSIS laboratories. Based on these constraints, only the chlorinated hydrocarbon/chlorinated organophosphate (CHC/COP) compound class can currently be included in the NRP. The 39 compounds that will be analyzed in this class are:

HCB, alpha-BHC, lindane, heptachlor, dieldrin, aldrin, endrin, ronnel, linuron, oxychlordane, chlorpyrifos, nonachlor, heptachlor epoxide A, heptachlor epoxide B, endosulfan I, endosulfan I sulfate, endosulfan II, trans-chlordane, cis-chlordane, chlorfenvinphos, p,p'-DDE, p, p'-TDE, o,p'-DDT, p,p'-DDT, carbophenothion, captan, stirofos, kepone, mirex, methoxychlor, phosalone, coumaphos-O, coumaphos-S, toxaphene, famphur, PCB 1242, PCB 1248, PCB 1254, PCB 1260, dicofol*, PBBs*, polybrominated diphenyl ethers*, and deltamethrin* (*identification only; not quantitated)

The sampling status of each compound or compound class in the 2000 Monitoring Plan and Special Projects is provided in Table 6.2. For each highly ranked compound or compound class that was not scheduled for inclusion in the 2000 NRP, a brief explanation of the reason for its exclusion is provided. This table will be used to identify future method development needs for pesticides for the FSIS NRP.

It can be seen that a number of highly ranked pesticides could not be included in the 2000 NRP due to methodological limitations. FSIS is currently working with EPA to extend the FSIS CHC/COP method to the chlorinated and non-chlorinated organophosphate compounds that were collectively rated as the top priority compound class. FSIS will implement this extended methodology as soon as it becomes available**.**

PHASE III - IDENTIFYING THE COMPOUND/PRODUCTION CLASS (C/PC) PAIRS

The CHC/COP class includes pesticides that are applied to grains. Some of these grains are used as animal feeds, creating the potential for the occurrence of "secondary residues" (i.e., residues that are not the result of direct treatment) in the animals. Other compounds within this class (such as the PCB's) are environmental contaminants. *Since all animals are fed grains, and since environmental contaminants can occur in any food animal, FSIS judged it prudent to sample for CHC's and COP's in all production classes*. FSIS also wishes to continue sampling for these compounds in all production classes as a means of monitoring for the occurrence of accidental contamination incidents.

PHASE IV - ALLOCATION OF SAMPLING RESOURCES

Since only the CHC/COP compound class will be included in the 2000 NRP, this phase is relatively straightforward. FSIS has sufficient analytical capability to implement CHC/COP analysis in all production classes. To establish a relative sampling priority for each C/PC pair, the ranking score for the CHC/COP's (as calculated in Table 6.1) was multiplied by the estimated relative percent of domestic consumption for each production class (presented in Table 4.6). This is identical Equation (4.6), which was used to calculate the relative sampling priorities for the veterinary drugs:

$$(\text{Rel. sampling priority})_{C/PC} = (\text{Ranking score})_{C} \times (\text{Est. rel. \% domestic consumption})_{PC} \qquad (6.4)$$

As stated above for veterinary drugs, Equation (6.4) is analogous to the equation used to estimate risk (Equation (6.1)), in which risk per unit of consumption is multiplied by consumption. While the results

of Equation (6.4) do not constitute an estimate of risk, they provide a numerical representation of the relative public health concern associated with each C/PC pair, and thus can be used to prioritize FSIS analytical sampling resources according to the latter. Note that the risk ranking provided by Equation (6.4) is based upon average consumption across the entire U.S. population, rather than upon maximally exposed individuals.

A ranking of the C/PC pairs within this single compound class could be obtained merely using the estimated relative percent of domestic consumption for each production class. In other words, the *rank order and the relative magnitude of the score* assigned to each of the C/PC pairs within this compound class is not changed by multiplying all the relative consumption values by the ranking score, since the ranking score is a constant term. Nevertheless, to maintain a rough parity between the sampling numbers assigned to the veterinary drugs and those assigned to the pesticides, all of the relative consumption figures were multiplied by the ranking score for the CHC/COP compound class. Then, rather than simply dividing the production classes into quartiles, the initial sampling levels were chosen using the same cutoff numbers employed in Table 4.7 for the veterinary drugs. The cutoff scores are as follows: $\geq$28 = 460 samples; 2.5 - 27 = 300 samples; 0.16 - 2.4 = 230 samples; < 0.16 = 90 samples. The results of this are presented in Table 6.3, *Pesticide Compound/Production Class Pairs, Sorted by Sampling Priority Score, with Adjusted Number of Analyses*. As described in Section 3, above, these sampling levels provide varying probabilities of detecting residue violations. Thus the larger sample sizes, which provide the greater chance of detecting violations, are directed towards those C/PC pairs that have been identified as representing higher levels of relative public health concern.

ADJUSTING RELATIVE SAMPLING NUMBERS

Adjusting for historical data on violation rates of individual C/PC pairs

Extensive FSIS historical testing information on violations, subdivided by production class, is available for the CHC/COP compound class. This information has been used to further refine the relative priority of sampling each C/PC pair. Table 6.3 lists, for the period 1/1/89 -12/31/98, the total number of samples analyzed by FSIS in each production class under its Monitoring Plan and Special Projects (i.e., random sampling only), and the percent of samples found to be violative (i.e., present at a level in excess of the action level or regulatory tolerance; or, for those compounds that are prohibited, present at any detectable level). Using these data, the following rules were applied to adjust the sampling numbers:

1. C/PC pair never tested: +1 level (i.e., increase by one sampling level, e.g., from 230 samples to 300 samples)
2. At least 300 samples tested, violation rate $\geq$ 0.25%: +1 level
3. The maximum number of samples to be scheduled for testing is 460

The two exceptions to this systems are:

1. Geese are never to be scheduled for more than 90 samples. Because very few geese are produced, and because virtually all geese are slaughtered by a very limited number of plants, it is impractical to collect a larger number of samples.

2. Because the use of the CHC/COP method to test for phenylbutazone did not start until recently, FSIS has limited data on the occurrence of this drug in the production classes of interest. Therefore, all production classes for which phenylbutazone was designated as of potential concern (in Table 4.6, with a "●") were assigned a minimum of 300 samples.

All of the above adjustments were applied. The sampling numbers obtained following these adjustments are listed in Table 6.3 under the heading "INITIAL ADJ. #" (initial adjusted number of samples).

Adjusting for laboratory capacity

No adjustments for laboratory capacity were necessary. Therefore the final sampling numbers for the pesticides, which are listed in the last column of Table 6.3 under the heading "FINAL ADJ. #" (final adjusted number of samples), are unchanged from those listed under the heading "INITIAL ADJ. #."

SCORING KEY FOR PESTICIDES
2000 FSIS DOMESTIC RESIDUE PROGRAM

FSIS Historical Testing Information on Violations (1/1/89 - 12/31/98)

Violation rate scores were calculated by two different methods, A and B:

Method A: Maximum Violation Rate. Identify the production class exhibiting the highest average violation rate (the number of violations over the period from 1989 - 1998, divided by the total number of samples analyzed). Score as follows:

4 = > 0.5%
3 = 0.25% - 0.5 %
2 = 0.07% - 0.24%
1 = < 0.07%
NT = Not tested by FSIS
NA = Tested by FSIS, but violation information does not apply

Method B: Violation Rate Weighted by Size of Production Class. For each production class analyzed, multiply the average violation rate (defined above) by the relative consumption value for that class (weight annual U.S. production for that class, divided by total production for all classes for which FSIS has regulatory responsibility). Add together the values for all production classes. Score as follows:

4 = > 0.08%
3 = 0.035% - 0.08%
2 = 0.003% - 0.034%
1 = < 0.003%
NT = Not tested by FSIS
NA = Tested by FSIS, but violation information does not apply

Final score is determined by assigning, to each pesticide or pesticide class, the greater of the scores from Method A and Method B.

It can be seen that Method A identifies those pesticides that are of regulatory concern because they exhibit high violation rates, independent of the relative consumption value of the production class in which the violations have occurred. Method B identifies those pesticides that may not have the highest violation rates, but would nevertheless be of concern because they exhibit moderate violation rates in a relatively large proportion of the U.S. meat supply. By employing Methods A and B together, and assigning a final score based on the highest score received from each, both of the above concerns are captured.

Regulatory Concern

These score were generated by a professional assessment of the extent to which the acute or chronic dietary exposure to this compound may exceed EPA's level of concern. Concern for chronic toxicity is judged by comparing a compound's Reference Dose (RfD) to the estimated level of exposure. The RfD is an estimated daily exposure to an agent that, when sustained over a lifetime, is assumed to be without appreciable risk to the human population.[1]

[1]Klassen, CD, ed. *Casarett and Doull's Toxicology: The Basic Science of Poisons, 5th Ed.* McGraw-Hill: New York, 1996, p. 80.

Concern for acute toxicity is judged by estimating the combined toxicity of all agents sharing the same mechanism of toxicity

4 = Reference Dose (RfD) exceeder, carcinogen, or possible high combined acute toxicity

3 = Close to RfD, or close to acceptable levels for combined acute toxicity

2 = Exposure estimated to be a low percentage of RfD, or to be below acceptable levels for combined acute toxicity

1 = Exposure estimated to be a very low percentage of RfD, or to be far below acceptable levels for combined acute toxicity

Lack of FSIS Testing Information on Violations

This represents the extent to which FSIS analytical testing information on a residue is limited, absent or obsolete.

4 = FSIS has not included this compound in its sampling program within the past 10 years (1/1/89 - 12/31/98); or FSIS has included this compound within its program only between 6 and 10 years ago (1/1/89 - 12/31/93), but the sampling does not meet the criteria specified for a "3;" or FSIS has included this compound in its sampling program, but the information is not at all useful in predicting future violation rates, because of subsequent significant changes in the conditions of use of the compound (e.g., the reduction in withdrawal time for carbadox), or because regulatory intelligence information indicates that the situation has changed significantly since the last time the compound was sampled; or because the compound is of concern in several production classes of interest, but testing has been carried out in only one.

3 = FSIS has tested within the past 5 years (1/1/94 - 12/31/98), but in fewer than 75% of the production classes of interest; or the only testing was between 6 and 10 years ago, where FSIS has analyzed at least 75% of production classes of interest for at least 2 of these 5 years, with a total of at least 500 samples per production class during this 5-year period and, in the case of a multi-residue method, the method used covers all compounds of interest with the compound class; or, the compound would normally have qualified for a "1" or "2," but the method used was not sufficiently sensitive to permit accurate determination of the true violation rate.

2 = FSIS has included this compound in its sampling program within the past 5 years in at least 75%, but less than 100% of the production classes of interest; or 100% of the production classes of interest have been sampled, but the amount and duration of sampling has been insufficient to qualify for a "1."

1 = FSIS has included this compound in its sampling program within the past 5 years, and has analyzed each production class of interest for at least 2 of these 5 years, with a total of at least 500 samples per production class during this 5-year period, and in the case of a multi-residue method, the method used covers all compounds of interest with the compound class.

Pre-Slaughter Interval

Pesticides accepted for direct dermal application have a minimum specified pre-slaughter interval. This is the interval between the last dermal application and the time of slaughter.

4 = Dermal application permitted, pre-slaughter interval 1 day or greater

3 = Dermal application permitted, pre-slaughter interval 0 days

2 = No direct dermal application permitted, but treatment of premises (e.g., holding cells, feedlots, barns, etc.) is permitted

1 = No direct dermal application or premise treatment permitted

Bioconcentration Factor

This is a measure of the compound's relative affinity for fat, as measured by the $K_{o/w}$. The $K_{o/w}$ is defined as the logarithm of the partition coefficient between octanol and water. Compounds that have a high affinity for octanol (and thus a high $K_{o/w}$) tend to bioaccumulate in body fat.

4 = log $K_{o/w}$ greater than 3

3 = log $K_{o/w}$ between 2 and 3

2 = log $K_{o/w}$ between 1 and 2

1 = log $K_{o/w}$ less than 1

Endocrine Disruption

This is a measure of the extent to which the compound changes endocrine function and causes adverse effects to individual organisms and/or their progeny, or to organism populations and subpopulations.

4 = Likely

3 = Suspected

NT = Not yet tested

Toxicity

This represents professional judgment of the toxicity of the compound, including both the dose required to achieve a toxic effect, and the severity of the toxic effect

4 = Highly acutely toxic, cholinesterase inhibitor, carcinogen, or low RfD

3 = Moderately acutely toxic, or higher RfD

2 = Low toxicity concern

1 = Very low toxicity concern or eligible for tolerance exception

Table 6.1
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Benzimidazole Pesticides in FSIS Benzimidazole Method (5-hydroxythiabendazole, benomyl (as carbendazim), thiabendazole)	1	3	1	4	3	4	3	13.2	***12.1***	12.3	11.7
Carbamates in FSIS Carbamate Method (aldicarb, alidcarb sulfoxide, aldicarb sulfone, carbaryl, carbofuran, carbofuran 3-hydroxy)	NA	4	4	2	3	4	4	18.2	***16.1***	16.6	15.3
Carbamates NOT in FSIS Carbamate Method (carbaryl 5,6-dihydroxy, chlorpropham, propham, thiobencarb, 4-chlorobenzylmethylsulfone,4-chlorobenzylmethylsulfone sulfoxide)	NT	4	1	3	NV	4	4	15.6	***13.8***	14.7	12.3
CHC'S and COP'S in FSIS CHC/COP Method (HCB, alpha-BHC, lindane, heptachlor, dieldrin, aldrin, endrin, ronnel, linuron, oxychlordane, chlorpyrifos, nonachlor, heptachlor epoxide A, heptachlor expoxide B, endosulfan I, endosulfan I sulfate, endosulfan II, trans-chlordane, cis-chlordane, chlorfenvinphos, p,p'-DDE, p, p'-TDE, o,p'-DDT, p,p'-DDT, carbophenothion, captan, stirofos, kepone, mirex, methoxychlor, phosalone, coumaphos-O, coumaphos-S, toxaphene, famphur, PCB 1242, PCB 1248, PCB 1254, PCB 1260, dicofol*, PBBs*, polybrominated diphenyl ethers*, deltamethrin*) (*identification only)	3	4	4	4	NV	4	1	16.0	***16.0***	16.0	16.0
COP'S and OP'S NOT in FSIS CHC/COP Method (azinphos-methyl, azinphos-methyl oxon, chlorpyrifos, coumaphos, coumaphos oxon, diazinon, diazinon oxon, diazinon met G-27550, dichlorvos, dimethoate, dimethoate oxon, dioxathion, ethion, ethion monooxon, fenthion, fenthion oxon, fenthion oxon sulfone, fenthion oxon sulfoxide, fenthion sulfone, fenthion sulfoxide, malathion, malathion oxon, naled, phosmet, phosmet oxon, pirimiphos-methyl, trichlorfon, tetrachlorvinphos, tetrachlorvinphos-4 metabolites, acephate, methamidophos, chlorpyrifos-methyl, fenamiphos, fenamiphos sulfoxide,fenamiphos sulfone, fenamiphos sulfoxide desisopropyl, fenamiphos sulfone desisopropyl, isofenphos, isofenphos oxon, isofenphos desisopropyl, isofenphos oxon desisopropyl, methidathion, ODM, parathion (ethyl)*, parathion oxon, parathion methyl*, parathion methyl oxon, phorate, phorate oxon, phorate oxon sulfone, phorate oxon sulfoxide, phorate sulfone, phorate sulfoxide, profenofos, sulprofos, sulprofos oxon, sulprofos oxon sulfone, sulprofos oxon sulfoxide, sulprofos sulfone, sulprofos sulfoxide, tribufos (DEF))	NT	4	4	4	NV	4	4	20.8	***18.4***	18.4	18.4

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Synthetic Pyrethrins in FSIS Synthetic Pyrethrin Method (cypermethrin, cis-permethrin, trans-permethrin, fenvalerate, zeta-cypermethrin)	1	3	4	4	3	4	3	16.8	***15.4***	15.0	16.1
Triazines in FSIS Triazine Method (atrazine, simazine, propazine, terbuthylazine)	1	4	2	3	4	4	3	15.6	***14.3***	15.0	13.2
Triazines NOT in FSIS Triazine Method (atrazine chloro metabolites, metribuzin, metribuzin DADK, metribuzin DA, metribuzin DK, amitraz, amitraz 2,4-DMA metabs., desdiethyl simazine, desethyl simazine, simazine chloro metabs.)	NT	4	4	3	4	4	4	19.5	***17.3***	17.5	16.9
1-(2,4-dichlorophenyl)-2-(1H-imidazole-1-yl)-1-ethanol	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
1,1-(2,2-dichloroethylidene)bis(4-methoxybenzene)	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
1,1,3,3,-tetrakis(2-methyl-2-phenylpropyl)-1,3-dihydroxydistannoxane	NT	2	1	4	NV	3	4	8.8	***7.8***	7.6	8.1
1-methoxy-4-(1,2,2,2-tetrachloroethyl)benzene)	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
1-methyl cyromazine	NT	3	4	2	NV	4	4	15.6	***13.8***	13.8	13.8
2-((2-ethyl-6-methylphenyl)-amino)-1-propanol	NT	3	1	3	3	4	4	13.0	***11.5***	12.0	10.7
2-(1-hydroxyethyl)-6-ethylaniline	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
2-(4-((6-chloro-2-benzoxazolyl)oxy)phenoxy)propanoic acid	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
2,3-dihydro-3,3-methyl-2-oxo-5-benzofuranyl methyl sulfonate	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
2,4-D	NT	3	2	1	3	2	4	5.9	***5.2***	5.5	4.6
2,5-dichloro-4-methoxyphenol	NT	1	1	2	NV	3	4	4.9	***4.3***	4.1	4.6
2,6-diethylaniline	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
2-aminobenzimidazole	NT	3	1	2	3	4	4	11.7	***10.4***	11.0	9.2
2-amino-n-isopropylbenzamide	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
2-carboxyisopropyl-4-(4-dichloro)-5-isopropoxyphenyl)-1,3,4-oxadiazolin-5-one	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
2-hydroxy-2,3-dihydro-3,3-methyl-5-benzofuranyl methyl sulfonate	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
2-t-butyl-4-(2,4-chloro-5-hydroxyphenyl)-delta 2-1,3,4-oxadiazolin-5-one	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
3-(1-(2,4-dichlorophenyl)-2-(1H-imidazole-1-yl)ethoxy)-1,2-propane diol	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
3-(2-chloro-4-hydroxyphenyl)-6-(2-chlorophenyl)-1,2,4,5-tetrazine	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
3-(3,4-dichlorophenyl)-1-methoxyurea	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
3,4-dichloroaniline	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3
3,4-dichlorophenylurea	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3
3-carboxy-5-ethoxy-1,2,4-thiadiazole	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
3-t-butyl-5-chloro-6-hydroxymethyluracil	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone	NT	3	1	3	3	4	4	13.0	***11.5***	12.0	10.7
4-chloro-2-trifluoromethylaniline	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
4-hydrocythidiazuron	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
6-chloro-2,3-dihydro-3,3,7-methyl-5H-oxazolo(3,2a)pyrimidin-5-one	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
6-chloro-2,3-dihydro-7-hydroxymethyl-3,3-methyl-5H-oxazolo(3,2-a)pyrimidin-5-one	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
6-chloro-2,3-dihydro-benzoxazol-2-one	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
6-chloronicotinic acid	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
6-chloropicolinic acid	NT	1	1	4	NV	3	4	6.8	***6.0***	5.5	6.9
6-methyl-2,3-quinoxalinedithiol	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Abamectin	NT	2	1	4	NV	4	4	11.7	***10.4***	10.1	10.7
Abamectin delta 8,9 geometric isomer	NT	2	1	4	NV	4	4	11.7	***10.4***	10.1	10.7
Acifluorfen, amino analog	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Alachlor	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
Allophanate	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Aminomethylphosphonic acid	NT	1	2	1	NV	1	4	1.6	***1.4***	1.4	1.5
Azoxystrobin	NT	1	1	3	NV	2	4	3.9	***3.5***	3.2	3.8
Azoxystrobin Z isomer	NT	1	1	3	NV	2	4	3.9	***3.5***	3.2	3.8
Benoxacor	NT	1	1	3	NV	4	4	7.8	***6.9***	6.4	7.7
Bensulfuron methyl ester	NT		1	1	NV	2	4	1.3	***1.2***	0.9	1.5
Bentazon, 6-hydroxy bentazon, 8-hydroxy bentazon	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Bifenthrin	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Bifenthrin, 4'-hydroxy	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
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COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Bis(trichloromethyl)disulfide	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Bromoxynil	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Buprofezin	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Butylamine, sec-	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Cacodylic acid	NT	3	3	3	3	4	4	15.6	***13.8***	13.8	13.8
Captan epoxide	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Carboxin	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Carboxin sulfoxide	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
CGA 150829	NT	2	1	1	NV	4	4	7.8	***6.9***	7.4	6.1
CGA 150829	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
CGA 161149	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
CGA 171683	NT	2	1	1	NV	4	4	7.8	***6.9***	7.4	6.1
CGA 195654	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
Chlorfenapyr	NT	1	1	2	NV	4	4	6.5	***5.8***	5.5	6.1
Chlorobenzilate	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Chloroneb	NT	1	1	2	NV	3	4	4.9	***4.3***	4.1	4.6
Chloroneb, hydroxy-	NT	1	1	2	NV	3	4	4.9	***4.3***	4.1	4.6
Chlorsulfuron	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Chlorsulfuron, 5-hydroxy-	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Clethodim	NT		1	2	NV	3	4	2.9	***2.6***	2.1	3.5
Clofencet	NT	1	1	2	NV	3	4	4.9	***4.3***	4.1	4.6
Clofentezine	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Cloprop	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
Clopyralid	NT	1	2	1	NV	2	4	3.3	***2.9***	2.8	3.1
Compound 125670	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
CP 101394	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
CP 108064	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
CP 108065	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
CP 108267	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
CP 51214	NT	4	1	3	3	4	4	15.6	***13.8***	14.7	12.3
Cyclanilide	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Cyclohexylstannoic acid	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Cyfluthrin	NT	3	4	2	NV	3	4	11.7	***10.4***	10.4	10.4
Cyhalothrin, lambda-	NT	3	4	2	NV	4	4	15.6	***13.8***	13.8	13.8
Cyhexatin	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Cyromazine	NT	3	4	2	NV	4	4	15.6	***13.8***	13.8	13.8
Dalapon	NT	2	2	2	NV	3	4	7.8	***6.9***	6.9	6.9
Dialifor	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Dialifor oxon	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Dicamba	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3
Dicyclohexyltin oxide	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Difenoconazole	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Difenoconazole	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Difenzoquat	NT	1	1	1	NV	4	4	5.2	***4.6***	4.6	4.6
Diflubenzuron	NT	3	4	4	NV	2	4	9.1	***8.1***	7.8	8.4
Dimethipin	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
Dioxathion	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Diphenamid	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
Diphenamid	NT	2	1	1	NV	3	4	5.9	***5.2***	5.5	4.6
Diphenamid, desmethyl	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
Diphenamid, desmethyl-	NT	2	1	1	NV	3	4	5.9	***5.2***	5.5	4.6
Diphenylamine	NT	3	3	1	NV	3	4	9.8	***8.6***	9.0	8.1

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
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COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Diphenylamine	NT	2	4	4	NV	3	4	11.7	***10.4***	9.7	11.5
Dipropyl isocinchomerate	NT	3	4	4	NV	2	4	9.1	***8.1***	7.8	8.4
Diquat dibromide	NT	1	1	3	NV	4	4	7.8	***6.9***	6.4	7.7
Diuron	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3
Dodine	NT	2	1	1	NV	3	4	5.9	***5.2***	5.5	4.6
Esfenvalerate	NT	3	4	3	NV	3	4	12.7	***11.2***	11.0	11.5
Ethalfluralin	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Ethephon	NT	3	1	1	NV	2	4	5.2	***4.6***	5.1	3.8
Ethofumesate	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Etridiazole .	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
ETU*	NT	3	1	2	3	4	4	11.7	***10.4***	11.0	9.2
Fenarimol	NT	1	1	4	NV	3	4	6.8	***6.0***	5.5	6.9
Fenarimol metabolite B	NT	1	1	4	NV	3	4	6.8	***6.0***	5.5	6.9
Fenarimol metabolite C	NT	1	1	4	NV	3	4	6.8	***6.0***	5.5	6.9
Fenbutatin Oxide	NT	2	1	4	NV	3	4	8.8	***7.8***	7.6	8.1
Fenoxaprop ethyl	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Fenpropathrin	NT	2	1	1	NV	3	4	5.9	***5.2***	5.5	4.6
Fenridazon	NT	2	1	2	NV	3	4	6.8	***6.0***	6.2	5.8
Fipronil	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
Fluazifop-butyl	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Fluridone	NT	2	1	2	NV	3	4	6.8	***6.0***	6.2	5.8
Flutolanil	NT	2	1	4	NV	2	4	5.9	***5.2***	5.1	5.4
Fluvalinate	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Glufosinate-Ammonium	NT	1	2	1	NV	3	4	4.9	***4.3***	4.1	4.6
Glyphosate	NT	1	2	1	NV	1	4	1.6	***1.4***	1.4	1.5
Glyphosate-Trimesium	NT	1	1	1	NV	2	4	2.6	***2.3***	2.3	2.3

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
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COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Halosulfuron	NT	1	1	2	NV	2	4	3.3	***2.9***	2.8	3.1
Hexazinone	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
HOE-061517	NT	1	2	1	NV	3	4	4.9	***4.3***	4.1	4.6
HOE-099730	NT	1	2	1	NV	3	4	4.9	***4.3***	4.1	4.6
Imazalil	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
Imidacloprid	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
IN-A3928	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
IN-B2838	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
IN-T3935	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
IN-T3936	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
IN-T3937	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Iprodione	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Iprodione isomer	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Iprodione metabolite	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Iprodione metabolite 2	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Maleic hydrazide	NT	3	1	4	NV	1	4	3.6	***3.2***	3.2	3.1
Mancozeb	NT	3	1	2	3	4	4	11.7	***10.4***	11.0	9.2
Maneb	NT	3	1	2	3	4	4	11.7	***10.4***	11.0	9.2
MB 45950	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
MB 46136	NT	3	4	4	NV	3	4	13.7	***12.1***	11.7	12.7
MB 46513	NT	3	4	4	NV	4	4	18.2	***16.1***	15.6	16.9
MCPA	NT	1	1	1	NV	4	4	5.2	***4.6***	4.6	4.6
Mepiquat chloride	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Methoprene	NT	2	1	3	NV	2	4	5.2	***4.6***	4.6	4.6
Methoxychlor olefin	NT	3	4	4	4	4	4	18.2	***16.1***	15.6	16.9
Methyl 3,5-dichlorobenzoate	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Metiram	NT	3	1	2	3	4	4	11.7	***10.4***	11.0	9.2
Metolachlor	NT	3	1	3	3	4	4	13.0	***11.5***	12.0	10.7
Metsulfuron Methyl	NT	1	1	1	NV	2	4	2.6	***2.3***	2.3	2.3
Myclobutanil, myclobutanil alcohol metabolite, myclobutanol dihydroxy metabolite	NT	3	1	2	NV	2	4	5.9	***5.2***	5.5	4.6
N-(3,4-dichlorophenyl)-N'-methylurea	NT	3	2	3	NV	4	4	14.3	***12.7***	12.9	12.3
N-(4-chloro-2-trifluoromethylphenyl)-propoxyacetamide	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Nicotine	NT	1	1	3	NV	4	4	7.8	***6.9***	6.4	7.7
Nitrapyrin	NT	1	1	4	NV	3	4	6.8	***6.0***	5.5	6.9
Norfluraxon, desmethyl-	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Norflurazon	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
N-phenylurea	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
NTN33823	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
NTN35884	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8
Octyl bicycloheptene dicarboximide (MGK-264)	NT	3	4	4	NV	3	4	13.7	***12.1***	11.7	12.7
Oxadiazon	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Oxyfluorfen	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Oxythioquinox	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Paraquat dichloride	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
PB-7	NT	2	1	1	NV	4	4	7.8	***6.9***	7.4	6.1
PB-9	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Phosalone oxon	NT	4	1	3	NV	4	4	15.6	***13.8***	14.7	12.3
Picloram	NT	1	2	1	NV	2	4	3.3	***2.9***	2.8	3.1
Piperonyl butoxide	NT	3	4	2	NV	3	4	11.7	***10.4***	10.4	10.4
PP 890	NT	3	4	2	NV	4	4	15.6	***13.8***	13.8	13.8
Primisulfuron-methyl	NT	2	1	1	NV	4	4	7.8	***6.9***	7.4	6.1
Propanil	NT	1	1	3	NV	4	4	7.8	***6.9***	6.4	7.7

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Propargite	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Propargite	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Propiconazole	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Propiconazole metabolite 1,2,4-triazole	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Propiconazole metabolite CGA 118244	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Propiconazole metabolite CGA 91305	NT	3	1	3	NV	4	4	13.0	***11.5***	12.0	10.7
Propyzamide	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Prosulfuron	NT	1	1	3	NV	3	4	5.9	***5.2***	4.8	5.8
Pyrazon	NT	3	1	1	NV	4	4	10.4	***9.2***	10.1	7.7
Pyrazon metabolite A	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Pyrazon metabolite B	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
Pyrethrin I	NT	2	4	4	NV	3	4	11.7	***10.4***	9.7	11.5
Pyridaben	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Quinclorac	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Quizalofop-ethyl	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
SD 31723	NT	2	1	4	NV	3	4	8.8	***7.8***	7.6	8.1
SD 33608	NT	2	1	4	NV	3	4	8.8	***7.8***	7.6	8.1
SD 54597	NT	3	4	3	NV	3	4	12.7	***11.2***	11.0	11.5
Sethoxydim	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Sethoxydim hydroxylate sulfone	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Sethoxydim sulfoxide	NT	2	1	2	NV	2	4	4.6	***4.0***	4.1	3.8
Sodium acifluorfen	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
TCP=3,5,6-trichloro-2-pyridinol	NT	3	2	1	NV	4	4	11.7	***10.4***	11.0	9.2
Tebuconazole	NT	3	1	2	NV	3	4	8.8	***7.8***	8.3	6.9
Tebufenozide	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Tebuthiuron	NT	2	1	2	NV	3	4	6.8	***6.0***	6.2	5.8

Table 6.1 – *Continued*
Scored Pesticide Residues, Rated With Various Weighting Formulas
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND/COMPOUND CLASS	HIST. VIOL. (FSIS)	REG. CON. (R) (EPA)	PSI (P) (EPA)	BIOCON. (B) (EPA)	ENDO. DISRUP. (EPA)	TOX. (T) (EPA)	LACK INFO. (L) (FSIS)	(((2*R+P+B)/4)*T) *(((L-1)*0.1)+1)	(((2*R+P+B)/4)*T) *(((L-1)*0.05)+1)	(((3*R+P+B)/5)*T) *(((L-1)*0.05)+1)	(((R+P+B)/3)*T) *(((L-1)*0.05)+1)
Terbacil	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
Tetradifon	NT	1	1	2	NV	4	4	6.5	***5.8***	5.5	6.1
Thidiazuron	NT	2	1	2	NV	4	4	9.1	***8.1***	8.3	7.7
Thiophanate methyl	NT	3	1	2	NV	4	4	11.7	***10.4***	11.0	9.2
THPI	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triadimefon	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triadimefon metabolite KWG 1323	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triadimefon metabolite KWG 1342	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triadimefon metabolite KWG 1732	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triadimenol (for metabolites see triadimefon)	NT	3	1	4	NV	4	4	14.3	***12.7***	12.9	12.3
Triasulfuron	NT	1	1	1	NV	3	4	3.9	***3.5***	3.5	3.5
Triclopyr	NT	3	2	1	NV	4	4	11.7	***10.4***	11.0	9.2
Triflumazole	NT	3	1	4	NV	3	4	10.7	***9.5***	9.7	9.2
Triphenyltin hydroxide	NT	1	1	4	NV	4	4	9.1	***8.1***	7.4	9.2
WAK4103	NT	3	1	1	NV	3	4	7.8	***6.9***	7.6	5.8

Key:
NT = Not Tested by FSIS (1/1/89 - 12/31/98)
NA = Compound has been tested by FSIS (1/1/89 - 12/31/98), but the information is Not Applicable (e.g., compound has not been tested in the appropriate matrix)
NV = Value not available
(FSIS) = Scores in this column supplied by FSIS
(EPA) = Scores in this column supplied by EPA
HIST. VIOL. = FSIS Historical Testing Information on Violations
REG. CON. (R) = Regulatory Concern
LACK INFO. (L) = Lack of FSIS Testing Information on Violations
PSI (P) = Pre-slaughter Interval
BIOCON. (B) = Bioconcentration Factor
ENDO. DISRUP. = Endocrine Disruption
TOX. (T) = Toxicity

Table 6.2
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
1	COP'S and OP'S NOT in FSIS CHC/COP MRM (azinphos-methyl, azinphos-methyl oxon, chlorpyrifos, coumaphos, coumaphos oxon, diazinon, diazinon oxon, diazinon met G-27550, dichlorvos, dimethoate, dimethoate oxon, dioxathion, ethion, ethion monooxon, fenthion, fenthion oxon, fenthion oxon sulfone, fenthion oxon sulfoxide, fenthion sulfone, fenthion sulfoxide, malathion, malathion oxon, naled, phosmet, phosmet oxon, pirimiphos-methyl, trichlorfon, tetrachlorvinphos, tetrachlorvinphos-4 metabolites, acephate, methamidophos, chlorpyrifos-methyl, fenamiphos, fenamiphos sulfoxide,fenamiphos sulfone, fenamiphos sulfoxide desisopropyl, fenamiphos sulfone desisopropyl, isofenphos, isofenphos oxon, isofenphos desisopropyl, isofenphos oxon desisopropyl, methidathion, ODM, parathion ethyl, parathion oxon, parathion methyl, parathion methyl oxon, phorate, phorate oxon, phorate oxon sulfone, phorate oxon sulfoxide, phorate sulfone, phorate sulfoxide, profenofos, sulprofos, sulprofos oxon, sulprofos oxon sulfone, sulprofos oxon	18.4	NIP, **currently EPA is attempting to extend the FSIS CHC3 method to include many of these compounds**
2	Triazines NOT in FSIS Triazine Method (atrazine chloro metabolites, metribuzin, metribuzin DADK, metribuzin DA, metribuzin DK, amitraz, amitraz 2,4-DMA metabs., desdiethyl simazine, desethyl simazine, simazine chloro metabs.)	17.3	NIP, **need FSIS regulatory method.**
3	Carbamates in FSIS Carbamate Method (aldicarb, alidcarb sulfoxide, aldicarb sulfone, carbaryl, carbofuran, carbofuran 3-hydroxy)	16.1	NIP, **need to adjust sample handling procedures to prevent degradation.**
4	1-(2,4-dichlorophenyl)-2-(1H-imidazole-1-yl)-1-ethanol	16.1	NIP, **need FSIS regulatory method**.
5	1,1-(2,2-dichloroethylidene)bis(4-methoxybenzene)	16.1	NIP, **need FSIS regulatory method**.
6	1-methoxy-4-(1,2,2,2-tetrachloroethyl)benzene)	16.1	NIP, **need FSIS regulatory method**.
7	3-(1-(2,4-dichlorophenyl)-2-(1H-imidazole-1-yl)ethoxy)-1,2-propane diol	16.1	NIP, **need FSIS regulatory method**.
8	Fipronil	16.1	NIP, **need FSIS regulatory method**.
9	Imazalil	16.1	NIP, **need FSIS regulatory method**.
10	MB 45950	16.1	NIP, **need FSIS regulatory method**.
11	MB 46513	16.1	NIP, **need FSIS regulatory method**.
12	Methoxychlor olefin	16.1	NIP, **need FSIS regulatory method**.
13	**CHC'S and COP'S in FSIS CHC/COP Method (HCB, alpha-BHC, lindane, heptachlor, dieldrin, aldrin, endrin, ronnel, linuron, oxychlordane, chlorpyrifos, nonachlor, heptachlor epoxide A, heptachlor expoxide B, endosulfan I, endosulfan I sulfate, endosulfan II, trans-chlordane, cis-chlordane, chlorfenvinphos, p,p'-DDE, p, p'-TDE, o,p'-DDT, p,p'-DDT, carbophenothion, captan, stirofos, kepone, mirex, methoxychlor, phosalone, coumaphos-O, coumaphos-S, toxaphene, famphur, PCB 1242, PCB 1248, PCB 1254, PCB 1260, dicofol*, PBBs*, polybrominated diphenyl ethers*, deltamethrin*) (*identification only)**	16.0	Monitoring Plan, MRM, all domestic production classes except roaster pigs. Import residue plan, all import production classes.

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
BASED ON CONSULTATION WITH EPA 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.			
14	Synthetic Pyrethrins in FSIS Synthetic Pyrethrin Method (cypermethrin, cis-permethrin, trans-permethrin, fenvalerate, zeta-cypermethrin)	15.4	NIP, low priority, method available.
15	Triazines in FSIS Triazine Method (atrazine, simazine, propazine, terbuthylazine)	14.3	NIP, low priority, method available.
16	Carbamates NOT in FSIS Carbamate Method (carbaryl 5,6-dihydroxy, chlorpropham, propham, thiobencarb, 4-chlorobenzylmethylsulfone,4-chlorobenzylmethylsulfone sulfoxide)	13.8	NIP, low priority.
17	1-methyl cyromazine	13.8	NIP, low priority.
18	2-(1-hydroxyethyl)-6-ethylaniline	13.8	NIP, low priority.
19	2,6-diethylaniline	13.8	NIP, low priority.
20	Alachlor	13.8	NIP, low priority, method available.
21	Cacodylic acid	13.8	NIP, low priority.
22	CP 101394	13.8	NIP, low priority.
23	CP 108064	13.8	NIP, low priority.
24	CP 108065	13.8	NIP, low priority.
25	CP 108267	13.8	NIP, low priority.
26	CP 51214	13.8	NIP, low priority.
27	Cyhalothrin, lambda-	13.8	NIP, low priority.
28	Cyromazine	13.8	NIP, low priority, method available.
29	Phosalone oxon	13.8	NIP, low priority.
30	PP 890	13.8	NIP, low priority.
31	2-(4-((6-chloro-2-benzoxazolyl)oxy)phenoxy)propanoic acid	12.7	NIP, low priority.
32	2-carboxyisopropyl-4-(4-dichloro)-5-isopropoxyphenyl)-1,3,4-oxadiazolin-5-one	12.7	NIP, low priority.
33	2-t-butyl-4-(2,4-chloro-5-hydroxyphenyl)-delta 2-1,3,4-oxadiazolin-5-one	12.7	NIP, low priority.
34	3-(3,4-dichlorophenyl)-1-methoxyurea	12.7	NIP, low priority.
35	3,4-dichloroaniline	12.7	NIP, low priority.
36	3,4-dichlorophenylurea	12.7	NIP, low priority.
37	6-chloro-2,3-dihydro-benzoxazol-2-one	12.7	NIP, low priority.
38	Bifenthrin	12.7	NIP, low priority.

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
39	Bifenthrin, 4'-hydroxy	12.7	NIP, low priority.
40	Bis(trichloromethyl)disulfide	12.7	NIP, low priority.
41	Captan epoxide	12.7	NIP, low priority.
42	Cyclanilide	12.7	NIP, low priority.
43	Dialifor	12.7	NIP, low priority.
44	Dialifor oxon	12.7	NIP, low priority
45	Dicamba	12.7	NIP, low priority
46	Diuron	12.7	NIP, low priority
47	Fenoxaprop ethyl	12.7	NIP, low priority
48	N-(3,4-dichlorophenyl)-N'-methylurea	12.7	NIP, low priority
49	Oxadiazon	12.7	NIP, low priority
50	Oxyfluorfen	12.7	NIP, low priority
51	THPI	12.7	NIP, low priority
52	Triadimefon	12.7	NIP, low priority
53	Triadimefon metabolite KWG 1323	12.7	NIP, low priority
54	Triadimefon metabolite KWG 1342	12.7	NIP, low priority
55	Triadimefon metabolite KWG 1732	12.7	NIP, low priority
56	Triadimenol(for metabolites see triadimefon)	12.7	NIP, low priority.
57	Benzimidazole Pesticides in FSIS Benzimidazole Method (5-hydroxythiabendazole, benomyl (as carbendazim), thiabendazole)	12.1	NIP, low priority, method available.
58	MB 46136	12.1	NIP, low priority
59	Octyl bicycloheptene dicarboximide (MGK-264)	12.1	NIP, low priority
60	2-((2-ethyl-6-methylphenyl)-amino)-1-propanol	11.5	NIP, low priority
61	4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone	11.5	NIP, low priority
62	Difenoconazole	11.5	NIP, low priority
63	Dioxathion	11.5	NIP, low priority
64	Iprodione	11.5	NIP, low priority
65	Iprodione isomer	11.5	NIP, low priority
66	Iprodione metabolite	11.5	NIP, low priority
67	Iprodione metabolite 2	11.5	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
68	Metolachlor	11.5	NIP, low priority
69	Propiconazole	11.5	NIP, low priority
70	Propiconazole metabolite 1,2,4-triazole	11.5	NIP, low priority
71	Propiconazole metabolite CGA 118244	11.5	NIP, low priority
72	Propiconazole metabolite CGA 91305	11.5	NIP, low priority
73	Esfenvalerate	11.2	NIP, low priority
74	SD 54597	11.2	NIP, low priority
75	2-aminobenzimidazole	10.4	NIP, low priority
76	6-methyl-2,3-quinoxalinedithiol	10.4	NIP, low priority
77	Abamectin	10.4	NIP, low priority
78	Abamectin delta 8,9 geometric isomer	10.4	NIP, low priority
79	Allophanate	10.4	NIP, low priority
80	Carboxin	10.4	NIP, low priority
81	Carboxin sulfoxide	10.4	NIP, low priority
82	Cyfluthrin	10.4	NIP, low priority
83	Diphenylamine	10.4	NIP, low priority
84	Ethalfluralin	10.4	NIP, low priority
85	ETU*	10.4	NIP, low priority
86	Mancozeb	10.4	NIP, low priority
87	Maneb	10.4	NIP, low priority
88	Metiram	10.4	NIP, low priority
89	Piperonyl butoxide	10.4	NIP, low priority
90	Pyrazon metabolite A	10.4	NIP, low priority
91	Pyrazon metabolite B	10.4	NIP, low priority
92	Pyrethrin I	10.4	NIP, low priority
93	Quizalofop-ethyl	10.4	NIP, low priority
94	TCP=3,5,6-trichloro-2-pyridinol	10.4	NIP, low priority
95	Thiophanate methyl	10.4	NIP, low priority
96	Triclopyr	10.4	NIP, low priority
97	3-carboxy-5-ethoxy-1,2,4-thiadiazole	9.5	NIP, low priority
98	4-chloro-2-trifluoromethylaniline	9.5	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
99	Chlorobenzilate	9.5	NIP, low priority
100	Difenoconazole	9.5	NIP, low priority
101	Etridiazole .	9.5	NIP, low priority
102	Fluvalinate	9.5	NIP, low priority
103	Methyl 3,5-dichlorobenzoate	9.5	NIP, low priority
104	N-(4-chloro-2-trifluoromethylphenyl)-propoxyacetamide	9.5	NIP, low priority
105	Propyzamide	9.5	NIP, low priority
106	Tebufenozide	9.5	NIP, low priority
107	Triflumazole	9.5	NIP, low priority
108	3-(2-chloro-4-hydroxyphenyl)-6-(2-chlorophenyl)-1,2,4,5-tetrazine	9.2	NIP, low priority
109	Bromoxynil	9.2	NIP, low priority
110	Clofentezine	9.2	NIP, low priority
111	Mepiquat chloride	9.2	NIP, low priority
112	Norfluraxon, desmethyl-	9.2	NIP, low priority
113	Norflurazon	9.2	NIP, low priority
114	Oxythioquinox	9.2	NIP, low priority
115	Paraquat dichloride	9.2	NIP, low priority
116	Pyrazon	9.2	NIP, low priority
117	Diphenylamine	8.6	NIP, low priority
118	4-hydrocythidiazuron	8.1	NIP, low priority
119	Buprofezin	8.1	NIP, low priority
120	Cyclohexylstannoic acid	8.1	NIP, low priority
121	Cyhexatin	8.1	NIP, low priority
122	Dicyclohexyltin oxide	8.1	NIP, low priority
123	Diflubenzuron	8.1	NIP, low priority
124	Dipropyl isocinchomerate	8.1	NIP, low priority
125	N-phenylurea	8.1	NIP, low priority
126	PB-9	8.1	NIP, low priority
127	Pyridaben	8.1	NIP, low priority
128	Thidiazuron	8.1	NIP, low priority
129	Triphenyltin hydroxide	8.1	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
130	1,1,3,3,-tetrakis(2-methyl-2-phenylpropyl)-1,3-dihydroxydistannoxane	7.8	NIP, low priority
131	2-amino-n-isopropylbenzamide	7.8	NIP, low priority
132	Acifluorfen, amino analog	7.8	NIP, low priority
133	Bentazon, 6-hydroxy bentazon, 8-hydroxy bentazon	7.8	NIP, low priority
134	Chlorsulfuron	7.8	NIP, low priority
135	Chlorsulfuron, 5-hydroxy-	7.8	NIP, low priority
136	Fenbutatin Oxide	7.8	NIP, low priority
137	Fluazifop-butyl	7.8	NIP, low priority
138	Hexazinone	7.8	NIP, low priority
139	IN-A3928	7.8	NIP, low priority
140	IN-B2838	7.8	NIP, low priority
141	IN-T3935	7.8	NIP, low priority
142	IN-T3936	7.8	NIP, low priority
143	IN-T3937	7.8	NIP, low priority
144	Propargite	7.8	NIP, low priority
145	Propargite	7.8	NIP, low priority
146	SD 31723	7.8	NIP, low priority
147	SD 33608	7.8	NIP, low priority
148	Sodium acifluorfen	7.8	NIP, low priority
149	Tebuconazole	7.8	NIP, low priority
150	6-chloronicotinic acid	6.9	NIP, low priority
151	Benoxacor	6.9	NIP, low priority
152	CGA 150829	6.9	NIP, low priority
153	CGA 171683	6.9	NIP, low priority
154	Dalapon	6.9	NIP, low priority
155	Diphenamid	6.9	NIP, low priority
156	Diphenamid, desmethyl	6.9	NIP, low priority
157	Diquat dibromide	6.9	NIP, low priority
158	Imidacloprid	6.9	NIP, low priority
159	Nicotine	6.9	NIP, low priority
160	NTN33823	6.9	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
161	NTN35884	6.9	NIP, low priority
162	PB-7	6.9	NIP, low priority
163	Primisulfuron-methyl	6.9	NIP, low priority
164	Propanil	6.9	NIP, low priority
165	WAK4103	6.9	NIP, low priority
166	6-chloropicolinic acid	6.0	NIP, low priority
167	Fenarimol	6.0	NIP, low priority
168	Fenarimol metabolite B	6.0	NIP, low priority
169	Fenarimol metabolite C	6.0	NIP, low priority
170	Fenridazon	6.0	NIP, low priority
171	Fluridone	6.0	NIP, low priority
172	Nitrapyrin	6.0	NIP, low priority
173	Tebuthiuron	6.0	NIP, low priority
174	Chlorfenapyr	5.8	NIP, low priority
175	Tetradifon	5.8	NIP, low priority
176	2,4-d	5.2	NIP, low priority
177	Diphenamid	5.2	NIP, low priority
178	Diphenamid, desmethyl-	5.2	NIP, low priority
179	Dodine	5.2	NIP, low priority
180	Fenpropathrin	5.2	NIP, low priority
181	Flutolanil	5.2	NIP, low priority
182	Myclobutanil, myclobutanil alcohol metabolite, myclobutanol dihydroxy metabolite	5.2	NIP, low priority
183	Prosulfuron	5.2	NIP, low priority
184	Difenzoquat	4.6	NIP, low priority
185	Ethephon	4.6	NIP, low priority
186	MCPA	4.6	NIP, low priority
187	Methoprene	4.6	NIP, low priority
188	2,5-dichloro-4-methoxyphenol	4.3	NIP, low priority
189	Chloroneb	4.3	NIP, low priority
190	Chloroneb, hydroxy-	4.3	NIP, low priority
191	Clofencet	4.3	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
192	Glufosinate-Ammonium	4.3	NIP, low priority
193	HOE-061517	4.3	NIP, low priority
194	HOE-099730	4.3	NIP, low priority
195	2,3-dihydro-3,3-methyl-2-oxo-5-benzofuranyl methyl sulfonate	4.0	NIP, low priority
196	2-hydroxy-2,3-dihydro-3,3-methyl-5-benzofuranyl methyl sulfonate	4.0	NIP, low priority
197	Butylamine, sec-	4.0	NIP, low priority
198	Compound 125670	4.0	NIP, low priority
199	Ethofumesate	4.0	NIP, low priority
200	Quinclorac	4.0	NIP, low priority
201	Sethoxydim	4.0	NIP, low priority
202	Sethoxydim hydroxylate sulfone	4.0	NIP, low priority
203	Sethoxydim sulfoxide	4.0	NIP, low priority
204	3-t-butyl-5-chloro-6-hydroxymethyluracil	3.5	NIP, low priority
205	6-chloro-2,3-dihydro-3,3,7-methyl-5H-oxazolo(3,2a)pyrimidin-5-one	3.5	NIP, low priority
206	6-chloro-2,3-dihydro-7-hydroxymethyl-3,3-methyl-5H-oxazolo(3,2-a)pyrimidin-5-one	3.5	NIP, low priority
207	Azoxystrobin	3.5	NIP, low priority
208	Azoxystrobin Z isomer	3.5	NIP, low priority
209	CGA 150829	3.5	NIP, low priority
210	CGA 161149	3.5	NIP, low priority
211	CGA 195654	3.5	NIP, low priority
212	Cloprop	3.5	NIP, low priority
213	Dimethipin	3.5	NIP, low priority
214	Terbacil	3.5	NIP, low priority
215	Triasulfuron	3.5	NIP, low priority
216	Maleic hydrazide	3.2	NIP, low priority
217	Clopyralid	2.9	NIP, low priority
218	Halosulfuron	2.9	NIP, low priority
219	Picloram	2.9	NIP, low priority
220	Clethodim	2.6	NIP, low priority
221	Glyphosate-Trimesium	2.3	NIP, low priority
222	Metsulfuron Methyl	2.3	NIP, low priority

Table 6.2 - *Continued*
Rank and Status for Pesticides
2000 FSIS NRP, Monitoring Plan and Special Projects

RANK	COMPOUND/COMPOUND CLASS	RAT-ING	STATUS IN 2000 NRP
223	Aminomethylphosphonic acid	1.4	NIP, low priority
224	Glyphosate	1.4	NIP, low priority
225	Bensulfuron methyl ester	1.2	NIP, low priority

Key:
MRM = Multi-Residue Method
NIP = Not Included in 2000 FSIS National Residue Program
CHC = Chlorinated hydrocarbon
COP = Chlorinated organophosphate
OP = Organophosphate
CHC3 = Current FSIS regulatory method for chlorinated hydrocarbons
In the second column, compounds/compound classes included in the 2000 NRP have been bolded.
In the last column, statements describing actions needed are bolded

Table 6.3
Pesticide Compound/Production Class Pairs, Sorted by Sampling Priority Score, with Adjusted Number of Analyses
2000 FSIS NRP, Monitoring Plan and Special Projects

COMPOUND CLASS	PRODUCTION CLASS	SCORE	# SAMP.	%VIOL.	UNADJ. #	ADJUST-MENT	INITIAL ADJ.#	ADJUST-MENT	FINAL ADJ.#
CHC's/COP's	Young chickens	751.041	6407	0.03	460		460		**460**
CHC's/COP's	Market hogs	346.635	6910	0.03	460		460		**460**
CHC's/COP's	Steers	259.959	4902	0.04	460		460		**460**
CHC's/COP's	Heifers	156.008	4057	0.00	460		460		**460**
CHC's/COP's	Young turkeys	135.096	6569	0.11	460		460		**460**
CHC's/COP's	Eggs	57.939	NT	NT	460		460		**460**
CHC's/COP's	Dairy cows	33.113	3269	0.00	460		460		**460**
CHC's/COP's	Beef cows	33.074	3428	0.09	460		460		**460**
CHC's/COP's	Sows	19.573	4029	0.07	300		300		**300**
CHC's/COP's	Mature chickens	16.918	3155	0.00	300		300		**300**
CHC's/COP's	Bulls	11.007	2476	0.08	300		300		**300**
CHC's/COP's	Lambs	4.605	4122	0.02	300		300		**300**
CHC's/COP's	Formula-fed	3.572	3529	0.00	300		300		**300**
CHC's/COP's	Boars/Stags	3.123	2713	0.37	300	+1 level	460		**460**
CHC's/COP's	Ducks	3.107	2330	0.00	300		300		**300**
CHC's/COP's	Mature turkeys	1.600	1823	0.05	230		230		**230**
CHC's/COP's	Bob calves	1.091	1087	0.00	230	P, min.300	300		**300**
CHC's/COP's	Horses	0.747	3378	0.44	230	+1 level	300		**300**
CHC's/COP's	Goats	0.416	3454	0.35	230	+1 level	300		**300**
CHC's/COP's	Other fowl	0.353	NT	NT	230	+1 level	300		**300**
CHC's/COP's	Heavy calves	0.321	3542	0.17	230	P, min.300	300		**300**
CHC's/COP's	Sheep	0.229	2574	0.08	230	P, min.300	300		**300**
CHC's/COP's	Non-formula	0.161	3083	0.13	230	P, min.300	300		**300**
CHC's/COP's	Geese	0.048	384	0.00	90		90		**90**
CHC's/COP's	Rabbits	0.033	1152	0.09	90		90		**90**
TOTAL # SAMPLES					**7800**		**8450**		**8450**

Key: #SAMP. = Total number of samples analyzed by the FSIS Monitoring Plan and/or Special Projects (i.e., random sampling only), 1/1/89 - 12/31/98.
%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.# = Final sample numbers, obtained following any adjustments needed to match sample volume to laboratory capacity *(note that no adjustments for laboratory capacity were necessary for the CHC/COP samples*).
+1 level = Increase by one sampling level, e.g., from 300 to 460 (refer to text, Chapter 6, for explanation).
P, min 300 = Because the official inclusion of phenylbutazone in the FSIS CHC/COP method did not begin until recently, FSIS has limited data on the occurrence of this drug in the production classes of interest. Therefore, all production classes in which phenylbutazone was designated as of potential concern (in Table 4.6, with a "●") were assigned a minimum of 300 samples.

SECTION 7. PLANNING THE 2000 FSIS IMPORT RESIDUE PLAN: PESTICIDES

PHASE I - GENERATING AND RANKING LIST OF CANDIDATE COMPOUNDS

The Food Safety and Inspection Service (FSIS) asked the Environmental Protection Agency (EPA) to generate a list of candidate compounds for the 2000 Import Residue Plan. EPA's list of compounds of concern for the Import Residue Plan was identical to that for the Domestic Residue Plan (see Section 6, Table 6.1). Furthermore, in ranking pesticides for inclusion in the Import Residue Plan, FSIS chose to employ to the ranking scores generated for the Domestic Residue Plan (see Section 6), because FSIS does not have sufficient historical data on pesticides in imported products to predict their violation rates.

PHASE II - SELECTING PESTICIDES FOR INCLUSION IN THE 2000 IMPORT RESIDUE PLAN

The list of high priority compounds chosen for the Import Residue Plan by the Surveillance Advisory Team (SAT) was the same as that for the domestic plan. Once the high-priority compounds and compound classes had been identified, it was necessary for the Food Safety and Inspection Service (FSIS) to apply non public health considerations to determine the compounds that would be sampled. The principal non public health consideration was the availability of laboratory resources, especially the availability of appropriate analytical methods within the FSIS laboratories. Based on these constraints, only the chlorinated hydrocarbon/chlorinated organophosphate (CHC/COP)[1] compound class can currently be included in the NRP. The compounds that can be identified by this multiresidue method are listed in Section 6, Phase II, p.94.

PHASE III- IDENTIFYING THE COMPOUND/PRODUCT CLASS PAIRS

As with the domestic program, the FSIS decided to sample for CHC's and COP's in all product classes. FSIS also continues sampling for these compounds in all production classes as a means of monitoring for the occurrence of accidental contamination incidents.

PHASE IV - ALLOCATION OF SAMPLING RESOURCES

ALLOCATION OF SAMPLING RESOURCES AMONG DIFFERENT PRODUCTION CLASSES

The samples for residue analysis for imported egg products are selected in a different manner than the other product classes.

[1]Phenylbutazone is also detected by this method.

EGG PRODUCTS

As stated in Section 2, for egg products, the first ten shipments from individual foreign establishments are subjected to 100 % reinspection, to establish a history of compliance with the U.S. requirements for each egg product category. This rate is reduced to a random selection of one reinspection out of eight product lots from each foreign establishment, which will continue as long as the product is in compliance

ANIMAL PRODUCT CLASSES

Table 5.6**,** *Estimated Annual Amount of Product Imported,* lists the estimated amounts of all product classes imported into the U.S. and the percentage of each of the product classes. The percentage of each product class imported annually is calculated using the following formula:

$$\% \text{ Product Class Imported } (P_C) = \frac{\text{Amount Product Class Imported}}{\text{Total Product Imported}} \times 100 \qquad (7.1)$$

The relative sampling priority is obtained by multiplying the percent product class imported (P_C) by the pesticide scores obtained in Phase I, using the following equation:

$$\text{Relative Sampling Priority} = (P_C) \times \text{Pesticide Score} \qquad (7.2)$$

Based on the scores, four different sampling options were chosen: very high regulatory concern (460 analyses/year); high regulatory concern (300 analyses/year); moderate regulatory concern (230 samples/year); low regulatory concern (90 samples/year). This is indicated in Table 7.1, *Number of Pesticide Samples/Product Class,* in the column labeled "Number of Samples."

As stated in Section 5, if a product class represents less than one percent (by weight) of total combined U.S. imports of meat, poultry and egg products, then the total number of samples analyzed for any compound or compound class is eight times the number of countries from which that product is imported. For example, processed turkey is imported from only three countries. The amount imported is 0.10 % relative to total U.S. imports. Therefore, 24 samples of processed turkey would be taken for each analysis, eight from each country.

The adjusted number of samples is listed in Table 7.1, *Number of Pesticide Samples/Product Class*, in the column labeled "Adjusted Number of Samples." The final number of samples for a compound/product class is obtained after the allocation of samples among different countries is completed. The final number of samples is listed in Table 7.1 in the column labeled "Final Number of Samples." The numbers in columns labeled "Adjusted Number of Samples" and "Final Number of Samples" may vary slightly because of the rounding upwards or downwards of the samples.

Allocation of Samples among Different Countries

The total number of samples was chosen for each compound/product class pair, was subdivided among the different countries. The number of samples for each country was based on the relative amount of total product class imported: less than one percent and greater than one percent.

Allocation of Samples in Product Classes Whose Total Volume Imported is Less Than 1%

As stated above, if the amount of an import product class was less than 1%, eight samples per compound/compound class were taken from each country. The relative amounts of fresh chicken, fresh goat, beef/pork processed, turkey fresh and processed, other fowl fresh and processed, varied combination processed, lamb/mutton processed, and veal processed was less than 1%. The numbers of samples per country per product class for each compound/compound class are listed in Tables 7.2 - 7.11.

Allocation if Samples in Product Classes Whose Total Volume Imported is Greater Than 1%

For major product classes, the number of samples was allocated to each country depending upon the relative amount of product imported from that country. Table 5.7, *Estimated Annual Volume of Import Product/Country*, lists the amount of product imported from each country. The percent of a product class imported from a country was calculated as follows and is in Table 5.8, *Relative Annual Amount of Import Product /Country*.

$$\text{Percent Product Class Imported per Country } (P_{C/C}) = \frac{\text{Amount of Product Class from Country}}{\text{Total Amount of Product Class}} \times 100 \qquad (7.3)$$

Based upon the relative amount of product class imported per country, the number of samples that should be taken at the port of entry was calculated using the following formula:

$$\text{Unadjusted Number of Samples per Country } (U_{C/S}) = \text{Total Number of Samples} \times \frac{(P_{C/C})}{100} \qquad (7.4)$$

This is indicated in the column labeled "Unadjusted Number of Samples ($U_{C/S}$)," in Tables 7.12 to 7.18.

After the determination of the number of samples from each country, each country with less than eight samples was assigned a minimum of eight samples. This is indicated in the column labeled "Adjustment # 1" in Tables 7.11 to 7.18. The results of this adjustment are in the column labeled "Initial Adj#." After this adjustment, the total number of samples for a compound/product class resulted in more than the total number of samples allocated to that compound/product class pair. A second adjustment then had to be made so that the total number of samples would be within an allocated number. This adjustment was made only to those countries from which greater than eight samples were to be taken. This was done using the following equation:

$$\text{Number of Samples after Adjustment \# 2} = (U_{C/S}) - \frac{[N \times (P_{C/C})]}{(P_{T/C})} \qquad (7.5)$$

where,
$N = (N_1) - (N_T)$
N_1 = Total Number of Samples after Adjustment #1
N_T = Total Number of Samples Allocated
$P_{T/C}$ = Total Percent of Product Class from the Countries That Had Greater Than Eight Samples
$P_{C/C}$ = Percent Product Class Imported per Country
$U_{C/S}$ = Unadjusted Number of Samples

The final numbers of product sampled are indicated in Tables 7.11 - 7.18, in the column labeled "Final Adj.#."

Table 7.1
Number of Pesticide Samples/Product Class
2000 Import Residue Plan

NO. COUNTRIES	PRODUCT	PESTICIDE	PESTICIDE SCORE	PERCENT PRODUCT	RELATIVE SAMPLING PRIORITY	NUMBER OF SAMPLES	ADJUSTED NUMBER OF SAMPLES	FINAL NUMBER OF SAMPLES
11	Beef, Fresh	CHC's/COP's	16	61.00	975.98	460	460	459
8	Pork, Fresh	CHC's/COP's	16	18.99	303.77	300	460	460
12	Beef, Processed	CHC's/COP's	16	6.35	101.65	300	300	300
16	Pork, processed	CHC's/COP's	16	6.33	101.25	230	300	298
6	Mutton/Lamb, Fresh	CHC's/COP's	16	3.42	54.66	90	230	230
3	Veal, Fresh	CHC's/COP's	16	1.40	22.45	90	90	90
4	Chicken, Processed	CHC's/COP's	16	1.25	19.95	90	90	90
1	Chicken, Fresh	CHC's/COP's	16	0.44	6.97	90	8	8
3	Goat, Fresh	CHC's/COP's	16	0.27	4.40	90	24	24
8	Beef/Pork, Processed	CHC's/COP's	16	0.13	2.09	90	64	64
3	Turkey, Processed	CHC's/COP's	16	0.10	1.60	90	24	24
3	Other fowl, Processed	CHC's/COP's	16	0.07	1.09	90	24	24
3	Varied Combination, Processed	CHC's/COP's	16	0.05	0.85	90	24	24
4	Mutton/Lamb, Processed	CHC's/COP's	16	0.02	0.36	90	32	32
2	Other Fowl, Fresh	CHC's/COP's	16	0.02	0.27	90	16	16
1	Turkey, Fresh	CHC's/COP's	16	0.01	0.17	90	8	8
1	Veal, Processed	CHC's/COP's	16	0.002	0.03	90	8	8
Total						2460	2162	2159

Table 7.2
Number of Samples/Product Class-Chicken, Fresh
2000 Import Residue Plan

CHICKEN, FRESH/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100.00	8
Total	100.00	8

Table 7.3
Number of Samples/Product Class-Turkey, Fresh
2000 Import Residue Plan

TURKEY, FRESH/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100.00	8
Total	100.00	8

Table 7.4
Number of Samples/Product Class-Turkey, Processed
2000 Import Residue Plan

TURKEY, PROCESSED/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	68.56	8
Hong Kong	20.36	8
Israel	11.08	8
Total	100.00	24

Table 7.5
Number of Samples/Product Class-Other Fowl, Fresh
2000 Import Residue Plan

OTHER FOWL, FRESH/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	77.99	8
France	22.01	8
Total	100	16

Table 7.6
Number of Samples/Product Class-Other Fowl, Processed
2000 Import Residue Plan

OTHER, FOWL, PROCESSED/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	97.14	8
France	2.86	8
Israel	0.01	8
Total	100.00	24

Table 7.7
Number of Samples/Product Class-Veal, Processed
2000 Import Residue Plan

VEAL, PROCESSED/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Canada	100.00	8
Total		8

Table 7.8
Number of Samples/Product Class-Beef/Pork, Processed
2000 Import Residue Plan

BEEF/PORK, PROCESSED/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	0.18	8
Austria	0.03	8
Canada	95.26	8
Costa Rica	1.76	8
Croatia	0.16	8
Denmark	1.85	8
Netherlands	0.77	8
New Zealand	0.001	8
Total		64

Table 7.9
Number of Samples/Product Class-Lamb/Mutton, Processed
2000 Import Residue Plan

LAMB/MUTTON, PROCESSED/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	41.58	8
Canada	39.13	8
New Zealand	13.81	8
Uruguay	5.49	8
Total		32

Table 7.10
Number of Samples /Product Class-Goat, Fresh
2000 Import Residue Plan

GOAT, FRESH/CHC's/COP's	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	88.29	8
Canada	0.01	8
New Zealand	11.70	8
Total		24

Table 7.11
Number of Samples /Product Class-Varied Combination, Processed
2000 Import Residue Plan

VARIED COMBINATION, PROCESSED /CHC'S/COP'S	PERCENT PRODUCT	FINAL NUMBER OF SAMPLES
Australia	2.07	8
Canada	93.29	8
France	1.98	8
Total		24

Table 7.12
Number of Samples/Product Class-Beef, Fresh
2000 Import Residue Plan

BEEF, FRESH/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Argentina	1.94	9		9	8	8
Australia	34.25	158		158	144	144
Canada	39.90	184		184	168	168
Costa Rica	1.17	5	8	8		8
Honduras	0.05	0	8	8		8
Ireland	0.00	0	8	8		8
Japan	0.00	0	8	8		8
Mexico	0.31	1	8	8		8
New Zealand	19.58	90		90	82	82
Nicaragua	0.70	3	8	8		8
Uruguay	2.09	10		10	9	9
Total		460		499		459

Table 7.13
Number of Samples /Product Class-Lamb/Mutton, Fresh
2000 Import Residue Plan

LAMB/ MUTTON, FRESH/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U)= 230*(% PRODUCT/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Australia	63.58	146		146	127	127
Canada	0.54	1	8	8		8
Iceland	0.06	0	8	8		8
Mexico	0.00	0	8	8		8
New Zealand	35.71	82		82	71	71
Uruguay	0.11	0	8	8		8
Total		230		260		230

Table 7.14
Number of Samples/Product Class-Pork, Processed
2000 Import Residue Plan

PORK, PROCESSED/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST..# 2	FINAL ADJ.#
Austria	0.00	0	8	8		8
Belgium	4.35	13		13	10	10
Canada	49.50	148		148	111	111
Costa Rica	0.00	0	8	8		8
Croatia	0.85	3	8	8		8
Denmark	26.90	81		81	61	61
France	0.39	1	8	8		8
Germany	0.14	0	8	8		8
Hungary	3.31	10	8	10	8	8
Ireland	0.42	1	8	8		8
Italy	1.71	5	8	8		8
Mexico	0.18	1	8	8		8
Netherlands	5.52	17		17	13	13
Poland	6.60	20		20	15	15
Spain	0.14	0	8	8		8
Switzerland	0.003	0	8	8		8
Total		300		369		298

Table 7.15
Number of Samples /Product Class-Pork, Fresh
2000 Import Residue Plan

PORK, FRESH/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 460*(($P_{C/C}$)/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST.# 2	FINAL ADJ.#
Australia	0.02	0	8	8		8
Canada	85.13	392		392	361	361
Denmark	12.26	56		56	51	51
Finland	0.11	1	8	8		8
Ireland	1.02	5	8	8		8
Mexico	0.04	0	8	8		8
Sweden	0.14	1	8	8		8
UK	1.28	6	8	8		8
Total		460		496		460

Table 7.16
Number of Samples/Product Class-Chicken, Processed
2000 Import Residue Plan

CHICKEN, PROCESSED/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U)= 90*(% PRODUCT/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST.# 2	FINAL ADJ.#
Canada	98.72	89		89	66	66
France	0.001	0	8	8		8
Hong Kong	0.24	0	8	8		8
Israel	1.04	1	8	8		8
		90	24	113		90

Table 7.17
Number of Samples /Product Class-Veal, Fresh
2000 Import Residue Plan

VEAL, FRESH/ CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U)= 90*(% PRODUCT/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST.# 2	FINAL ADJ.#
Australia	11.12	10	10	10	10	10
Canada	38.38	35	35	35	35	35
New Zealand	50.50	45	45	45	45	45
Total		90		90		90

Table 7.18
Number of Samples /Product Class-Beef, Processed
2000 Import Residue Plan

BEEF, PROCESSED CHC's/COP's	PERCENT PRODUCT ($P_{C/C}$)	UNADJUSTED NUMBER OF SAMPLES (U) = 300*(($P_{C/C}$)/100)	ADJUSTMENT #1 (8 MINIMUM/ COUNTRY)	INITIAL ADJ.#	ADJUST. # 2	FINAL ADJ.#
Argentina	28.64	86		86	73	70
Australia	1.00	3	8	8		8
Brazil	43.75	131		131	110	108
Canada	20.98	63		63	53	51
Costa Rica	0.05	0	8	8		8
Croatia	0.43	1	8	8		8
Germany	0.00	0	8	8		8
Italy	0.07	0	8	8		8
Mexico	2.12	6	8	8		8
New Zealand	0.77	2	8	8		8
Switzerland	0.02	0	8	8		8
Uruguay	2.17	7	8	8		8
Total		300		344		300

SECTION 8. PLANNING THE 2000 FSIS DOMESTIC MONITORING PLAN AND SPECIAL PROJECTS, AND IMPORT RESIDUE PLAN: ENVIRONMENTAL CONTAMINANTS

The candidate environmental and processing contaminants of concern selected by members of the Surveillance Advisory Team (SAT) were as follows:

--*Environmental Contaminants:*

- dioxins
- heavy metals
- mycotoxins

--*Processing Contaminants:*

- nitrosamines
- maillard reaction products (from charring)
- compounds migrating from packaging
- polyaromatic hydrocarbons
- breakdown products of oils used in deep frying

Following discussion by the SAT, it was decided that none of the processing contaminants were appropriate for inclusion in the 2000 Food Safety and Inspection Service (FSIS) National Residue Program (NRP). If required, processing contaminants can be analyzed as part of an FSIS Emergency Response Project. FSIS will initiate Special Projects to analyze for environmental contaminants, as needed. Projects currently under consideration include a baseline study for levels of heavy metals in meat and poultry, and a Special Project to analyze for lead in raw meat products used in baby food, and in baby food containing vegetable root material.

SECTION 9. THE 2000 FSIS NATIONAL RESIDUE PROGRAM: DOMESTIC MONITORING PLAN AND SPECIAL PROJECTS, AND IMPORT RESIDUE PLAN

The Food Safety and Inspection Service (FSIS), working with its partner agencies, has developed sampling allocation systems for compound/production class pairs (domestic residue sampling plans) and compound/product class pairs (import residue sampling plan) that are founded on a public health-based prioritization process. These systems each incorporate a structured planning process that employs risk assessment formulas and uses the best available data to develop relative rankings within these formulas. These systems do not, and were not intended to, generate formal absolute estimates of risk that can be interpreted in an actuarial sense. Nevertheless, their relative risk-based rankings are sufficient to develop sound and internally consistent allocations of sampling resources. These rankings help FSIS to manage the public health concerns presented by a comprehensive range of veterinary drugs and pesticides in the egg product, meat, and poultry production classes for which FSIS has regulatory authority.

The final detailed domestic plan sample numbers for veterinary drugs and pesticides in all production classes are listed Table 9.1, *2000 FSIS National Residue Program, Domestic Monitoring Plan and Special Projects*.

The final detailed import plan sample numbers for all compounds (veterinary drugs and pesticides), in all product classes and all countries, are listed in Table 9.2, *2000 FSIS National Residue Program, Import Residue Plan*.

An overall summary of the Domestic Monitoring Plan and Special Projects and the Import Residue Plan is provided in Table 9.3, *Summary, 2000 FSIS National Residue Program, Domestic Monitoring Plan and Special Projects, and Import Residue Plan*.

Table 9.1
2000 FSIS National Residue Program
Domestic Monitoring Plan and Special Projects

ANALYSIS	LAB	PROD. CLASS	#SAMP.	TYPE
Antibiotics by Bioassay	MWL	Young chickens	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Market hogs	690	Monitoring Plan
Antibiotics by Bioassay	MWL	Steers	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Heifers	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Young turkeys	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Egg products*	TBD	Special Project
Antibiotics by Bioassay	MWL	Dairy cows	690	Monitoring Plan
Antibiotics by Bioassay	MWL	Beef cows	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Sows	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Mature chickens	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Bulls	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Lambs	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Formula-fed	690	Monitoring Plan
Antibiotics by Bioassay	MWL	Boars/Stags	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Ducks	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Mature turkeys	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Bob calves	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Horses	460	Monitoring Plan
Antibiotics by Bioassay	MWL	Goats	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Other fowl	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Heavy calves	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Roaster pigs	300	Monitoring Plan
Antibiotics by Bioassay	MWL	Sheep	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Non-formula	230	Monitoring Plan
Antibiotics by Bioassay	MWL	Geese	90	Monitoring Plan
Antibiotics by Bioassay	MWL	Rabbits	300	Monitoring Plan
Total Antibiotics by Bioassay	**MWL**		**8930**	
Arsenicals	EL	Young chickens	1200	Monitoring Plan
Arsenicals	EL	Market hogs	300	Monitoring Plan
Arsenicals	EL	Young turkeys	460	Monitoring Plan
Arsenicals	EL	Egg products	460	Monitoring Plan
Arsenicals	EL	Beef cows	300	Monitoring Plan
Arsenicals	EL	Sows	230	Monitoring Plan
Arsenicals	EL	Mature chickens	230	Monitoring Plan
Arsenicals	EL	Boars/Stags	90	Monitoring Plan
Arsenicals	EL	Ducks	230	Monitoring Plan
Arsenicals	EL	Mature turkeys	90	Monitoring Plan
Arsenicals	EL	Goats	300	Monitoring Plan
Arsenicals	EL	Other fowl	300	Monitoring Plan
Arsenicals	EL	Roaster pigs	230	Monitoring Plan
Total Arsenicals	**EL**		**4420**	Monitoring Plan

*Method extension needed for egg products.

Table 9.1 - *Continued*
2000 FSIS National Residue Program
Domestic Monitoring Plan and Special Projects

ANALYSIS	LAB	PROD. CLASS	#SAMP.	TYPE
Avermectins	EL	Market hogs	460	Monitoring Plan
Avermectins	EL	Steers	460	Monitoring Plan
Avermectins	EL	Heifers	460	Monitoring Plan
Avermectins	EL	Dairy cows	300	Monitoring Plan
Avermectins	EL	Beef cows	300	Monitoring Plan
Avermectins	EL	Sows	300	Monitoring Plan
Avermectins	EL	Bulls	300	Monitoring Plan
Avermectins	EL	Lambs	230	Monitoring Plan
Avermectins	EL	Formula-fed	230	Monitoring Plan
Avermectins	EL	Boars/Stags	230	Monitoring Plan
Avermectins	EL	Horses	300	Monitoring Plan
Avermectins	EL	Goats	460	Monitoring Plan
Avermectins	EL	Heavy calves	230	Monitoring Plan
Avermectins	EL	Roaster pigs	230	Monitoring Plan
Avermectins	EL	Sheep	90	Monitoring Plan
Avermectins	EL	Non-formula	90	Monitoring Plan
Avermectins	EL	Rabbits	230	Monitoring Plan
Total Avermectins	**EL**	**TOTAL**	**4900**	
CHC's/COP's/Phenylbutazone	WL	Young chickens	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Market hogs	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Steers	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Heifers	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Young turkeys	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Egg products	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Dairy cows	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Beef cows	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Sows	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Mature chickens	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Bulls	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Lambs	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Formula-fed	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Boars/Stags	460	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Ducks	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Mature turkeys	230	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Bob calves	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Horses	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Goats	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Other fowl	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Heavy calves	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Sheep	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Non-formula	300	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Geese	90	Monitoring Plan
CHC's/COP's/Phenylbutazone	WL	Rabbits	90	Monitoring Plan
Total CHC's/COP's/Phenylbut. *	**WL**		**8450**	

*Method extension needed for phenylbutazone

Table 9.1 - *Continued*
2000 FSIS National Residue Program
Domestic Monitoring Plan and Special Projects

ANALYSIS	LAB	PROD. CLASS	#SAMP.	TYPE
Sulfonamides	MWL or EL	Young chickens	460	Monitoring Plan
Sulfonamides	MWL or EL	Market hogs	460	Monitoring Plan
Sulfonamides	MWL or EL	Steers	460	Monitoring Plan
Sulfonamides	MWL or EL	Heifers	460	Monitoring Plan
Sulfonamides	MWL or EL	Young turkeys	460	Monitoring Plan
Sulfonamides	EL	Egg products	460	Monitoring Plan
Sulfonamides	MWL or EL	Dairy cows	300	Monitoring Plan
Sulfonamides	MWL or EL	Beef cows	300	Monitoring Plan
Sulfonamides	MWL or EL	Sows	460	Monitoring Plan
Sulfonamides	MWL or EL	Bulls	300	Monitoring Plan
Sulfonamides	MWL or EL	Lambs	300	Monitoring Plan
Sulfonamides	MWL or EL	Formula-fed	230	Monitoring Plan
Sulfonamides	MWL or EL	Boars/Stags	460	Monitoring Plan
Sulfonamides	MWL or EL	Ducks	230	Monitoring Plan
Sulfonamides	MWL or EL	Mature turkeys	300	Monitoring Plan
Sulfonamides	MWL or EL	Bob calves	460	Monitoring Plan
Sulfonamides	MWL or EL	Horses	230	Monitoring Plan
Sulfonamides	MWL or EL	Goats	230	Monitoring Plan
Sulfonamides	MWL or EL	Other fowl	300	Monitoring Plan
Sulfonamides	MWL or EL	Heavy calves	230	Monitoring Plan
Sulfonamides	MWL or EL	Roaster pigs	230	Monitoring Plan
Sulfonamides	MWL or EL	Non-formula	230	Monitoring Plan
Sulfonamides	MWL or EL	Geese	90	Monitoring Plan
Total Sulfonamides, MWL	**MWL**		**4000**	
Total Sulfonamides, EL	**EL**		**3640**	
Total Sulfonamides	**MWL + EL**		**7640**	
Beta agonists**	FDA+MWL	Formula-fed veal	300	Monitoring Plan
Beta agonists**	FDA+MWL	Steers	300	Monitoring Plan
Beta agonists**	FDA+MWL	Market hogs	300	Monitoring Plan
Total Beta agonists	**FDA+MWL**		**900**	
Carbadox	MWL	Roaster pigs	300	Special Project
Total Carbadox	**MWL**		**300**	
Chloramphenicol	MWL	Dairy cattle	300	Special Project
Chloramphenicol	MWL	Formula-fed veal	300	Special Project
Chloramphenicol	MWL	Bob veal	110	Special Project
Total Chloramphenicol	**MWL**		**710**	
DES/Zeranol	MWL	Formula-fed veal	TBD	Special Project
Total DES/Zeranol	**MWL**		**TBD**	

**A total of 900 samples (containing both eyeball and liver) will be collected and sent to the FDA laboratories. FDA will first screen for beta agonists in the eyeballs (following treatment, the beta agonists will remain in the eyeballs long after they have depleted from edible tissue). If the sample is positive, FDA will implement a confirmatory method using mass spectrometry, and will ship the liver from the positive animal to MWL for analysis.

Table 9.1 - *Continued*
2000 FSIS National Residue Program
Domestic Monitoring Plan and Special Projects

ANALYSIS	LAB	PROD. CLASS	#SAMP.	TYPE
Dexamethasone	MWL	Dairy cattle	300	Special Project
Total Dexamethasone	**MWL**		**300**	
Florfenicol	MWL	Dairy cattle	300	Special Project
Total Florfenicol	**MWL**		**300**	
Flunixin	MWL	Dairy cattle	300	Special Project
Total Flunixin	**MWL**		**300**	
Fluoroquinolones	MWL	Dairy cattle	300	Monitoring Plan
Fluoroquinolones	MWL	Young chickens	300	Monitoring Plan
Fluoroquinolones	MWL	Market hogs	300	Monitoring Plan
Total Fluoroquinolones	**MWL**		**900**	
Lead	EL	Various	TBD	Special Project
Total Lead	**EL**		**TBD**	
Melengesterol acetate (MGA)	MWL	Steers	250	Monitoring Plan
Melengesterol acetate (MGA)	MWL	Heifers	250	Monitoring Plan
Total Melengesterol acetate	**MWL**		**500**	
Nitroimidazoles	MWL	Formula-fed veal	260-300	Special Project
Total Nitroimidazoles	**MWL**		**260-300**	
Organophosphates (OP's)	WL	ALL	TBD	Special Project
Total Organophosphates (OP's)	**WL**		**TBD**	
Ractopamine	MWL	Market hogs	300	Special Project
Total Ractopamine	**MWL**		**300**	
Spectinomycin	MWL	Dairy cattle	TBD	Special Project
Total Spectinomycin	**MWL**		**TBD**	
Tilmicosin	MWL	Dairy cattle	300	Monitoring Plan
Tilmicosin	MWL	Beef cattle	300	Monitoring Plan
Tilmicosin	MWL	Steers	240	Monitoring Plan
Total Tilmicosin	**MWL**		**840**	
Veterinary Tranquilizers	MWL	Market hogs	300	Special Project
Total Veterinary Tranquilizers	**MWL**		**300**	

Contingent upon increasing sensitivity of method. FSIS will attempt to collect samples from *pen-raised* formula-fed veal, since higher nitroimidazole use thought likely with this production practice.

OP's will be analyzed by the CHC/COP method, following its extension to these compounds.

Key:

PROD. CLASS = Production class; TBD = To be determined; CHC = Chlorinated hydrocarbon; COP = Chlorinated organophosphate; EL = FSIS Eastern Laboratory, Athens, GA; MWL = FSIS Midwestern Laboratory, St. Louis, MO; WL = FSIS Western Laboratory, Alameda, CA

Table 9.2
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Argentina	Beef , fresh	Antibiotics	8
Argentina	Beef , fresh	Avermectins	8
Argentina	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Argentina	Beef, fresh	Chloramphenicol	8
Argentina	Beef, fresh	Dexamethazone	8
Argentina	Beef, fresh	Flunixin	8
Argentina	Beef, fresh	Sulfonamides	8
Argentina	Beef, processed	CHC's/COP's/Phenylbutazone	70
Argentina	Beef, processed	Sulfonamides	49
Australia	Beef , fresh	Antibiotics	144
Australia	Beef , fresh	Avermectins	144
Australia	Beef, fresh	CHC's/COP's/Phenylbutazone	144
Australia	Beef, fresh	Chloramphenicol	144
Australia	Beef, fresh	Dexamethazone	9
Australia	Beef, fresh	Flunixin	9
Australia	Beef, fresh	Sulfonamides	144
Australia	Beef, processed	CHC's/COP's/Phenylbutazone	8
Australia	Beef, processed	Sulfonamides	8
Australia	Beef/pork, processed	Arsenicals	8
Australia	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Australia	Beef/pork, processed	Sulfonamides	8
Australia	Goat, fresh	Antibiotics	8
Australia	Goat, fresh	Arsenicals	8
Australia	Goat, fresh	Avermectins	8
Australia	Goat, fresh	CHC's/COP's/Phenylbutazone	8
Australia	Goat, fresh	Sulfonamides	8
Australia	Lamb/mutton, fresh	Antibiotics	37
Australia	Lamb/mutton, fresh	Avermectins	37
Australia	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	127
Australia	Lamb/mutton, fresh	Sulfonamides	37
Australia	Lamb/mutton, processed	CHC's/COP's/Phenylbutazone	8
Australia	Lamb/mutton, processed	Sulfonamides	8
Australia	Pork, fresh	Antibiotics	8
Australia	Pork, fresh	Arsenicals	8
Australia	Pork, fresh	Avermectins	8
Australia	Pork, fresh	Carbadox	8
Australia	Pork, fresh	CHC's/COP's/Phenylbutazone	8
Australia	Pork, fresh	Nitroimidazoles	8
Australia	Pork, fresh	Ractopamine	8
Australia	Pork, fresh	Sulfonamides	8
Australia	Varied combination, processed	Sulfonamides	8
Australia	Varied Combo, processed	CHC's/COP's/Phenylbutazone	8
Australia	Veal, fresh	Antibiotics	10
Australia	Veal, fresh	Avermectins	10
Australia	Veal, fresh	CHC's/COP's/Phenylbutazone	10
Australia	Veal, fresh	Chloramphenicol	8
Australia	Veal, fresh	Sulfonamides	10
Austria	Beef/pork, processed	Arsenicals	8
Austria	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Austria	Beef/pork, processed	Sulfonamides	8
Austria	Pork, processed	Arsenicals	8

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Austria	Pork, processed	CHC's/COP's/Phenylbutazone	8
Austria	Pork, processed	Sulfonamides	8
Belgium	Pork, processed	Arsenicals	8
Belgium	Pork, processed	CHC's/COP's/Phenylbutazone	10
Belgium	Pork, processed	Sulfonamides	8
Brazil	Beef, processed	CHC's/COP's/Phenylbutazone	107
Brazil	Beef, processed	Sulfonamides	74
Canada	Beef , fresh	Antibiotics	168
Canada	Beef , fresh	Avermectins	168
Canada	Beef, fresh	CHC's/COP's/Phenylbutazone	168
Canada	Beef, fresh	Chloramphenicol	168
Canada	Beef, fresh	Dexamethazone	11
Canada	Beef, fresh	Flunixin	11
Canada	Beef, fresh	Sulfonamides	168
Canada	Beef, processed	CHC's/COP's/Phenylbutazone	51
Canada	Beef, processed	Sulfonamides	35
Canada	Beef/pork, processed	Arsenicals	8
Canada	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Canada	Beef/pork, processed	Sulfonamides	8
Canada	Chicken, fresh	Antibiotics	8
Canada	Chicken, fresh	Arsenicals	8
Canada	Chicken, fresh	CHC's/COP's/Phenylbutazone	8
Canada	Chicken, fresh	Fluroquinolones	8
Canada	Chicken, fresh	Sulfonamides	8
Canada	Chicken, processed	Arsenicals	66
Canada	Chicken, processed	CHC's/COP's/Phenylbutazone	66
Canada	Chicken, processed	Sulfonamides	66
Canada	Goat, fresh	Antibiotics	8
Canada	Goat, fresh	Arsenicals	8
Canada	Goat, fresh	Avermectins	8
Canada	Goat, Fresh	CHC's/COP's/Phenylbutazone	8
Canada	Goat, fresh	Sulfonamides	8
Canada	Lamb/mutton, fresh	Antibiotics	8
Canada	Lamb/mutton, fresh	Avermectins	8
Canada	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	8
Canada	Lamb/mutton, fresh	Sulfonamides	8
Canada	Lamb/mutton, processed	CHC's/COP's/Phenylbutazone	8
Canada	Lamb/mutton, processed	Sulfonamides	8
Canada	Other fowl, fresh	Antibiotics	8
Canada	Other Fowl, fresh	CHC's/COP's/Phenylbutazone	8
Canada	Other fowl, fresh	Sulfonamides	8
Canada	Other fowl, processed	CHC's/COP's/Phenylbutazone	8
Canada	Other fowl, processed	Sulfonamides	8
Canada	Pork, fresh	Antibiotics	220
Canada	Pork, fresh	Arsenicals	8
Canada	Pork, fresh	Avermectins	220
Canada	Pork, fresh	Carbadox	37
Canada	Pork, fresh	CHC's/COP's/Phenylbutazone	361
Canada	Pork, fresh	Nitroimidazoles	37
Canada	Pork, fresh	Ractopamine	37
Canada	Pork, fresh	Sulfonamides	220

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Canada	Pork, processed	Arsenicals	8
Canada	Pork, processed	CHC's/COP's/Phenylbutazone	111
Canada	Pork, processed	Sulfonamides	76
Canada	Turkey, fresh	Antibiotics	8
Canada	Turkey, fresh	Arsenicals	8
Canada	Turkey, fresh	CHC's/COP's/Phenylbutazone	8
Canada	Turkey, fresh	Sulfanomides	8
Canada	Turkey, processed	Arsenicals	8
Canada	Turkey, processed	CHC's/COP's/Phenylbutazone	8
Canada	Turkey, processed	Sulfonamides	8
Canada	Varied combination processed	Sulfonamides	8
Canada	Varied combination, processed	CHC's/COP's/Phenylbutazone	8
Canada	Veal, fresh	Antibiotics	35
Canada	Veal, fresh	Avermectins	35
Canada	Veal, fresh	CHC's/COP's/Phenylbutazone	35
Canada	Veal, fresh	Chloramphenicol	8
Canada	Veal, fresh	Sulfonamides	35
Canada	Veal, processed	CHC's/COP's/Phenylbutazone	8
Canada	Veal, processed	Sulfonamides	8
Costa Rica	Beef , fresh	Antibiotics	8
Costa Rica	Beef , fresh	Avermectins	8
Costa Rica	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Costa Rica	Beef, fresh	Chloramphenicol	8
Costa Rica	Beef, fresh	Dexamethazone	8
Costa Rica	Beef, fresh	Flunixin	8
Costa Rica	Beef, fresh	Sulfonamides	8
Costa Rica	Beef, processed	CHC's/COP's/Phenylbutazone	8
Costa Rica	Beef, processed	Sulfonamides	8
Costa Rica	Beef/pork, processed	Arsenicals	8
Costa Rica	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Costa Rica	Beef/pork, processed	Sulfonamides	8
Costa Rica	Pork, processed	Arsenicals	8
Costa Rica	Pork, processed	CHC's/COP's/Phenylbutazone	8
Costa Rica	Pork, processed	Sulfonamides	8
Croatia	Beef, processed	CHC's/COP's/Phenylbutazone	8
Croatia	Beef, processed	Sulfonamides	8
Croatia	Beef/pork, processed	Arsenicals	8
Croatia	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Croatia	Beef/pork, processed	Sulfonamides	8
Croatia	Pork, processed	Arsenicals	8
Croatia	Pork, processed	CHC's/COP's/Phenylbutazone	8
Croatia	Pork, processed	Sulfonamides	8
Denmark	Beef/pork, processed	Arsenicals	8
Denmark	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Denmark	Beef/pork, processed	Sulfonamides	8
Denmark	Pork, fresh	Antibiotics	32
Denmark	Pork, fresh	Arsenicals	220
Denmark	Pork, fresh	Avermectins	32
Denmark	Pork, fresh	Carbadox	8
Denmark	Pork, fresh	CHC's/COP's/Phenylbutazone	51
Denmark	Pork, fresh	Nitroimidazoles	8

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Denmark	Pork, fresh	Ractopamine	8
Denmark	Pork, fresh	Sulfonamides	32
Denmark	Pork, processed	Arsenicals	8
Denmark	Pork, processed	CHC's/COP's/Phenylbutazone	61
Denmark	Pork, processed	Sulfonamides	41
Finland	Pork, fresh	Antibiotics	8
Finland	Pork, fresh	Arsenicals	32
Finland	Pork, fresh	Avermectins	8
Finland	Pork, fresh	Carbadox	8
Finland	Pork, fresh	CHC's/COP's/Phenylbutazone	8
Finland	Pork, fresh	Nitroimidazoles	8
Finland	Pork, fresh	Ractopamine	8
Finland	Pork, fresh	Sulfonamides	8
France	Chicken, processed	Arsenicals	8
France	Chicken, processed	CHC's/COP's/Phenylbutazone	8
France	Chicken, processed	Sulfonamides	8
France	Other fowl, fresh	Antibiotics	8
France	Other fowl, fresh	CHC's/COP's/Phenylbutazone	8
France	Other fowl, fresh	Sulfonamides	8
France	Other fowl, processed	CHC’S/ COP’S	8
France	Other fowl, processed	Sulfonamides	8
France	Pork, processed	Arsenicals	8
France	Pork, processed	CHC's/COP's/Phenylbutazone	8
France	Pork, processed	Sulfonamides	8
France	Varied combination, processed	Sulfonamides	8
France	Varied Combo, processed	CHC's/COP's/Phenylbutazone	8
Germany	Beef, processed	CHC's/COP's/Phenylbutazone	8
Germany	Beef, processed	Sulfonamides	8
Germany	Pork, processed	Arsenicals	8
Germany	Pork, processed	CHC's/COP's/Phenylbutazone	8
Germany	Pork, processed	Sulfonamides	8
Honduras	Beef , fresh	Antibiotics	8
Honduras	Beef , fresh	Avermectins	8
Honduras	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Honduras	Beef, fresh	Chloramphenicol	8
Honduras	Beef, fresh	Dexamethazone	8
Honduras	Beef, fresh	Flunixin	8
Honduras	Beef, fresh	Sulfonamides	8
Hong Kong	Chicken, processed	Arsenicals	8
Hong Kong	Chicken, processed	CHC's/COP's/Phenylbutazone	8
Hong Kong	Chicken, processed	Sulfonamides	8
Hong Kong	Turkey, processed	Arsenicals	8
Hong Kong	Turkey, processed	CHC's/COP's/Phenylbutazone	8
Hong Kong	Turkey, processed	Sulfonamides	8
Hungary	Pork, processed	Arsenicals	8
Hungary	Pork, processed	CHC's/COP's/Phenylbutazone	8
Hungary	Pork, processed	Sulfonamides	8
Iceland	Lamb/mutton, fresh	Antibiotics	8
Iceland	Lamb/mutton, fresh	Avermectins	8
Iceland	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	8
Iceland	Lamb/mutton, fresh	Sulfonamides	8

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Ireland	Beef , fresh	Antibiotics	8
Ireland	Beef , fresh	Avermectins	8
Ireland	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Ireland	Beef, fresh	Chloramphenicol	8
Ireland	Beef, fresh	Dexamethazone	8
Ireland	Beef, fresh	Flunixin	8
Ireland	Beef, fresh	Sulfonamides	8
Ireland	Pork, fresh	Antibiotics	8
Ireland	Pork, fresh	Arsenicals	8
Ireland	Pork, fresh	Avermectins	8
Ireland	Pork, fresh	Carbadox	8
Ireland	Pork, fresh	CHC's/COP's/Phenylbutazone	8
Ireland	Pork, fresh	Nitroimidazoles	8
Ireland	Pork, fresh	Ractopamine	8
Ireland	Pork, fresh	Sulfonamides	8
Ireland	Pork, processed	Arsenicals	8
Ireland	Pork, processed	CHC's/COP's/Phenylbutazone	8
Ireland	Pork, processed	Sulfonamides	8
Israel	Chicken, processed	Arsenicals	8
Israel	Chicken, processed	CHC's/COP's/Phenylbutazone	8
Israel	Chicken, processed	Sulfonamides	8
Israel	Other fowl, processed	CHC's/COP's/Phenylbutazone	8
Israel	Other fowl, processed	Sulfonamides	8
Israel	Turkey, processed	Arsenicals	8
Israel	Turkey, processed	CHC's/COP's/Phenylbutazone	8
Israel	Turkey, processed	Sulfonamides	8
Italy	Beef, processed	CHC's/COP's/Phenylbutazone	8
Italy	Beef, processed	Sulfonamides	8
Italy	Pork, processed	Arsenicals	8
Italy	Pork, processed	CHC's/COP's/Phenylbutazone	8
Italy	Pork, processed	Sulfonamides	8
Japan	Beef , fresh	Antibiotics	8
Japan	Beef , fresh	Avermectins	8
Japan	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Japan	Beef, fresh	Chloramphenicol	8
Japan	Beef, fresh	Dexamethazone	8
Japan	Beef, fresh	Flunixin	8
Japan	Beef, fresh	Sulfonamides	8
Mexico	Beef , fresh	Antibiotics	8
Mexico	Beef , fresh	Avermectins	8
Mexico	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Mexico	Beef, fresh	Chloramphenicol	8
Mexico	Beef, fresh	Dexamethazone	8
Mexico	Beef, fresh	Flunixin	8
Mexico	Beef, fresh	Sulfonamides	8
Mexico	Beef, processed	CHC's/COP's/Phenylbutazone	8
Mexico	Beef, processed	Sulfonamides	8
Mexico	Lamb/mutton, fresh	Antibiotics	8
Mexico	Lamb/mutton, fresh	Avermectins	8
Mexico	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	8
Mexico	Lamb/mutton, fresh	Sulfonamides	8

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Mexico	Pork, fresh	Antibiotics	8
Mexico	Pork, fresh	Arsenicals	8
Mexico	Pork, fresh	Avermectins	8
Mexico	Pork, fresh	Carbadox	8
Mexico	Pork, fresh	CHC's/COP's/Phenylbutazone	8
Mexico	Pork, fresh	Nitroimidazoles	8
Mexico	Pork, fresh	Ractopamine	8
Mexico	Pork, fresh	Sulfonamides	8
Mexico	Pork, processed	Arsenicals	8
Mexico	Pork, processed	CHC's/COP's/Phenylbutazone	8
Mexico	Pork, processed	Sulfonamides	9
Netherlands	Beef/pork, processed	Arsenicals	8
Netherlands	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
Netherlands	Beef/pork, processed	Sulfonamides	8
Netherlands	Pork, processed	Arsenicals	8
Netherlands	Pork, processed	CHC's/COP's/Phenylbutazone	13
Netherlands	Pork, processed	Sulfonamides	10
New Zealand	Beef , fresh	Antibiotics	82
New Zealand	Beef , fresh	Avermectins	82
New Zealand	Beef, fresh	CHC's/COP's/Phenylbutazone	82
New Zealand	Beef, fresh	Chloramphenicol	82
New Zealand	Beef, fresh	Dexamethazone	8
New Zealand	Beef, fresh	Flunixin	8
New Zealand	Beef, fresh	Sulfonamides	82
New Zealand	Beef, processed	CHC's/COP's/Phenylbutazone	8
New Zealand	Beef, processed	Sulfonamides	8
New Zealand	Beef/pork, processed	Arsenicals	8
New Zealand	Beef/pork, processed	CHC's/COP's/Phenylbutazone	8
New Zealand	Beef/pork, processed	Sulfonamides	8
New Zealand	Goat, fresh	Antibiotics	8
New Zealand	Goat, fresh	Arsenicals	8
New Zealand	Goat, fresh	Avermectins	8
New Zealand	Goat, fresh	CHC's/COP's/Phenylbutazone	8
New Zealand	Goat, fresh	Sulfonamides	8
New Zealand	Lamb/mutton, fresh	Antibiotics	21
New Zealand	Lamb/mutton, fresh	Avermectins	21
New Zealand	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	71
New Zealand	Lamb/mutton, fresh	Sulfonamides	21
New Zealand	Lamb/mutton, processed	CHC's/COP's/Phenylbutazone	8
New Zealand	Lamb/mutton, processed	Sulfonamides	8
New Zealand	Veal, fresh	Antibiotics	45
New Zealand	Veal, fresh	CHC's/COP's/Phenylbutazone	45
New Zealand	Veal, fresh	Chloramphenicol	8
New Zealand	Veal, fresh	Sulfonamides	45
Nicaragua	Beef , fresh	Antibiotics	8
Nicaragua	Beef , fresh	Avermectins	8
Nicaragua	Beef, fresh	CHC's/COP's/Phenylbutazone	8
Nicaragua	Beef, fresh	Chloramphenicol	8
Nicaragua	Beef, fresh	Dexamethazone	8
Nicaragua	Beef, fresh	Flunixin	8
Nicaragua	Beef, fresh	Sulfonamides	8

Table 9.2 - *Continued*
2000 FSIS National Residue Program
Import Residue Plan

COUNTRY	PRODUCT	COMPOUND	NO. SAMPLES
Poland	Pork, processed	Arsenicals	8
Poland	Pork, processed	CHC's/COP's/Phenylbutazone	15
Poland	Pork, processed	Sulfonamides	8
Spain	Pork, processed	Arsenicals	8
Spain	Pork, processed	CHC's/COP's/Phenylbutazone	8
Spain	Pork, processed	Sulfonamides	8
Sweden	Pork, fresh	Antibiotics	8
Sweden	Pork, fresh	Arsenicals	8
Sweden	Pork, fresh	Avermectins	8
Sweden	Pork, fresh	Carbadox	8
Sweden	Pork, fresh	CHC's/COP's/Phenylbutazone	8
Sweden	Pork, fresh	Nitroimidazoles	8
Sweden	Pork, fresh	Ractopamine	8
Sweden	Pork, fresh	Sulfonamides	8
Switzerland	Beef, processed	CHC's/COP's/Phenylbutazone	8
Switzerland	Beef, processed	Sulfonamides	8
Switzerland	Pork, processed	Arsenicals	8
Switzerland	Pork, processed	CHC's/COP's/Phenylbutazone	8
Switzerland	Pork, processed	Sulfonamides	8
UK	Pork, fresh	Antibiotics	8
UK	Pork, fresh	Arsenicals	8
UK	Pork, fresh	Avermectins	8
UK	Pork, fresh	Carbadox	8
UK	Pork, fresh	CHC's/COP's/Phenylbutazone	8
UK	Pork, fresh	Nitroimidazoles	8
UK	Pork, fresh	Ractopamine	8
UK	Pork, fresh	Sulfonamides	8
Uruguay	Beef , fresh	Antibiotics	9
Uruguay	Beef, fresh	Avermectins	9
Uruguay	Beef, fresh	CHC's/COP's/Phenylbutazone	9
Uruguay	Beef, fresh	Chloramphenicol	9
Uruguay	Beef, fresh	Dexamethazone	8
Uruguay	Beef, fresh	Flunixin	8
Uruguay	Beef, fresh	Sulfonamides	9
Uruguay	Beef, processed	CHC's/COP's/Phenylbutazone	8
Uruguay	Beef, processed	Sulfonamides	8
Uruguay	Lamb/mutton, fresh	Antibiotics	8
Uruguay	Lamb/mutton, fresh	Avermectins	8
Uruguay	Lamb/mutton, fresh	CHC's/COP's/Phenylbutazone	8
Uruguay	Lamb/mutton, fresh	Sulfonamides	8
Uruguay	Lamb/mutton, processed	CHC's/COP's/Phenylbutazone	8
Uruguay	Lamb/mutton, processed	Sulfonamides	8

Table 9.3
Summary, 2000 FSIS National Residue Program
Domestic Monitoring Plan and Special Projects and Import Residue Plan

LAB	ANALYSIS	# SAMPLES SCHEDULED	# Domestic Samples	# Imported Samples	NOTES
MWL	Antibiotics - Bioassay (not incl. eggs)	**9925**	8930	995	
MWL	Antibiotics - Bioassay, eggs	**TBD**	TBD	TBD	eggs, contingent upon method extension
EL	Arsenicals (incl. eggs)	**5066**	4420	646	
EL	Avermectins	**5818**	4900	918	
*	Beta agonists	**900**	900	0	300 each, f. fed veal, steers, market hogs
MWL	Carbadox	**393**	300	93	300 roaster pigs, 93 fresh pork
WL	CHC's/COP's/Phenylbutazone	**10609**	8450	2159	method extension needed for phenylbutazone
EL	Chloramphenicol (Guidebook method)	**1193**	710	483	300 dairy, 300 f. fed veal, 110 bob veal; 459 fresh beef, 24 fresh veal
MWL	DES /Zeranol, both at ppt level	**TBD**	TBD	0	f. fed veal, contingent upon increasing sensitivity of method
MWL	Dexamethasone	**392**	300	92	300 dairy cattle; 92 fresh beef
MWL	Florfenicol	**300**	300	0	300 dairy cattle
MWL	Flunixin	**392**	300	92	300 dairy cattle; 92 fresh beef
MWL	Fluoroquinolones	**908**	900	8	300 dairy cattle, 300 young chicken, 300 market hogs; 8 fresh chicken
EL	Lead	**TBD**	TBD	TBD	product class TBD; contingent upon increasing sensitivity of method
MWL	MGA (Guidebook method)	**500**	500	0	250 steers, 250 heifers
MWL	Nitroimidazoles	**353**	260	93	260 f. fed veal; 93 fresh pork (300 f. fed veal, if possible)
WL	OP's (by CHC/COP method)	**TBD**	TBD	TBD	contingent upon extension of CHC/COP method
MWL	Ractopamine	**393**	300	93	300 market hogs; 93 fresh pork
MWL	Spectinomycin	**TBD**	TBD	TBD	dairy cattle, contingent upon equipment optimization
MWL	Sulfonamides	**4000**	4000	0	
EL	Sulfonamides (incl. eggs)	**5363**	3640	1723	
MWL	Tilmicosin	**840**	840	0	300 dairy cattle, 300 beef cattle, 240 steers
MWL	Vet tranquilizers	**300**	300	0	300 market hogs
	TOTAL, ALL LABS	**47645**	**40250**	**7395**	

*FDA will analyze eyeballs; MWL will analyze livers from positive samples only.

Key:

TBD = To be determined; f.fed veal = formula-fed veal (also known as "fancy veal"); eggs = dried, liquid or frozen egg products

CHC = Chlorinated hydrocarbon; COP = Chlorinated organophosphate; OP = Organophosphate

EL = FSIS Eastern Laboratory, Athens, GA; MWL = FSIS Midwestern Laboratory, St. Louis, MO; WL = FSIS Western Laboratory, Alameda, CA

APPENDIX I. TISSUES TO BE COLLECTED FOR ANALYSIS, 2000 FSIS NATIONAL RESIDUE PROGRAM

RESIDUE	TISSUE ANALYZED	AMOUNT	LAB
Antibiotics	Kidney, liver, muscle	1 pound	MWL
Arsenicals	Liver, muscle	1 pound	EL
Avermectins	Liver, muscle	1 pound	EL
Beta agonists	Eyeball, liver	1 pound	MWL
Carbadox	Liver, muscle	1 pound	MWL
Chloramphenicol	Muscle	1 pound	EL
Chlorinated hydrocarbons/chlorinated organophosphates	Fat	1 pound	WL
DES/zeranol	Liver, muscle	1 pound	MWL
Dexamethasone	Liver, muscle	1 pound	MWL
Florfenicol	Liver, muscle	1 pound	MWL
Flunixin	Liver, muscle	1 pound	MWL
Fluoroquinolones	Muscle (poultry) Liver, muscle (bovine)	1 pound	MWL
Lead	TBD	1 pound	EL
Melengesterol acetate (MGA)	Fat, muscle	1 pound	MWL
Nitroimidazoles	Muscle	1 pound	MWL
Ractopamine	Liver, muscle	1 pound	MWL
Spectinomycin	Kidney, muscle	1 pound	MWL
Sulfonamides	Liver, muscle	1 pound	MWL, EL
Tilmicosin	Liver, muscle	1 pound	MWL
Veterinary tranquilizers	Kidney, liver, muscle	1 pound	MWL

Key:

EL = FSIS Eastern Laboratory, Athens, GA
MWL = FSIS Midwestern Laboratory, St. Louis, Mo
WL = FSIS Western Laboratory, Alameda, Ca
TBD = To be determined

APPENDIX II. U.S. RESIDUE LIMITS FOR VETERINARY DRUGS AND UNAVOIDABLE CONTAMINATS 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[1]	
	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							
	Eggs	4.0[w], 8.0[y]						
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 [1,3]	
	Sheep							
Bambermycin [4]	Cattle							21 CFR 556.428
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
								21 CFR 556.90
Buquinolate	Cattle							
	Goat							
	Hogs							
	Horse							
	Poultry	0.4	0.1		0.4	0.4		
	Sheep							
	Eggs	0.5 [Y], 0.2 [W]						
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 Goat Hogs Horse Poultry Sheep						0	21 CFR 556.110
Ceftiofur	Cattle Goat Hogs[4] Horse Poultry[4] Sheep[4]		1.0		2.0	8.0		21 CFR 556.113
Cephapirin	Cattle Goat Hogs Horse Poultry Sheep						0.1	21 CFR 556.115
Chlorhexidine	Cattle Goat Hogs Horse Poultry Sheep Eggs						0	21 CFR 556.120

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 Goat Hogs Horse Poultry Sheep Eggs						[4]	21 CFR 556.167
Decoquinate	Cattle Goat Hogs Horse Poultry[5] Sheep	2.0 2.0	1.0 1.0	2.0 2.0	2.0 2.0	2.0 2.0	2.0 2.0	21 CFR 556.170
Dichlorvos	Cattle Goat Hogs Horse Poultry Sheep						0.1	21 CFR 556.180
Dihydrostreptomycin	Cattle Goat Hogs Horse Poultry Sheep	0.5 0.5	0.5 0.5	0.5 0.5	0.5 0.5	2.0 2.0	0.5 0.5	21 CFR 556.200

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[5]	
	Sheep							
Doramectin	Cattle		0.03		0.1			21 CFR 556.225
	Goat							
	Hogs				0.16			
	Horse							
	Poultry							
	Sheep							
Enrofloxacin	Cattle				0.1[7]			21 CFR 556.228
	Goat							
	Hogs							
	Horse							
	Poultry		0.3[6]					
	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[6]	
	Sheep							
	Eggs	0.025						
Estradiol benzoate & related esters [8]	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[9] Horse Poultry Sheep Eggs				0.8 0.8			21 CFR 556.275
Fenprostalene	Cattle[9] 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[6]	
	Sheep							
	Eggs							
Halofuginone hydrpbromide	Cattle							21 CFR 556.308
	Goat							
	Hogs							
	Horse							
	Poultry				0.16[5], 0.13[1]			
	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	0.3[5]						
	Sheep [9]							
	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 [5,9]							
	Sheep							
	Eggs							
Maduramicin ammonium	Cattle							21 CFR 556.375
	Goat							
	Hogs							
	Horse							
	Poultry	0.38[5]						
	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[5]	
	Eggs							
Monensin	Cattle						0.05	21 CFR 556.420
	Goat						0.05	
	Hogs							
	Horse							
	Poultry[9]							
	Sheep							
	Eggs							
Morantel tartrate	Cattle				0.7[10]			21 CFR 556.425
	Goat				0.7[10]			
	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 [5,9]							
	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							
Nequinate	Cattle							21 CFR 556.440
	Goat							
	Hogs							
	Horse							
	Poultry						0.1[5]	
	Sheep							
	Eggs							
Nicarbazine	Cattle							
	Goat							
	Hogs							
	Horse							
	Poultry[5]	4.0	4.0		4.0	4.0		21 CFR 556.445
	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[6]	
	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[6]	12	2		6	12		
	Sheep	12	2		6	12		
	Eggs							
PCB's	Cattle							21 CFR 109.30
	Goat							
	Hogs							
	Horse							
	Poultry	3.0[11]						
	Sheep							
	Eggs							
Penicillin	Cattle						0.05	21 CFR 556.510
	Goat							
	Hogs						0	
	Horse							
	Poultry						0 [3,5], 0.01[1]	
	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[5]					0.1[5]	
	Sheep							
	Eggs							

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

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[5]	
	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[6]	
	Sheep							
	Eggs							
Sulfanitran	Cattle							21 CFR 556.680
	Goat							
	Hogs							
	Horse							
	Poultry						0[5]	
	Sheep							
	Eggs							
Sulfaquinoxaline	Cattle						0.1	21 CFR 556.685
	Goat							
	Hogs							
	Horse							
	Poultry						0.1[6]	
	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[6]	
	Sheep							
	Eggs							
Testosterone propionate	Cattle[12]	0.0026	0.00064		0.0013	0.0019		21 CFR 556.710
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep							
	Eggs							
Tetracycline	Cattle[13]	12	2		6	12		21 CFR 556.720
	Goat							
	Hogs	12	2		6	12		
	Horse							
	Poultry[6]	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[14]	
	Sheep							
	Eggs							

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

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[9]							21 CFR 556.750
	Goat							
	Hogs	0.4	0.1		0.3	0.4		
	Horse							
	Poultry[6]	0.2	0.1		0.3	0.5		
	Sheep							
	Eggs							
Zeranol	Cattle[9]							21 CFR 556.760
	Goat							
	Hogs							
	Horse							
	Poultry							
	Sheep						0	
	Eggs							
Zoalene	Cattle							21 CFR 556.770
	Goat							
	Hogs							
	Horse							
	Poultry	2[5]	3[6]		6[5], 3[1]	6[5]		
	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

APPENDIX III. U.S. RESIDUE LIMITS FOR PESTICIDES IN MEAT, POULTRY, AND EGG PRODUCTS

INTRODUCTION

This Appendix provides information on the residue limits (tolerances and action levels) for pesticides in meat, poultry, and egg products, as of December 31, 1999. Tolerances, which are set by the Environmental Protection Agency (EPA) for currently registered pesticides, are applied by the Food Safety and Inspection Service in its regulatory programs. The official source of these tolerances is Title 40, Part 180 of the Code of Federal Regulations (40 CFR 180).

For some cancelled pesticides that persist in the environment, EPA has recommended action levels to FSIS. Action levels are listed in the Federal Register (FR).

FSIS does not permit concentrations of residues in meat and poultry that exceed the tolerances or action levels published in this section. This Appendix supplies the relevant citation for each tolerance and action level.

The tolerances and action levels in poultry and livestock species are listed alphabetically by compound. These residue limits may be for the parent compound (the original chemical form of the compound to which the animal is exposed), 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 and action levels 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 or FR, the values from the latter two sources 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)	Reference
Abamectin	Cattle	0.015	0.02	0.02			40 CFR 180.449
	Goat						
	Hogs						
	Horse						
	Poultry						
	Sheep						
Acephate	Cattle	0.1	0.1	0.1			40 CFR 180.108
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
Acifluorfen	Cattle				0.02	0.02	40 CFR 180.383
	Goat				0.02	0.02	
	Hogs				0.02	0.02	
	Horse				0.02	0.02	
	Poultry	0.02	0.02	0.02			
	Sheep				0.02	0.02	
Alachlor	Cattle	0.02	0.02	0.02			40 CFR 180.249
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Aldicarb	Cattle	0.01	0.01	0.01			40 CFR 180.269
	Goat	0.01	0.01	0.01			
	Hogs	0.01	0.01	0.01			
	Horse	0.01	0.01	0.01			
	Poultry						
	Sheep	0.01	0.01	0.01			
Aldrin	Cattle	0.3[1]					51 FR 46662
	Goat	0.3[1]					
	Hogs	0.3[1]					
	Horse	0.3[1]					
	Poultry	0.3[1]					
	Sheep	0.3[1]					
Amitraz	Cattle	0.1	0.05	0.3			40 CFR 180.287
	Goat	0.01	0	0			
	Hogs	0.1	0.05	0.3	0.2	0.2	
	Horse	0	0	0			
	Poultry	0.01	0.01	0.05			
	Sheep	0	0	0			
Atrazine	Cattle	0.02	0.02	0.02			40 CFR 180.220
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Azinphos-Methyl	Cattle	0.1	0.1	0.1			40 CFR 180.154
	Goat	0.1	0.1	0.1			
	Hogs						
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
Azoxystrobin	Cattle	0.01	0.01	0.01	0.3	0.06	40 CFR 180.507
	Goat	0.01	0.01	0.01	0.3	0.06	
	Hogs	0.01	0.01	0.01	0.2	0.06	
	Horse	0.01	0.01	0.01	0.3		
	Poultry	0.01	0.01		0.4		
	Sheep	0.01	0.01	0.01	0.3	0.06	
Benomyl	Cattle	0.1	0.1	0.1			40 CFR 180.294
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1	0.2		
	Sheep	0.1	0.1	0.1			
Benoxacor	Cattle	0.01	0.01	0.01	0.01	0.01	40 CFR 180.460
	Goat	0.01	0.01	0.01	0.01	0.01	
	Hogs	0.01	0.01	0.01	0.01	0.01	
	Horse	0.01	0.01	0.01	0.01	0.01	
	Poultry	0.01	0.01	0.01	0.01		
	Sheep	0.01	0.01	0.01	0.01	0.01	
Bentazon	Cattle	0.05	0.05	0.05			40 CFR 180.355
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
Benzene hexachloride	Cattle	0.3[1]					50 FR25697
	Goat	0.3[1]					
	Hogs	0.3[1]					
	Horse	0.3[1]					
	Poultry	0.3[1]					
	Sheep	0.3[1]					
Bifenthrin	Cattle	1.0	0.5	0.1			40 CFR 180.442
	Goat	1.0	0.5	0.1			
	Hogs	1.0	0.5	0.1			
	Horse	1.0	0.5	0.1			
	Poultry	0.05	0.05	0.05			
	Sheep	1.0	0.5	0.1			
Bromoxynil	Cattle	0.1	0.1	0.1			40 CFR 180.324
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.05	0.05	0.05			
	Sheep	0.1	0.1	0.1			
Buprofezin	Cattle	0.02	0.02	0.5			40 CFR 180.511
	Goat	0.02	0.02	0.5			
	Hogs	0.02	0.02	0.5			
	Horse	0.02	0.02	0.5			
	Poultry						
	Sheep	0.02	0.02	0.5			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Cacodylic acid	Cattle	0.7	0.7	0.7	1.4	1.4	40 CFR 180.311
	Goat						
	Hogs						
	Horse						
	Poultry						
	Sheep						
							40 CFR 180.103
Captan	Cattle	0.05	0.05	0.05			
	Goat						
	Hogs	0.05	0.05	0.05			
	Horse						
	Poultry						
	Sheep						
Carbaryl	Cattle	0.1	0.1	0.1	1.0	1.0	40 CFR 180.169
	Goat	0.1	0.1	0.1	1.0	1.0	
	Hogs	0.1	0.1	0.1	1.0	1.0	
	Horse	0.1	0.1	0.1	1.0	1.0	
	Poultry	5.0	5.0				
	Sheep	0.1	0.1	0.1	1.0	1.0	
	Eggs	0.5					
Carbofuran	Cattle	0.05	0.05	0.05			40 CFR 180.254
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
Carbophenothion	Cattle	0.1					40 CFR 180.156
	Goat	0.1					
	Hogs	0.1					
	Horse						
	Poultry						
	Sheep	0.1					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Carboxin	Cattle	0.1	0.1	0.1			40 CFR 180.156
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.01					
Chlordane	Cattle	0.3[1]					51 FR 46665
	Goat	0.3[1]					
	Hogs	0.3[1]					
	Horse	0.3[1]					
	Poultry	0.3[1]					
	Sheep	0.3[1]					
Chlordimeform	Cattle	0.01	0.1	0.1			40 CFR 180.285
	Goat	0.01	0.1	0.1			
	Hogs	0.01	0.1	0.1			
	Horse	0.01	0.1	0.1			
	Poultry	0.25	0.25	0.25			
	Sheep	0.01	0.1	0.1			
Chlorfenapyr	Cattle	0.1	0.01	0.3			40 CFR 180.513
	Goat	0.1	0.01	0.3			
	Hogs	0.1	0.01	0.3			
	Horse	0.1	0.01	0.3			
	Poultry						
	Sheep	0.1	0.01	0.3			
2-Chloro-N- isopropylacetanilide	Cattle	0.02	0.02	0.02			40 CFR 180.211

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
[Propachlor]	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			
Chloroneb	Cattle	0.2	0.2	0.2			40 CFR 180.257
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry						
	Sheep	0.2	0.2	0.2			
Chlorpyrifos	Cattle	0.3	0.05	0.05			40 CFR 180.342
	Goat	0.2	0.05	0.05			
	Hogs	0.2	0.05	0.05			
	Horse	0.25	0.25	0.25			
	Poultry	0.1	0.1	0.1			
	Sheep	0.2	0.05	0.05			
	Eggs	0.01					
Chlorpyrifos-methyl	Cattle	0.5	0.5	0.5			40 CFR 180.419
	Goat	0.5	0.5	0.5			
	Hogs	0.5	0.5	0.5			
	Horse	0.5	0.5	0.5			
	Poultry	0.5	0.5	0.5			
	Sheep	0.5	0.5	0.5			
Chlorsulfuron	Cattle	0.3	0.3	0.3			40 CFR 180.405
	Goat	0.3	0.3	0.3			
	Hogs	0.3	0.3	0.3			
	Horse	0.3	0.3	0.3			
	Poultry						
	Sheep	0.3	0.3	0.3			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Clethodim	Cattle	0.2	0.2	0.2			40 CFR 180.458
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry	0.2	0.2	0.2			
	Sheep	0.2	0.2	0.2			
Clofencet	Cattle	0.04	0.15	0.5		10.0	40 CFR 180.497
	Goat	0.04	0.15	0.5		10.0	
	Hogs	0.04	0.15	0.5		10.0	
	Horse	0.04	0.15	0.5		10.0	
	Poultry	0.04	0.15	0.2			
	Sheep	0.04	0.15	0.5		10.0	
Clofentezine	Cattle	0.05	0.05	0.05	0.4		40 CFR 180.446
	Goat	0.05	0.05	0.05	0.4		
	Hogs	0.05	0.05	0.05	0.4		
	Horse	0.05	0.05	0.05	0.4		
	Poultry						
	Sheep	0.05	0.05	0.05	0.4		
Clopyralid	Cattle	1.0	1.0	1.0		12	40 CFR 180.431
	Goat	1.0	1.0	1.0		12	
	Hogs	0.2	0.2	0.2			
	Horse	1.0	1.0	1.0		12	
	Poultry	0.2	0.2	0.2			
	Sheep	1.0	1.0	1.0		12	
	Eggs	0.1					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Coumaphos	Cattle	1.0	1.0	1.0			40 CFR 180.189
	Goat	1.0	1.0	1.0			
	Hogs	1.0	1.0	1.0			
	Horse	1.0	1.0	1.0			
	Poultry						
	Sheep	1.0	1.0	1.0			
Cuprous Oxide	Cattle		Exempt				40 CFR 180.1021
	Goat		Exempt				
	Hogs		Exempt				
	Horse		Exempt				
	Poultry		Exempt				
	Sheep		Exempt				
	Eggs		Exempt				
Cyclanilide	Cattle	0.1	0.02	0.2		2.0	40 CFR 180.506
	Goat	0.1	0.02	0.2		2.0	
	Hogs	0.1	0.02	0.2		2.0	
	Horse	0.1	0.02	0.2		2.0	
	Poultry						
	Sheep	0.1	0.02	0.2		2.0	
Cyfluthrin	Cattle	5.0	0.4	0.4			40 CFR 180.436
	Goat	5.0	0.4	0.4			
	Hogs	5.0	0.4	0.4			
	Horse	5.0	0.4	0.4			
	Poultry	0.01	0.01	0.01			
	Sheep	5.0	0.4	0.4			
	Eggs	0.01					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Cyhexatin	Cattle	0.2	0.2	0.2	0.5	0.5	40 CFR 180.144
	Goat	0.2	0.2	0.2	0.5	0.5	
	Hogs	0.2	0.2	0.2	0.5	0.5	
	Horse	0.2	0.2	0.2	0.5	0.5	
	Poultry						
	Sheep	0.2	0.2	0.2	0.5	0.5	
Cypermethrin	Cattle	0.05	0.05	0.05			40 CFR 180.418
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
Cyromazine	Cattle						40 CFR 180.414
	Goat						
	Hogs						
	Horse						
	Poultry	0.05	0.05	0.05			
	Sheep						
	Eggs	0.25					
Dalapon	Cattle		0.2	0.2			40 CFR 180.150
	Goat		0.2	0.2			
	Hogs		0.2	0.2			
	Horse						
	Poultry		3.0[2]			9.0	
	Sheep		0.2	0.2			
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
DDT & Metabolites[1]	Cattle	5.0					51 FR 46658
	Goat	5.0					
	Hogs	5.0					
	Horse	5.0					
	Poultry	5.0					
	Sheep	5.0					
	Eggs						
Diazinon	Cattle	0.7	0.7	0.7			40 CFR 180.153
	Goat	0.7	0.7	0.7			
	Hogs						
	Horse						
	Poultry						
	Sheep	0.7	0.7	0.7			
	Eggs						
Dicamba	Cattle	0.2	0.2	0.2	1.5	1.5	40 CFR 180.227
	Goat	0.2	0.2	0.2	1.5	1.5	
	Hogs	0.2	0.2	0.2	1.5	1.5	
	Horse	0.2	0.2	0.2	1.5	1.5	
	Poultry						
	Sheep	0.2	0.2	0.2	1.5	1.5	
	Eggs						
2,4-Dichlorophenoxyacetic acid	Cattle	0.2	0.2	0.2		2.0	40 CFR 180.142
	Goat	0.2	0.2	0.2		2.0	
	Hogs	0.2	0.2	0.2		2.0	
	Horse	0.2	0.2	0.2		2.0	
	Poultry	0.05					
	Sheep	0.2	0.2	0.2		2.0	
	Eggs	0.05					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
3,4-Dichloropropionanilide	Cattle	0.1	0.1	0.1			40 CFR 180.274
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.1	0.1	0.1			
Dichlorvos	Cattle	0.02	0.02	0.02			40 CFR 180.235
	Goat	0.02	0.02	0.02			
	Hogs	0.1	0.1	0.1			
	Horse	0.02	0.02	0.02			
	Poultry	0.05	0.05	0.05			
	Sheep	0.02	0.02	0.02			
	Eggs	0.05					
Dieldrin[1]	Cattle	0.3					51 FR 46662
	Goat	0.3					
	Hogs	0.3					
	Horse	0.3					
	Poultry	0.3					
	Sheep	0.3					
	Eggs						
Difenoconazole	Cattle	0.05	0.05	0.05			40 CFR 180.475
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Difenzoquat	Cattle	0.05	0.05	0.05			40 CFR 180.369
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs						
Diflubenzuron	Cattle	0.05	0.05	0.05			40 CFR 180.377
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					
Dimethipin	Cattle	0.02	0.02	0.02			40 CFR 180.406
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry						
	Sheep	0.02	0.02	0.02			
	Eggs						
Dimethoate	Cattle	0.02	0.02	0.02			40 CFR 180.204
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			
	Eggs	0.02					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
N,N-Dimethylpiperidinium Chloride	Cattle	0.1	0.1	0.1			40 CFR 180.384
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.05					
Dioxathion	Cattle						40 CFR 180.171
	Goat						
	Hogs	1.0					
	Horse	1.0					
	Poultry						
	Sheep						
	Eggs						
Diphenamide	Cattle	0.05	0.05	0.05			40 CFR 180.230
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						
Diphenylamine	Cattle		0				40 CFR 180.190
	Goat		0				
	Hogs						
	Horse		0				
	Poultry						
	Sheep		0				
	Eggs						
Dipropyl isocinchomeronate	Cattle	0.1	0.1	0.1			40 CFR 180.143
	Goat	0.1	0.1	0.1			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
	Eggs						
Diquat dibromide	Cattle	0.02	0.02	0.02			40 CFR 180.226
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			
	Eggs	0.02	0.02	0.02			
Diuron	Cattle	1	1	1			40 CFR 180.106
	Goat	1	1	1			
	Hogs	1	1	1			
	Horse	1	1	1			
	Poultry						
	Sheep	1	1	1			
	Eggs						
Dodin	Cattle		0				40 CFR 180.172
	Goat		0				
	Hogs		0				
	Horse		0				
	Poultry		0				
	Sheep		0				
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Endosulfan	Cattle	0.2	0.2	0.2			40 CFR 180.182
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry						
	Sheep	0.2	0.2	0.2			
	Eggs						
Endrin[1]	Cattle	0.3					MPI Dir 917.1
	Goat	0.3					
	Hogs	0.3					
	Horse	0.3					
	Poultry	0.3					
	Sheep	0.3					
	Eggs						
Esfenvalerate	Cattle	0.3	0.03	0.3	0.03		40 CFR 180.533
	Goat						
	Hogs						
	Horse						
	Poultry						
	Sheep						
	Eggs	0.03					
Ethalfluralin	Cattle						40 CFR 180.416
	Goat	0.05	0.05	0.05			
	Hogs						
	Horse						
	Poultry						
	Sheep						
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Ethephon	Cattle	0.1	0.1	0.1			40 CFR 180.300
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	-	-	-			
	Sheep	0.1	0.1	0.1			
	Eggs						
Ethion	Cattle	2.5	2.5	1.0			40 CFR 180.173
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry						
	Sheep	0.2	0.2	0.2			
	Eggs						
Ethofumesate	Cattle	0.05	0.05	0.05			40 CFR 180.345
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						
Ethyl 4,4'-dichlorobenzilate [Chlorobenzilate]	Cattle	0.5	0.5	0.5			40 CFR 180.109
	Goat						
	Hogs						
	Horse						
	Poultry						
	Sheep	0.5	0.5	0.5			
	Eggs						
O-Ethyl-O-[4-(methylthio)-phenyl]-S-propyl phosphorodithioate & metabolites	Cattle	0.1	0.1	0.1			40 CFR 180.374
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
[Sulprofos]	Horse	0.1	0.1	0.1			
	Poultry	0.01	0.01	0.01			
	Sheep	0.1	0.1	0.1			
	Eggs						
Etridiazole	Cattle	0.1	0.1	0.1			40 CFR 180.370
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.05					
Fenamiphos	Cattle	0.05	0.05	0.05			40 CFR 180.349
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						
Fenarimol	Cattle	0.1	0.01	0.01	0.1	0.1	40 CFR 180.421
	Goat	0.1	0.01	0.01	0.1	0.1	
	Hogs	0.1	0.01	0.01	0.1	0.1	
	Horse	0.1	0.01	0.01	0.1	0.1	
	Poultry	0.01	0.01	0.01			
	Sheep	0.1	0.01	0.01	0.1	0.1	
	Eggs	0.01					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Fenbuconazole	Cattle	0.01	0.01	0.01			40 CFR 180.480
	Goat	0.01	0.01	0.01			
	Hogs	0.01	0.01	0.01			
	Horse	0.01	0.01	0.01			
	Poultry						
	Sheep	0.01	0.01	0.01			
	Eggs						
Fenbutatin Oxide	Cattle	0.5	0.5	0.5			40 CFR 180.362
	Goat	0.5	0.5	0.5			
	Hogs	0.5	0.5	0.5			
	Horse	0.5	0.5	0.5			
	Poultry	0.1	0.1	0.1			
	Sheep	0.5	0.5	0.5			
	Eggs	0.1					
Fenoxaprop-ethyl	Cattle	0.05	0.05	0.05			40 CFR 180.430
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						
Fenpropathrin	Cattle	1.0	0.1	0.1			40 CFR 180.466
	Goat	1.0	0.1	0.1			
	Hogs	1.0	0.1	0.1			
	Horse	1.0	0.1	0.1			
	Poultry	0.05	0.05	0.05			
	Sheep	1.0	0.1	0.1			
	Eggs	0.05					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Fenridazone-potassium	Cattle	0.05	0.05	0.05	1.0	1.0	40 CFR 180.423
	Goat	0.05	0.05	0.05	1.0	1.0	
	Hogs	0.05	0.05	0.05	1.0	1.0	
	Horse	0.05	0.05	0.05	1.0	1.0	
	Poultry	0.3	0.3	0.3			
	Sheep	0.05	0.05	0.05	1.0	1.0	
	Eggs	0.05					
Fenthion	Cattle	0.1	0.1	0.1			40 CFR 180.214
	Goat						
	Hogs	0.1	0.1	0.1			
	Horse						
	Poultry	0.1	0.1	0.1			
	Sheep						
	Eggs						
Fenvalerate	Cattle	1.5	1.5	1.5			40 CFR 180.379
	Goat	1.5	1.5	1.5			
	Hogs	1.5	1.5	1.5			
	Horse	1.5	1.5	1.5			
	Poultry						
	Sheep	1.5	1.5	1.5			
	Eggs						
Fipronil	Cattle	0.4	0.04	0.04	0.1		40 CFR 180.517
	Goat	0.4	0.04	0.04	0.1		
	Hogs	0.04	0.01	0.01	0.02		
	Horse	0.4	0.04	0.04	0.1		
	Poultry	0.05	0.02	0.02			
	Sheep	0.4	0.04	0.04	0.1		
	Eggs	0.03					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Fluazifop-butyl	Cattle	0.05	0.05	0.05			40 CFR 180.411
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					
Flufenacet	Cattle	0.05	0.05	0.1		0.5	40 CFR 180.527
	Goat	0.05	0.05	0.1		0.5	
	Hogs	0.05	0.05	0.1		0.5	
	Horse	0.05	0.05	0.1		0.5	
	Poultry						
	Sheep	0.05	0.05	0.1		0.5	
	Eggs						
Fluridone	Cattle	0.05	0.05	0.05	0.1	0.1	40 CFR 180.420
	Goat	0.05	0.05	0.05	0.1	0.1	
	Hogs	0.05	0.05	0.05	0.1	0.1	
	Horse	0.05	0.05	0.05	0.1	0.1	
	Poultry	0.05	0.05	0.05	0.1	0.1	
	Sheep	0.05	0.05	0.05	0.1	0.1	
	Eggs	0.05					
Fluroxypyr 1-methylheptyl ester	Cattle	0.1	0.1	0.1		0.5	40 CFR 180.535
	Goat	0.1	0.1	0.1		0.5	
	Hogs	0.1	0.1	0.1		0.5	
	Horse	0.1	0.1	0.1		0.5	
	Poultry						
	Sheep	0.1	0.1	0.1		0.5	
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Flutolanil	Cattle	0.1	0.05	0.05	2.0	1.0	40 CFR 180.484
	Goat	0.1	0.05	0.05	2.0	1.0	
	Hogs	0.1	0.05	0.05	2.0	1.0	
	Horse	0.1	0.05	0.05	2.0	1.0	
	Poultry	0.05	0.05	0.05			
	Sheep	0.1	0.05	0.05	2.0	1.0	
	Eggs	0.05					
Fluvalinate	Cattle	0.01	0.01	0.01			40 CFR 180.427
	Goat	0.01	0.01	0.01			
	Hogs	0.01	0.01	0.01			
	Horse	0.01	0.01	0.01			
	Poultry	0.01	0.01	0.01			
	Sheep	0.01	0.01	0.01			
	Eggs	0.01					
Glufosinate – ammonium	Cattle	0.05	0.05	0.1			40 CFR 180.473
	Goat	0.05	0.05	0.1			
	Hogs	0.05	0.05	0.1			
	Horse	0.05	0.05	0.1			
	Poultry	0.05	0.05	0.1			
	Sheep	0.05	0.05	0.1			
	Eggs	0.05					
Glyphosate and its metabolites	Cattle				0.5	4.0	40 CFR 180.364
	Goat				0.5	4.0	
	Hogs				0.5	4.0	
	Horse				0.5	4.0	
	Poultry				0.5	0.5	
	Sheep				0.5	4.0	
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Halosulfuron	Cattle			0.1			40 CFR 180.479
	Goat			0.1			
	Hogs			0.1			
	Horse			0.1			
	Poultry						
	Sheep			0.1			
	Eggs						
HCB	Cattle	0.5					MPI Dir 917.1
	Goat	0.5					
	Hogs	0.5					
	Horse	0.5					
	Poultry	0.5					
	Sheep	0.5					
	Eggs						
Heptachlor & heptachlor epoxide[1]	Cattle	0.2	0.2	0.2			54 FR 33690
	Goat	0.2	0.2	0.2			MPI Dir 917.1
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry	0.2	0.2	0.2			
	Sheep	0.2	0.2	0.2			
	Eggs						
Hexazinone	Cattle	0.1	0.1	0.1			40 CFR 180.396
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Imazalil	Cattle	0.01	0.01	0.01	0.5		40 CFR 180.413
	Goat	0.01	0.01	0.01	0.5		
	Hogs	0.01	0.01	0.01	0.5		
	Horse	0.01	0.01	0.01	0.5		
	Poultry						
	Sheep	0.01	0.01	0.01	0.5		
	Eggs						
Imidacloprid	Cattle	0.3	0.3	0.3			40 CFR 180.472
	Goat	0.3	0.3	0.3			
	Hogs	0.3	0.3	0.3			
	Horse	0.3	0.3	0.3			
	Poultry	0.05	0.05	0.05			
	Sheep	0.3	0.3	0.3			
	Eggs	0.02					
Iprodione	Cattle	0.5	0.5	0.5	3.0	3.0	40 CFR 180.399
	Goat	0.5	0.5	0.5	3.0	3.0	
	Hogs	0.5	0.5	0.5	3.0	3.0	
	Horse	0.5	0.5	0.5	3.0	3.0	
	Poultry	3.5	1.0	1.0			
	Sheep	0.5	0.5	0.5	3.0	3.0	
	Eggs	1.5					
Lambda-Cyhalothrin	Cattle	3.0	0.2	0.2			40 CFR 180.438
	Goat	3.0	0.2	0.2			
	Hogs	3.0	0.2	0.2			
	Horse	3.0	0.2	0.2			
	Poultry	0.03	0.01	0.01			
	Sheep	3.0	0.2	0.2			
	Eggs	0.01					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Lindane	Cattle	7.0	7.0				40 CFR 180.133
	Goat	7.0	7.0				
	Hogs	4.0	4.0				
	Horse	7.0	7.0				
	Poultry						
	Sheep	7.0	7.0				
	Eggs						
Linuron	Cattle	1	1	1			40 CFR 180.184
	Goat	1	1	1			
	Hogs	1	1	1			
	Horse	1	1	1			
	Poultry						
	Sheep	1	1	1			
	Eggs						
Malathion	Cattle	4.0	4.0	4.0			40 CFR 180.111
	Goat	4.0	4.0	4.0			
	Hogs	4.0	4.0	4.0			
	Horse	4.0	4.0	4.0			
	Poultry	4.0	4.0	4.0			
	Sheep	4.0	4.0	4.0			
	Eggs	0.1					
Maleic Hydrazide	Cattle	3.0	2.5		7	32	40 CFR 180.175
	Goat	3.0	2.5		7	32	
	Hogs	3.0	2.5		7	32	
	Horse	3.0	2.5		7	32	
	Poultry	0.5	0.5	1.4	0.5		
	Sheep	3	2.5		7	32	
	Eggs	0.5					
Mancozeb	Cattle				0.5	0.5	40 CFR 180.176
	Goat				0.5	0.5	

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Hogs				0.5	0.5	
	Horse				0.5	0.5	
	Poultry				0.5	0.5	
	Sheep				0.5	0.5	
	Eggs						
Metalxyl	Cattle	0.4	0.05	0.05	0.4	0.4	40 CFR 180.408
	Goat	0.4	0.05	0.05	0.4	0.4	
	Hogs	0.4	0.05	0.05	0.4	0.4	
	Horse	0.4	0.05	0.05	0.4	0.4	
	Poultry	0.4	0.05	0.05	0.4	0.4	
	Sheep	0.4	0.05	0.05	0.4	0.4	
	Eggs						
Methidathion	Cattle	0.05	0.05	0.05			40 CFR 180.298
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs						
Methoprene	Cattle	1.0	0.1	0.1			40 CFR 180.359
	Goat	1.0	0.1	0.1			
	Hogs	1.0	0.1	0.1			
	Horse	1.0	0.1	0.1			
	Poultry	1.0	0.1	0.1			
	Sheep	1.0	0.1	0.1			
	Eggs	0.1					
Methoxychlor	Cattle	3.0	3.0				40 CFR 180.120
	Goat	3.0	3.0				
	Hogs	3.0	3.0				
	Horse	3.0	3.0				
	Poultry						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Sheep	3.0	3.0				
	Eggs						
2-Methyl-4- chlorophenoxy-acetic acid [MCPA]	Cattle	0.1	0.1	0.1			40 CFR 180.339
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
	Eggs						
6-Methyl-1,3- dithiolo [4,5-b] quinoxalin-2-one [Oxythioquinox]	Cattle	0.05	0.05	0.05			40CFR 180.338
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
1-Methylethyl-2-ethoxy-1- methylethyl amino phosphinothioyl -oxy benzoate [Isofenphos]	Cattle	0.1	0.1	0.1			40CFR 180.387
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
Metolachlor	Cattle	0.02	0.02	0.02	0.05	0.2	40CFR 180.368
	Goat	0.02	0.02	0.02	0.05	0.2	
	Hogs	0.02	0.02	0.02	0.05	0.2	
	Horse	0.02	0.02	0.02	0.05	0.2	
	Poultry	0.02	0.02	0.02	0.05		
	Sheep	0.02	0.02	0.02	0.05	0.2	
	Eggs	0.02					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Metribuzin	Cattle	0.7	0.7	0.7			40 CFR 180.332
	Goat	0.7	0.7	0.7			
	Hogs	0.7	0.7	0.7			
	Horse	0.7	0.7	0.7			
	Poultry	0.7	0.7	0.7			
	Sheep	0.7	0.7	0.7			
	Eggs	0.01					
Metsulfuron-methyl	Cattle	0.1	0.1	0.1		0.5	40 CFR 180.428
	Goat	0.1	0.1	0.1		0.5	
	Hogs	0.1	0.1	0.1		0.5	
	Horse	0.1	0.1	0.1		0.5	
	Poultry						
	Sheep	0.1	0.1	0.1		0.5	
	Eggs						
Mirex	Cattle	0.1	0.1	0.1			51 FR45114
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs						
Myclobutanil	Cattle	0.05	0.1	0.2	1.0		40 CFR 180.443
	Goat	0.05	0.1	0.2	1.0		
	Hogs	0.05	0.1	0.2	1.0		
	Horse	0.05	0.1	0.2	1.0		
	Poultry	0.02	0.02	0.02			
	Sheep	0.05	0.1	0.2	1.0		
	Eggs	0.02					
Naled	Cattle	0.05	0.05	0.05			40 CFR 180.215

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					
Nicotine	Cattle						40 CFR 180.167
	Goat						
	Hogs						
	Horse						
	Poultry	1.0	1.0	1.0			
	Sheep						
	Eggs	1.0					
Nitrapyrin	Cattle	0.05	0.05	0.05			40 CFR 350
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep						
	Eggs						
Norflurazon	Cattle	0.1	0.1	0.1	0.25		40 CFR 180.356
	Goat	0.1	0.1	0.1	0.25		
	Hogs	0.1	0.1	0.1	0.25		
	Horse	0.1	0.1	0.1	0.25		
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1	0.25		
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
N-Octyl bicycloheptene dicarboximide	Cattle	0.3					40 CFR 180.367
	Goat	0.3					
	Hogs	0.3					
	Horse	0.3					
	Poultry						
	Sheep	0.3					
	Eggs						
Oxadiazon	Cattle	0.01	0.01	0.01			40 CFR 180.346
	Goat	0.01	0.01	0.01			
	Hogs	0.01	0.01	0.01			
	Horse	0.01	0.01	0.01			
	Poultry						
	Sheep	0.01	0.01	0.01			
	Eggs						
Oxydemeton-methyl	Cattle	0.01	0.01	0.01			40 CFR 180.330
	Goat	0.01	0.01	0.01			
	Hogs	0.01	0.01	0.01			
	Horse	0.01	0.01	0.01			
	Poultry						
	Sheep	0.01	0.01	0.01			
	Eggs						
Oxyfluorfen	Cattle	0.05	0.05	0.05			40 CFR 180.381
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Paraquat dichloride	Cattle	0.05	0.05	0.05		0.3	40 CFR 180.205
	Goat	0.05	0.05	0.05		0.3	
	Hogs	0.05	0.05	0.05		0.3	
	Horse	0.05	0.05	0.05		0.3	
	Poultry						
	Sheep	0.05	0.05	0.05		0.3	
	Eggs	0.01					
Permethrin	Cattle	3.0	0.25	2.0			40 CFR 180.378
	Goat	3.0	0.25	2.0			
	Hogs	3.0	0.25	3.0			
	Horse	3.0	0.25	2.0			
	Poultry	0.15	0.05	0.25			
	Sheep	3.0	0.25	2.0			
	Eggs	1.0					
Phorate	Cattle	0.05	0.05	0.05			40 CFR 180.206
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					
Phosmet	Cattle	0.2	0.2	0.2			40 CFR 180.261
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry						
	Sheep	0.2	0.2	0.2			
	Eggs						
Picloram	Cattle	0.2	0.2	0.2	0.5	5.0	40 CFR 180.292
	Goat	0.2	0.2	0.2	0.5	5.0	

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Hogs	0.2	0.2	0.2	0.5	5.0	
	Horse	0.2	0.2	0.2	0.5	5.0	
	Poultry	0.05	0.05	0.05			
	Sheep	0.2	0.2	0.2	0.5	5.0	
	Eggs	0.05					
Piperonyl butoxide	Cattle	0.1	0.1	0.1			40 CFR 180.127
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	3.0	3.0	3.0			
	Sheep	0.1	0.1	0.1			
	Eggs	1.0					
Pirimiphos-methyl	Cattle	0.2	0.2	0.2	2.0	2.0	40 CFR 180.409
	Goat	0.2	0.2	0.2	2.0	2.0	
	Hogs	0.2	0.2	0.2	2.0	2.0	
	Horse	0.2	0.2	0.2	2.0	2.0	
	Poultry	0.2	2.0	2.0			
	Sheep	0.2	0.2	0.2	2.0	2.0	
	Eggs	0.5					
Polyoxyethylene	Cattle		Exempt				40 CFR 180.1078
	Goat		Exempt				
	Hogs		Exempt				
	Horse		Exempt				
	Poultry		Exempt				
	Sheep		Exempt				
	Eggs		Exempt				
Primisulfuron	Cattle	0.1	0.1	0.1			40 CFR 180.452
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.1					
Profenofos	Cattle	0.05	0.05	0.05			40 CFR 180.404
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry	0.05	0.05	0.05			
	Sheep	0.05	0.05	0.05			
	Eggs	0.05					
Propamocarb hydrochloride	Cattle	0.1	0.1	0.1			40 CFR 180.499
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
	Eggs						
Propargite	Cattle	0.1	0.1	0.1			40 CFR 180.259
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.1					
Propham	Cattle	0.5	0.5	0.5			40 CFR 180.319
	Goat	0.5	0.5	0.5			
	Hogs	0.5	0.5	0.5			
	Horse	0.5	0.5	0.5			
	Poultry	0.5	0.5	0.5			
	Sheep	0.5	0.5	0.5			
	Eggs	0.5					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Propiconazole	Cattle	0.1	0.1	0.1	2.0	2.0	40 CFR 180.434
	Goat	0.1	0.1	0.1	2.0	2.0	
	Hogs	0.1	0.1	0.1	2.0	2.0	
	Horse	0.1	0.1	0.1	2.0	2.0	
	Poultry	0.1	0.1	0.1	0.2	0.2	
	Sheep	0.1	0.1	0.1	2.0	2.0	
	Eggs	0.1					
Propionic acid	Cattle		Exempt	Exempt			40 CFR 180.1023
	Goat		Exempt	Exempt			
	Hogs		Exempt	Exempt			
	Horse		Exempt	Exempt			
	Poultry		Exempt	Exempt			
	Sheep		Exempt	Exempt			
	Eggs		Exempt				
Propyzamide	Cattle	0.02	0.02	0.02	0.4	0.4	40 CFR 180.317
	Goat	0.02	0.02	0.02	0.4	0.4	
	Hogs	0.02	0.02	0.02	0.4	0.4	
	Horse	0.02	0.02	0.02	0.4	0.4	
	Poultry	0.02	0.02	0.02	0.2	0.2	
	Sheep	0.02	0.02	0.02	0.4	0.4	
	Eggs	0.02					
Prosulfuron	Cattle	0.05	0.05	0.05	0.05	0.05	40 CFR 180.481
	Goat	0.05	0.05	0.05	0.05	0.05	
	Hogs	0.05	0.05	0.05	0.05	0.05	
	Horse	0.05	0.05	0.05	0.05	0.05	
	Poultry						
	Sheep	0.05	0.05	0.05	0.05	0.05	
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Pyrethrins	Cattle	0.1	0.1	0.1			40 CFR 180.128
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.2	0.2	0.2			
	Sheep	0.1	0.1	0.1			
	Eggs	0.1					
Pyridaben	Cattle	0.05	0.05	0.05			40 CFR 180.494
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						
Quinclorac	Cattle	0.7	0.05	1.5			40 CFR 180.463
	Goat	0.7	0.05	1.5			
	Hogs	0.7	0.05	1.5			
	Horse	0.7	0.05	1.5			
	Poultry	0.2	0.05	0.1			
	Sheep	0.7	0.05	1.5			
	Eggs	0.05					
Quizalofob-ethyl	Cattle	0.05	0.02	0.05			40 CFR 180.441
	Goat	0.05	0.02	0.05			
	Hogs	0.05	0.02	0.05			
	Horse	0.05	0.02	0.05			
	Poultry	0.05	0.02	0.05			
	Sheep	0.05	0.02	0.05			
	Eggs	0.02					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Sethoxydim	Cattle	0.2	0.2	0.2			40 CFR 180.412
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry	0.2	0.2	2.0			
	Sheep	0.2	0.2	0.2			
	Eggs	2.0					
Simazine	Cattle	0.02	0.02	0.02			40 CFR 180.213
	Goat	0.02	0.02	0.02			
	Hogs	0.02	0.02	0.02			
	Horse	0.02	0.02	0.02			
	Poultry	0.02	0.02	0.02			
	Sheep	0.02	0.02	0.02			
	Eggs	0.02					
Sodium acifluorfen	Cattle				0.02	0.02	40 CFR 180.383
	Goat				0.02	0.02	
	Hogs				0.02	0.02	
	Horse				0.02	0.02	
	Poultry	0.02	0.02	0.02			
	Sheep				0.02	0.02	
	Eggs	0.02					
Spinosad	Cattle	3.5	0.15	1.0			40 CFR 180.495
	Goat	3.5	0.15	1.0			
	Hogs	3.5	0.15	1.0			
	Horse	3.5	0.15	1.0			
	Poultry	0.2	0.02	0.02			
	Sheep	3.5	0.15	1.0			
	Eggs	0.02					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Sulfosate	Cattle	0.5	1.0	1.5		6.0	40 CFR 180.489
	Goat	0.5	1.0	1.5		6.0	
	Hogs	0.5	1.0	1.5		6.0	
	Horse	0.5	1.0	1.5		6.0	
	Poultry	0.05	0.05	0.1			
	Sheep	0.5	1.0	1.5		6.0	
	Eggs	0.05					
Tebuconazole	Cattle			0.2			40 CFR 180.474
	Goat			0.2			
	Hogs			0.2			
	Horse			0.2			
	Poultry			0.2			
	Sheep			0.2			
	Eggs						
Tebufenozide	Cattle	0.1	0.02	0.1	1.0	0.02	40 CFR 180.482
	Goat	0.1	0.02	0.1	1.0	0.02	
	Hogs						
	Horse						
	Poultry						
	Sheep	0.1	0.02	0.1	1.0	0.02	
	Eggs						
Tebuthiuron	Cattle	2.0	2.0	2.0			40 CFR 180.390
	Goat	2.0	2.0	2.0			
	Hogs						
	Horse	2.0	2.0	2.0			
	Poultry						
	Sheep	2.0	2.0	2.0			
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Terbacil	Cattle	0.1	0.1	0.1			40 CFR 180.209
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry						
	Sheep	0.1	0.1	0.1			
	Eggs						
Tetrachlovinphos	Cattle	1.5					40 CFR 180.252
	Goat	0.5					
	Hogs	1.5					
	Horse	0.5					
	Poultry	0.75					
	Sheep	0.5					
	Eggs	0.1					
Tetradifon	Cattle		0				40 CFR 180.174
	Goat		0				
	Hogs		0				
	Horse		0				
	Poultry		0				
	Sheep		0				
	Eggs						
Thiabendazole	Cattle	0.1	0.1	0.1			40 CFR 180.242
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.1	0.1	0.1			
	Sheep	0.1	0.1	0.1			
	Eggs	0.1					
Thidiazuron	Cattle	0.2	0.2	0.2			40 CFR 180.403
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
	Horse	0.2	0.2	0.2			
	Poultry	0.2	0.2	0.2			
	Sheep	0.2	0.2	0.2			
	Eggs	0.1					
Thiobencarb	Cattle	0.2	0.2	0.2			40 CFR 180.401
	Goat	0.2	0.2	0.2			
	Hogs	0.2	0.2	0.2			
	Horse	0.2	0.2	0.2			
	Poultry	0.2	0.2	0.2			
	Sheep	0.2	0.2	0.2			
	Eggs	0.2					
Thiophanate-methyl	Cattle	0.1	0.1	0.1	2.5	0.2	40 CFR 180.371
	Goat	0.1	0.1	0.1	2.5	0.2	
	Hogs	0.1	0.1	0.1	1.0		
	Horse	0.1	0.1	0.1	1.0		
	Poultry	0.1	0.1	0.1	0.2		
	Sheep	0.1	0.1	0.1	2.5	0.2	
	Eggs	0.1					
Triadimefon	Cattle	1.0	1.0	1.0			40 CFR 180.410
	Goat	1.0	1.0	1.0			
	Hogs	0.04	0.04	0.04			
	Horse	1.0	1.0	1.0			
	Poultry	0.04	0.04	0.04			
	Sheep	1.0	1.0	1.0			
	Eggs	0.04					

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Triadimenol	Cattle	0.1	0.1	0.1			40 CFR 180.450
	Goat	0.1	0.1	0.1			
	Hogs	0.1	0.1	0.1			
	Horse	0.1	0.1	0.1			
	Poultry	0.01	0.01	0.01			
	Sheep	0.1	0.1	0.1			
	Eggs	0.01					
Triasulfuron	Cattle	0.1	0.1	0.1		0.5	40 CFR 180.459
	Goat	0.1	0.1	0.1		0.5	
	Hogs	0.1	0.1	0.1		0.5	
	Horse	0.1	0.1	0.1		0.5	
	Poultry						
	Sheep	0.1	0.1	0.1		0.5	
	Eggs						
S,S,S-Tributyl phosphorotrithioate	Cattle	0.02	0.02	0.02			40 CFR 180.272
	Goat	0.02	0.02	0.02			
	Hogs						
	Horse						
	Poultry						
	Sheep	0.02	0.02	0.02			
	Eggs						
Trichlorfon	Cattle	0.1	0.1	0.1			40 CFR 180.198
	Goat						
	Hogs						
	Horse						
	Poultry						
	Sheep						
	Eggs						

Compound	Species	Fat (ppm)	Meat (ppm)	Meat By-product (ppm)	Liver (ppm)	Kidney (ppm)	Reference
Triclopyr	Cattle	0.05	0.05	0.05	0.5	0.5	40 CFR 180.417
	Goat	0.05	0.05	0.05	0.5	0.5	
	Hogs	0.05	0.05	0.05	0.5	0.5	
	Horse	0.05	0.05	0.05	0.5	0.5	
	Poultry	0.1	0.1	0.1			
	Sheep	0.05	0.05	0.05	0.5	0.5	
	Eggs	0.05					
Triflumazole	Cattle	0.5	0.05	0.5			40 CFR 180.476
	Goat	0.5	0.05	0.5			
	Hogs	0.5	0.05	0.5			
	Horse	0.5	0.05	0.5			
	Poultry	0.05	0.05	0.1			
	Sheep	0.5	0.05	0.5			
	Eggs	0.05					
Triphenyltin hydroxide	Cattle				0.05	0.05	40 CFR 180.236
	Goat				0.05	0.05	
	Hogs				0.05	0.05	
	Horse				0.05	0.05	
	Poultry						
	Sheep				0.05	0.05	
	Eggs						
Zeta-cypermethrin	Cattle	0.05	0.05	0.05			40 CFR 180.418
	Goat	0.05	0.05	0.05			
	Hogs	0.05	0.05	0.05			
	Horse	0.05	0.05	0.05			
	Poultry						
	Sheep	0.05	0.05	0.05			
	Eggs						

1. Action level.

2. All tissues of poultry excluding kidneys.