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IMPORTED MEAT AND LIVESTOCK

Chemical Residue Detection and the Issue of Labeling

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The Honorable E (Kika) de la Garza
Chairman, Committee on Agriculture
House of Representatives

The Honorable Patrick J. Leahy
Chairman, Committee on Agriculture, Nutrition
and Forestry
United States Senate

The enclosed report responds to Section 1703 of the Food Security Act of 1985, which requires us to study the U.S. Department of Agriculture's effectiveness in detecting prohibited chemical residues and foreign matter in imported meat items and prohibited chemical residues in live animals. The report evaluates the feasibility of requiring that foreign processing plants eligible to export meat items to the United States submit to the Department quality control reports relating to their product purity and inspection procedures. This report also evaluates the feasibility of requiring that all imported meat and meat food products bear a label stating the country of origin.

We are sending copies of this report to the Secretary of Agriculture and other interested parties.

This work was performed under the direction of Brian P. Crowley, Senior Associate Director. Other major contributors are listed in appendix III.

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Executive Summary

Purpose

Section 1703 of the Food Security Act of 1985 requires GAO to study the U.S. Department of Agriculture's (USDA) effectiveness in detecting prohibited chemical residues and foreign matter in imported meat items and prohibited chemical residues in live animals. The study is to include recommendations on the feasibility of requiring (1) foreign processing plants that are eligible to export meat items to the United States to submit to USDA quality control reports relating to their product purity and inspection procedures, (2) all imported meat and meat food products to exhibit country of origin labels through final consumption, and (3) eating establishments serving imported meat items to include country of origin labeling on their menus.

Background

In 1986 about 2.4 billion pounds of meat from about 30 countries were imported into the United States. This amounted to about 7 percent of the U.S. meat supply. In addition, about 1.8 million live animals were imported in 1986. More than three quarters of the imported meat consisted of fresh, chilled, and frozen beef, pork, lamb, and veal used in processed items. As of December 1986, 41 countries were considered eligible by USDA's Food Safety and Inspection Service (FSIS) to export meat to the United States. FSIS officials review the meat inspection systems of countries wishing to export meat items to the United States, in order to assure their equivalence to U.S. systems. FSIS inspectors also inspect imported meat products entering domestic commerce. They rejected less than 1 percent of this meat during 1986.

As part of the inspection, import inspectors draw, on the basis of an annual residue testing plan, samples of meat items from abroad to be tested for harmful chemical residues. Such residues may result from the absorption and retention by livestock of animal drugs or agricultural and environmental chemicals. In 1986 about 15,000 imported meat samples were drawn and tested for these substances. FSIS found 38 samples that contained chemical residues above established tolerances.

Results in Brief

FSIS lacks detailed, up-to-date information on all chemicals used abroad. In addition, because FSIS had met its 1986 testing goals for some major compounds for principal exporting countries by May 1, 1986, meat imported from those countries during the rest of 1986 was not subject to testing for the full range of residues.

Because of inconsistent and incomplete policies and, in some cases, a lack of notification of appropriate officials, FSIS did not always attempt

to locate and remove from U.S. food channels the remaining portions of the lots from which samples were taken that showed chemical residue violations.

FSIS has little information about the risk of residues in imported live animals. In 1986 about 60 percent of imported live animals came from Mexico, which has been ineligible to export meat to the United States since 1984 because of chemical residues detected in Mexican meat. FSIS does not have current information on chemicals used in Mexico. As a result, when Mexican animals are slaughtered in U.S. plants, they may not be tested for chemicals used in Mexico since the animals are tested under the domestic program, which is directed at chemicals used in the United States.

After carefully weighing available information, GAO concludes that USDA should not require foreign meat processing plants to furnish quality control reports nor extend country-of-origin labeling of imported meat beyond that currently required.

Principal Findings

Chemicals Tested

Because FSIS does not have a system for collecting detailed information on all chemicals used in foreign countries, imported meat testing during 1986 was generally limited to the same harmful chemical residues contained in the domestic residue testing plan. To comply with the Food Security Act of 1985, FSIS is planning to require that each country wanting to export meat to the United States submit its annual residue testing plan to USDA. Such plans are to list all chemicals to be targeted in that year. (See ch. 2.)

Timing of Testing

FSIS' Automated Import Information System was developed to schedule the inspection, sampling, and laboratory testing of imported meat. However, because the system did not handle all compounds specified in the 1986 residue testing plan, FSIS managers relied on ad hoc approaches for scheduling residue tests. As a result, by May 1, testing quotas for several compounds for imported meat from four major exporting countries had been met. After May 1, much imported meat from these countries was tested for only selected compounds, regardless of the possibility that other prohibited chemical residues might be present. According to

FSIS officials, enhancements have been made to the system so that residue testing is balanced throughout the year. (See ch. 4.)

Removal of Violative Meat From Commerce

For 10 of the 28 residue violation cases occurring from January 1985 through April 1986, import inspectors had not attempted to locate and remove from commerce the meat remaining from the same lots. Failure to remove this meat was due to (1) conflicting policies within FSIS on when meat with violative residues must be removed and (2) FSIS' failure to notify import inspectors when residue violations were detected in associated samples. FSIS has taken action to clarify its policy and improve notification procedures. (See ch. 4.)

Imported Live Animals

Live animals are imported primarily from Canada and Mexico. FSIS does not have enough information about the risks of chemical residues in imported live animals. This is particularly important with respect to Mexico, which has been ineligible to export meat to the United States since 1984 because FSIS had detected prohibited pesticides in Mexican meat. Imported live animals are eventually subject to testing for residues when slaughtered in domestic plants. However, there is no assurance that such testing would reflect chemical use in Mexico because such information is collected only for countries currently eligible to export meat to the United States. (See ch. 5.)

Quality Control Reports

Requiring foreign meat processing export plants to provide quality control reports to USDA would run counter to USDA's progress in implementing a systems approach to judging the overall integrity of foreign meat inspection systems. This approach focuses on the country's entire livestock slaughter and meat processing system, rather than on parts of the system. Mandating quality control reports could also be interpreted by U.S. trading partners as a nontariff trade barrier. (See ch. 2.)

Country-Of-Origin Labeling

The predominant argument in favor of extending country-of-origin labeling of meat, including menu notices or signs in eating establishments, is that the consumer has a right to know the country of origin of the meat. However, those who are opposed generally argue that such changes would result in industry compliance and government enforcement costs that would be passed on to consumers/taxpayers. Such a requirement could also constitute an impediment to trade. (See ch. 6.)

Recommendations

GAO recommends that the Secretary of Agriculture direct the Administrator, FSIS, to

- implement a continuous, systematic effort to identify and evaluate chemicals used in livestock production and processing operations of exporting countries and include them in the import testing plan; and
- undertake a risk assessment with respect to the potential of harmful residues in imported live animals. (See chs. 2 and 5.)

Agency Comments

USDA told us that the detailed information on agricultural chemicals in eligible exporting countries is now being collected. USDA disagreed with our recommendation that such information should serve as a basis for the import residue sampling plan, stating that the information is designed to provide data through which FSIS can evaluate the "equal to status" of residue control programs in foreign countries. USDA's major concern was that the draft of this report failed to emphasize sufficiently that an exporting country's own meat inspection system, not USDA's port of entry testing, is the primary protection for domestic consumers of imported meat. (See ch. 2.)

GAO agrees that USDA's review of foreign meat inspection systems for equivalence to the U.S. system is a crucial component in USDA's total imported meat inspection program and has reflected this in the report. However, given that FSIS operates an active program in the United States for testing imported meat for prohibited chemical residues, GAO believes that information collected on chemicals found in meat exporting countries should be considered in developing the import residue testing plan.

USDA stated that it will consider the feasibility of requiring that countries—such as Mexico—which are not eligible to export meat to the United States supply data about their use of agricultural and environmental compounds before exporting live animals. (See ch. 5.)

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Abbreviations

AIIS	Automated Import Information System
APHIS	Animal and Plant Health Inspection Service
ARS	Agricultural Research Service
ASPC	American Sheep Producers Council
BHC	benzene hexachloride
CAST	Calf Antibiotic and Sulfa Test
CES	Compound Evaluation System
CFR	Code of Federal Regulations
CHC	chlorinated hydrocarbon
CRS	Congressional Research Service
DES	diethylstilbestrol
DDT	dichlorodiphenyltrichloroethane
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FPD	Foreign Programs Division
FSIS	Food Safety and Inspection Service
GAO	General Accounting Office
GATT	General Agreement on Tariffs and Trade
IFO	Import Field Office
IID	Import Inspection Division
IP	International Programs
MICA	Meat Importers Council of America
MPIO	Meat and Poultry Inspection Operations
NAS	National Academy of Sciences
NCA	National Cattlemen's Association
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
RCED	Resources, Community, and Economic Development Division(GAO)
REPD	Residue Evaluation and Planning Division
SAT	Surveillance Advisory Team
STOP	Swab Test on Premises
USDA	U.S. Department of Agriculture
WHO	World Health Organization

Introduction

The Federal Meat Inspection Act (21 U.S.C. 601 et seq.) provides that to be imported into the United States, meat items must be wholesome, unadulterated, properly marked, labeled, and packaged. The act also requires that meat imports be produced under inspection systems that are at least equal to that of the United States.[1] The U.S. Department of Agriculture (USDA) is responsible for inspecting all imported meat items at the port of entry to assure product integrity and reviewing the meat inspection systems of countries eligible to export meat to the United States for equivalency.

In 1986 about 2.4 billion pounds of meat were imported by the United States, accounting for about 7 percent of the U.S. meat supply. Imported meat consisted primarily of fresh, chilled, and frozen beef, pork, veal, and lamb products used in processed meat items (79 percent), canned pork (12 percent), and cooked or canned beef (5 percent). Australia provided 29 percent of the 1986 meat imports; Canada, 26 percent; New Zealand, 16 percent; and Denmark 11 percent. As of December 31, 1986, 1,306 plants in 32 countries were authorized to export meat (and four countries were eligible to export poultry products) to the United States. (See app. I.) Nine other countries were also eligible to export meat to the United States, but none of their plants did so in 1986.

Products may be examined by import inspectors with respect to their net weight, container condition, extent of contamination, and/or label. About 13 million pounds, or less than 1 percent, of the imported meat offered for entry nationwide in 1986 were rejected by import inspectors. Fresh, chilled, and frozen meat were rejected primarily for contamination;[2] canned products, for container defects.

Periodically, in accordance with USDA's annual residue plan for testing harmful chemicals, import inspectors draw samples of meat items arriving from abroad to be tested at laboratories for harmful chemical residues. Harmful residues are caused by the absorption and retention by animals of animal drugs and agricultural and environmental chemicals. In 1986 about 15,000 samples were drawn and tested for these substances. Products were found to contain residues above established tolerances in 38 instances.

[1]Similar provisions for poultry are in the Poultry Products Inspection Act (21 U.S.C. 451 et seq.). However, because of the relatively small amount of imported poultry products, we limited our review to imported meat and meat products.

[2]Contaminated meat refers to meat containing hair, dirt, feces or other unsanitary material or foreign matter.

About 1.3 million live cattle and calves and 500,000 live swine were imported by the United States during 1986. All the swine and 17 percent of the cattle came from Canada. Mexico exported the rest of the cattle, which consisted of feeder animals.

Program Administration

USDA's Food Safety and Inspection Service (FSIS) is responsible for carrying out the requirements of the Federal Meat Inspection Act. FSIS' International Programs (IP) component (1) reviews foreign meat inspection systems to assure that they are equal to the U.S. system, (2) inspects imported meat products entering U.S. commerce, (3) represents U.S. interests throughout the world to minimize regulatory impediments to trade in meat products, and (4) coordinates the inspection and certification of U.S. meat products for export into foreign commerce.

Systems reviews of foreign countries' laws and policies relative to meat inspection are conducted by IP's Foreign Programs Division (FPD). The laws, administration, and policies of the foreign systems are evaluated with respect to seven basic risk areas: residues, disease, misuse of food additives, gross contamination, microscopic contamination, economic fraud, and product integrity.

On-site review of exporting plants is another method by which FSIS evaluates the effectiveness of foreign inspection systems. As of December 31, 1986, 20 FSIS foreign programs officers reviewed certified plants in eligible exporting countries. As of the same date, 581 of the 1,306 plants authorized to export to the United States were in Canada, 133 were in Denmark, and 134 were in Australia. (See app. I.) During 1986, 71 plants were delisted, that is, removed from the authorized list. Of the 71, 21 were Australian, 14 were Yugoslavian, and 12 were Canadian. The 24 remaining delisted plants were scattered among 13 countries. Reasons for delistment included plant closings, plants' decisions to withdraw from the U.S. market, or a determination by foreign governments that plants within their countries did not comply with U.S. standards.

An inspection certificate issued by a responsible official of the exporting country must accompany each shipment of meat offered for entry into the United States. Certificates identify products by country and plant of origin, destination, shipping marks, and amounts. They certify that the animal products received antemortem and postmortem inspection, are wholesome and not adulterated or misbranded, and otherwise comply with U.S. requirements.

FSIS' Automated Import Information System (AIIS) is a computerized system that centralizes inspection and shipping information from all U.S. ports. Information stored in the system includes the amount of products offered from each establishment; the amount refused entry; and the results of samples tested for pesticides, hormones, heavy metals, antibiotics, and other chemical residues. Using information in the system, IP's Import Inspection Division (IID) can inspect imported meat on the basis of the exporting plant's compliance history.

In testing imported meat items at domestic laboratories, FSIS targets harmful chemical residues, as it does in testing meat of domestic origin. FSIS' policy is that when a laboratory notifies it of a residue violation, the agency takes steps as deemed appropriate to locate and remove from commerce any part of the imported shipment that is available. As discussed in chapter 4, imported meat is placed into commerce as long as it has not been refused entry at the port. Any products removed are not permitted to be used as human food.

About 133 FSIS personnel inspected imported meat during 1986 at 198 official inspection points in the United States. Import inspection of meat items is designed to check on the effectiveness of foreign inspection systems in assuring wholesome products that meet U.S. standards. Imported meat that undergoes further processing in the United States is subject to further inspection in federally inspected processing plants.

Objective, Scope, and Methodology

Section 1703 of the Food Security Act of 1985 (Public Law 99-198) requires us to conduct a study of the effectiveness of USDA's regulations and inspection procedures to detect foreign matter and prohibited chemical residues in imported live animals and to detect chemical residues and foreign matter in food or raw agricultural commodities. Pursuant to Section 1703 and subsequent discussions with the Senate Committee on Agriculture, Nutrition, and Forestry on the House Committee on Agriculture, we conducted a study of the effectiveness of USDA's regulations and inspection procedures in detecting foreign matter and prohibited chemical residues in imported live animals and red meat items only. The study also includes recommendations regarding the feasibility of requiring that quality control reports relating to product purity and inspection procedures be submitted from processing plants that are eligible to export meat and meat products to the United States. In addition, the report is to evaluate the feasibility of requiring (1) all imported meat and meat products to be labeled as to country of origin and (2) any person owning or operating an eating establishment that serves meat or

meat products to inform patrons that the meat or meat products may be imported by displaying a sign indicating that imported meat is served or by providing such information on the menus.

We made our review in accordance with generally accepted government auditing standards. We reviewed the legislation, regulations, instructions, and procedures governing FSIS' meat inspection activities, with a focus on detection of contamination and prohibited chemical residues in imported live animals and meat. We coordinated our review with USDA's Office of Inspector General (OIG). Because that office's staff visited Australia and New Zealand (two of the four major meat exporters to the United States) in fiscal year 1986 to evaluate FSIS activities related to foreign meat inspection systems, we did not visit foreign countries. We spoke with officials from FSIS; USDA's Animal and Plant Health Inspection Service (APHIS); the Environmental Protection Agency (EPA); the Food and Drug Administration (FDA), U.S. Department of Health and Human Services; the Bureau of the Census, U.S. Department of Commerce; and the U.S. Customs Service, U.S. Department of the Treasury.

We gathered information on domestic processing plants' quality control activities to evaluate the potential usefulness of requiring foreign plants that export meat to the United States to provide quality control reports to USDA. We studied the legislation, regulations, instructions, and procedures governing the mandatory aspects of labeling imported meat.

We analyzed FSIS' annual residue plans for 1984, when the first one was published, through 1986. We spoke with FSIS' residue evaluation and control experts, chemists, microbiologists, and statisticians, emphasizing their methods of identifying prohibited chemical residues to be tested for in imported meat. We also talked with EPA and FDA officials about the interrelationships between their agencies' statutory responsibilities relative to chemical residues and USDA's charge. In addition, we obtained the views of various meat industry and consumer organizations regarding chemical residues in imported meat. These organizations included the American Meat Institute, the National Pork Producers Council, the American Sheep Producers Council, the Meat Importers Council of America, the Center for Science in the Public Interest, and the National Resources Defense Council.

With respect to imported live animals, we reviewed relevant legislation, regulations, and procedures. We carried out this portion of the study at FSIS headquarters, Washington, D.C., and at its North Central Regional Office, Des Moines, Iowa. In addition, we obtained information from FSIS'

Southwest Regional Office, Dallas, Texas. We visited and obtained data from FSIS veterinarians in charge of two slaughter plants each in North Dakota, Minnesota, and Iowa that slaughter cattle or swine imported from Canada. We also gathered information relative to Mexican cattle imports from an FSIS meat inspector at a slaughter plant in Texas.

Because APHIS has primary responsibility within USDA for inspecting and quarantining imported live animals, we discussed APHIS' live animal import operations with, and obtained information on the operations from, APHIS headquarters officials in Washington, D.C. We also obtained information from APHIS' regional and state offices in Fort Worth, Texas; Englewood, Colorado; Des Moines, Iowa; St. Paul, Minnesota; and Albuquerque, New Mexico. In addition, we visited animal ports of entry in Pembina, North Dakota, and El Paso, Texas, and obtained information from the APHIS veterinarians stationed there. We also spoke with major importers of Mexican cattle and several firms that import livestock fro Canada.

To determine whether FSIS' import meat inspection program was operat ing as intended, we used a four-part approach. First, we reviewed the operations of AIIS relating to 1986 import inspection activities. Second, we observed meat import inspection operations at FSIS' import field offices at Baltimore, Maryland; Long Beach, California; and Seattle, Washington. We selected these offices to provide variety in the volume of imported meat products and in the originating location of products. We also observed laboratory scheduling and testing procedures and interviewed staff at FSIS' three laboratories in Alameda, California; St. Louis, Missouri; and Athens, Georgia. Third, we reviewed program actions relating to contamination findings for a group of eight foreign meat exporting plants. We selected the plants according to import volume for particular field offices. Our purpose was to determine how the inspection system was responding to contamination findings in importe meat. Information covered pertained to January 1985 through April 1986.

Fourth, we tracked 28 residue violations identified by FSIS to have occurred from January 1985 through April 1986 through the entire pr cess, from the time samples were selected for testing to the ultimate di position of the product. We wanted to determine if appropriate actions were taken in each process step. We verified procedures by examining documentation in the files at the field offices, the laboratories, and FSIS headquarters.

With respect to the feasibility of requiring country-of-origin labeling of imported meat, we solicited the views of representatives of various trade groups that had indicated their interest in this topic over time. These included the National Cattlemen's Association, the Pork Producers Council, the Meat Processors Association, the American Sheep Producers Council, the Meat Importers Council of America, the Food Marketing Institute, and the National Restaurant Association.

We also estimated costs to the industry of complying with a mandatory country-of-origin labeling requirement. We updated a 1981 USDA economic impact analysis, which considered costs to industry of new label designing, approval, and printing. We also looked at issues related to enforcing such a requirement and reviewed court cases involving country-of-origin labeling of imported products.

We made our review primarily between February and September 1986 and obtained updated information, as appropriate, through March 1987.

Residue Detection Activities for Imported Meats Need to Address All Potentially Harmful Chemicals Used in Foreign Countries

The presence of harmful chemical residues in imported meats has attracted both public and congressional attention. Questions have been raised regarding the effectiveness of FSIS' program for detecting such residues in assuring the safety of the imported meat supply.

FSIS' annual residue plan presents the agency's program for testing imported and domestic meat and poultry products. Our comparison of the 1986 domestic and import plans shows that, although certain differences exist, all chemicals included in the import plan are also in the domestic plan. In commenting on this similarity, FSIS officials cited a lack of detailed information concerning chemicals used in countries eligible to export meat to the United States. FSIS has not yet addressed the information gap in its import residue plan but recognizes the need to determine whether other potentially harmful chemicals need to be added to the plan.

Since 1979 FSIS has adopted a more systematic approach to examining foreign country residue evaluation and control programs. Specifically, FSIS shifted its priorities from examining individual slaughter and meat processing plants to evaluating foreign meat inspection systems as a whole. For each country, FSIS maintains a risk profile that reflects the capability of the country's inspection system to control factors, which, i uncontrolled, may cause harm to U.S. citizens. However, risk profiles of individual countries are outdated and lack current data on chemical residues.

Our assessment of the feasibility of requiring foreign processing plants to submit quality control reports relating to product purity and inspection procedures to USDA indicated several drawbacks to such a requirement with no apparent offsetting benefit.

Chemical Residues in Meats

Numerous animal drugs, agricultural chemicals, and environmental chemicals are used in the agricultural sector. An FDA official has estimated that as many as 30,000 animal drugs are administered worldwide. In its inventory of toxic substances, EPA has identified more than 66,000 environmental contaminants and pesticides. These products consist of various combinations of several hundred active ingredients. Residues of the active ingredients that can be dangerous to people are the specific focus of FSIS' testing programs.

Chemicals in all three categories have been found to cause cancer and other health problems in people. Extensive use of antibiotics and sulfa

drugs in red meat animals has aroused concern among scientists that such usage may produce drug-resistant strains of human disease. Antibiotics and sulfa drugs can also cause severe allergic reactions in sensitive people. About 1 in 40,000 persons consuming meat containing residues of the antibiotic chloramphenicol contracts aplastic anemia, a fatal disease. Heptachlor, a pesticide and potential carcinogen that is now banned for most agricultural uses, stirred public concern in 1986 when milk and meat of animals given feed containing this chemical were contaminated. Polychlorinated biphenyls (PCBs), environmental chemicals and potential carcinogens, contaminated fish meal being sold by Peru to Czechoslovakian cattle producers in the early 1980s. The cattle ate the fish meal, and FSIS detected PCBs as residues in the imported meat of the cattle.

Various groups representing the meat industry and consumer organizations provided us their views regarding chemical residues in imported meats. For example, officials with the American Meat Institute, a trade association representing red meat (beef, pork, and lamb) packing and processing companies, told us that they could not identify any harmful chemicals used in foreign countries that are not already included in the FSIS import plan. An Institute official said that both the United States and foreign countries should have effective controls in place to make sure that the meat is wholesome and not adulterated.

An official with the National Pork Producers Council, which represents about 90 percent of the commercial hog producers in the United States, told us that the Council is concerned with sulfa drugs, a certain amount of which show up in animal organs and muscle. The Council has been working with producers to lower the level of sulfa residues. The official also cited concerns about Canadian use of chloramphenicol but said that Canada had withdrawn approval for the use of this compound.

An official with the American Sheep Producers Council, the promotional arm of the lamb and wool industry, told us that, in his opinion, any illegal chemicals that may have been used would be detected during FSIS testing. However, he said that for those chemicals that have never been used, banned, or tested in the United States, there is no way of knowing if that chemical is being used in another country.

An official with the Meat Importers Council of America, a trade association for meat importers, told us that his clients are not aware of any residues in the meats they import. He said that his clients have never attempted to identify all of the chemicals in use.

The Center for Science in the Public Interest, a national consumer health advocacy group, has identified three animal drugs (ipronidazole, carbadox, and dimetridazole) that it requested FDA in 1986 to declare illegal; FDA is preparing a response to the petition. These compounds are used in the United States and foreign countries and can leave residues in food animals. In 1986 FSIS tested for ipronidazole in domestic and imported meats and evaluated a method to test for carbadox. In commenting on our report, FSIS said that ipronidazole and carbadox are included in the 1987 annual domestic and import residue testing plans. FSIS also commented that there are no adequate methods of analysis for dimetridazole in domestic or imported meat. An official from the Center for Science in the Public Interest told us that the Center could not identify any chemicals used in foreign countries for which suitable methods of analysis are available which are not already included in FSIS' annual residue plan.

An official with the Natural Resources Defense Council, a public interes environmental law firm, expressed concern about chemicals manufactured in the United States which are banned from domestic use, but which are shipped and used abroad and may reenter the United States as residues in imported meats. The official did not identify specific chemicals.

Criteria for Compounds Considered and Included in the FSIS Annual Residue Plan

FSIS has tested for chemical residues since the late 1960s. In 1984 the agency began publishing its annual residue plan, a document describing its program for detecting chemical residues in meats and poultry. The plan specifies the compounds to be tested for and the number of sample to be drawn for each compound by animal species. The plan covers domestic products and products from each foreign country eligible to export meat to the United States.

The first step in developing the annual residue plan involves drawing u a list of compounds to be considered. The list considered in preparing the 1986 plan included 406 compounds. All animal drugs and pesticide listed in the Code of Federal Regulations (CFR) with a potential for mea contamination by way of animal feed or other sources were included fc consideration. A number of metals (such as lead and iron) were also included. A few compounds not listed in the CFR but regarded by FSIS scientists as potentially dangerous to humans were included on the list Animal drugs accounted for about 75 per cent of the compounds consi ered; pesticides and environmental contaminants accounted for the

remainder. FSIS officials told us that the 406 compounds selected comprise all of the known, potentially dangerous compounds likely to be present in domestic and imported meats.

Four criteria govern the actual choice of compounds to be included in the testing plan:

1. Ranking assigned based on toxicity and the likelihood of animal and human exposure.

2. Practical detection method availability and suitability for regulatory use.

3. Measurability by a multiresidue testing method whereby many compounds, even though all may not be assigned a high ranking, can be identified at a relatively low cost.

4. The history of residue findings associated with specific compounds.

Following the application of the four criteria, 100 compounds were selected for incorporation in the 1986 annual residue plan. These included 21 antibiotics, 17 chlorinated hydrocarbons (CHCs), 16 organophosphates, 11 arsenic-based animal drugs, and 5 sulfa-based animal drugs. The remaining 30 compounds included 8 trace elements (or metals), additional animal drugs, pesticides, and industrial contaminants.

The 1986 residue plan provided that of the 46,957 samples of domestic and imported meat and poultry to be drawn for testing, 12,057 were to be import samples. The plan prescribed the number of samples to be taken from each animal species for each compound or family of compounds.

Parallel Testing in Domestic and Import Plans May Exclude Potentially Harmful Chemicals

The domestic and import plans are basically similar in the compounds that they cover. FSIS states that the compounds selected for residue testing in the import plan were chosen to parallel those in the domestic plan as much as possible. FSIS officials told us that extensive overlaps exist between the chemicals in use in the United States and foreign countries. They said, for example, that many of the chemical manufacturing companies are multinational corporations selling their products worldwide. FSIS officials, however, also told us that some chemicals used in foreign countries are not used in the United States. One FSIS official said that the divergence in usage might include dozens, but certainly not hundreds, of

chemicals. In this light we noted that USDA's OIG issued a report in January 1987 indicating that Australia and New Zealand were routinely using, and in some cases not testing for, animal drugs and pesticides that were not permitted for use in the United States.

FSIS officials attributed the lack of additional compounds in the import residue testing plan to three factors. The first factor was lack of a system for collecting detailed information on what chemicals are used in foreign countries. The Acting Director of FSIS' Residue Evaluation and Planning Division (REPD) said that in the early 1980s, FSIS officials explored the possibility of comparing animal drugs used in foreign countries with animal drugs used in the United States but discontinued the project. The Acting Director said that they found insufficient information regarding the type and level of usage for specific compounds to make the comparison meaningful. In addition, the lack of uniformity in names given to the same drugs in the United States and foreign countries complicated the comparison process.

However, the Acting Director, REPD, said that the information gap involving the use of chemicals in individual countries is a weakness in the import plan that a standing committee of key FSIS officials, chaired by the Director, International Programs, is planning to address. The Food Security Act of 1985 requires that to be eligible to export meat to the United States, foreign countries submit a plan detailing their testing for chemical residues in food animals. As part of FSIS' implementation o this requirement, the standing committee is identifying the specific information that should be contained in the foreign residue testing plans. The Acting Director, REPD, said that this effort will help to overcome the lack of detailed information on chemicals in use in foreign countries. Further, FSIS' Deputy Administrator, Science, told us in November 1986 that IP was beginning to evaluate ways to collect the necessary data so that future import plans will reflect greater sensitivity to actual chemical usage.

The second factor, according to the Acting Director, REPD, was resource constraints and a concern with efficiency. She said that it is generally less efficient to include a compound for the import plan but not for the domestic plan. She said that FSIS uses an assembly line approach in test ing samples. She noted further that laboratory space and instrumentation are dedicated to testing a specific compound or family of compounds, and it would be highly inefficient not to coordinate the

cycling of compounds in the domestic and import plan. The Acting Director emphasized, however, that public safety, not efficiency, is the ultimate consideration. She said that as a result, if FSIS believes that a specific compound should be added to the import plan, it will do so, but that the compound will generally be added to the domestic plan at the same time.

The third factor FSIS officials cited was a concern with equitable treatment for domestic and foreign products. They said that it would be unfair for FSIS to subject foreign products to chemical residue tests that are not applied to domestic products. We questioned this rationale in view of the FSIS officials' statement that some chemicals are in use in foreign countries that are not used in the United States, a fact that would seem to warrant special additional coverage. Also, as discussed later in this chapter, the domestic plan includes compounds omitted from the import plan.

The Acting Director, REPD, told us that FSIS is becoming more flexible with regard to equitable treatment and is willing to consider additional testing in special cases. She stated that one compound, albendazole, a proven carcinogen, should have been kept in the import plan while being omitted from the domestic plan, even though it would be expensive for FSIS to cover it. (FSIS discontinued domestic testing for albendazole in 1986 when FDA banned its use in the United States; at the same time, FSIS omitted albendazole from the 1986 import plan, although foreign countries had not banned its use.) In November 1986 the Acting Director, REPD, told us that albendazole would be included in the 1987 import plan as well as in the domestic plan. (Possible illegal use of albendazole is still a concern in the United States.)

The Acting Director also noted that, although cyromazine was scheduled for testing in the 1986 import plan for imported beef, FSIS did not test for its presence in domestic beef. Cyromazine, an insect growth regulator capable of causing animal tumors, is approved for use in the United States for horses and laying hens only. Consequently, poultry is the only species tested under the domestic plan for cyromazine residues. Since the compound is used in foreign countries for cattle, FSIS tests imported meats for it.

In addition to the compounds covered in the domestic and import plans being basically similar, the import plan itself makes no distinction with regard to individual foreign countries. Meat from all foreign countries is tested according to the same formula, which is not sensitive to possible

differences in compounds used in various countries. The formula prescribes the number of samples to be taken based on volume; it is applied equally to all countries and food animal species. However, the level of sampling (dictated by the formula) for some of the compounds exceeds laboratory capability, so a reduced level is planned.

Although volume of imports and laboratory capacity now determine the number of samples to be taken for each compound in developing the import plan, we believe that testing should take into account the unique characteristics of chemical presence and use in each country. However, much remains to be done to develop this country-specific information and make the import plan more sensitive to actual chemical use in foreign countries. Specifically, as discussed in the next section, FSIS first needs to identify those chemicals used in foreign countries that are not used in the United States and determine whether they pose a hazard. If FSIS concludes that a chemical poses a potential hazard, it further needs to determine whether a method for detecting the chemical is available and develop such a method where one is lacking. (These basic steps of evaluation, methods assessment, and methods development applied by FSIS to chemicals of concern are discussed in chapter 3.) As a final step, FSIS should also include such chemicals in the import plan for actual testing.

Need for Specific Information About Exporting Countries' Residue Evaluation and Control

FSIS has undertaken various efforts to improve its review of meat exporting countries' residue evaluation and control programs. Since 1979 such efforts have reflected a shift from examining individual slaughter and meat processing plants abroad to evaluating foreign mea inspection systems as a whole. Despite considerable activity directed a enhancing its systems reviews, FSIS' acquisition of data to support its foreign country evaluations has been piecemeal, and important inform tion is not current. In particular, the risk profiles, which enable FSIS to determine the degree of control exercised by foreign countries to assur a safe meat supply, are outdated.

Transition to Foreign Country Inspection Systems Review

A 1979 report by a USDA task force, which studied the basis for import meat (and poultry) inspection, concluded that the import inspection pr cess should focus on evaluating foreign country inspection systems, rather than on examining individual foreign slaughter and processing plants, as was USDA's practice. According to the report, USDA should no use resources to prove periodically that particular products from part ular plants complied with domestic inspection standards. The task for

concluded that USDA was not assuring the effectiveness of foreign country regulatory controls over time, the appropriate goal of USDA's imported meat inspection program.

In 1981, in response to the task force recommendations, the Food Safety and Quality Service, FSIS' predecessor agency, prepared a guide for developing procedures to assess foreign inspection systems. The guide recommends that the agency assess a foreign inspection system according to its control over several risk areas and develop "risk profiles" for every country that is, or would like to be, declared eligible to export meat items to the United States. The risk areas are use and presence of chemical residues abroad, prevalent animal diseases, misuse of food additives, economic fraud, and microscopic and gross contamination of meat animals and their products. According to the guide, the capability of a foreign inspection system to control these risks should be measured against several standards and criteria for three levels of performance:

- Acceptable and "equal to" U.S. standards.
- Marginally acceptable and in need of immediate remedial attention.
- Unacceptable, resulting in severe product restrictions and delistment of some or all certified exporting establishments in the foreign system.

With respect to control over chemical residues, the guide emphasizes the need for USDA to assess foreign agricultural practices, including the use of chemical compounds that may result in residue accumulation in food animals; food handling practices; and laboratory capabilities for detecting unwholesome product. The following characteristics of foreign countries are to provide the general focus of USDA's evaluation, according to the guide:

- The presence of a regulatory system with controls over manufacture, distribution, and use of drugs, chemicals, or other harmful residues in food animals.
- The presence of an inspection system capable of detecting residues in meat and meat products.
- The presence of an enforcement system capable of controlling, and excluding from export, products identified as containing violative levels of residues.

Foreign Country Data Acquisition by FSIS

USDA regulations since 1970 have required that to be eligible to export meat to the United States, foreign countries must have meat inspection systems that are at least equal to the U.S. system. By specifying that

imported meats must meet domestic standards for chemical residues, and directing the manner by which USDA should deal with foreign residue evaluation and control, the Agriculture and Food Act of 1981 (Public Law 97-98) provided the impetus for USDA to collect baseline data on meat inspection systems of all countries eligible to export meat to the United States and of all countries applying for such eligibility. This law provides that meat and meat products imported by the United States are subject to the residue standards applied to such products inspected in the United States. To be considered eligible to export meat to the United States, under this act, countries are required to sample and test internal organs and fat of meat and meat products for residues in accordance with methods approved by the U.S. Secretary of Agriculture.

USDA did not complete efforts to evaluate and determine the comparability of laws and regulations abroad until 1983, when the initial development of risk profiles for each country eligible to export meat to the United States was finished. Generally, FSIS has obtained existing data by one or more of four methods: (1) desk reviews of laws and regulations supporting and affecting foreign inspection systems; (2) interdisciplinary visits abroad by teams of experts in meat inspection procedures, chemistry, microbiology, and residue evaluation; (3) on-site reviews of foreign plants by foreign programs officers stationed abroad; and (4) verification sampling and testing of imported meat items at U.S. ports of entry. (A detailed discussion of the latter method is contained in chapter 4.)

Desk Review of Foreign Laws and Regulations

In 1981 the Foreign Programs Division began sending questionnaires abroad, requesting information on petitioner countries' regulation of their meat industries and requirements of their meat inspection processes. Data relevant to foreign residue and control programs focused on

- government regulations;
- drug and pesticide use;
- livestock management systems;
- agricultural practices, such as herbicide use;
- residue testing programs;
- laboratory facilities and analytical methods; and
- tracing systems to track violative meat back to livestock producers.

Evaluation Trips to Foreign Countries

After foreign countries' completed questionnaires were evaluated, USDA review teams traveled abroad to review (1) livestock slaughter and processing plants certified by the countries' inspection systems to export meat and/or meat products to the United States and (2) foreign residue testing laboratories. During the 1981-83 period, the review teams made 13 country trips. The teams, in addition to foreign programs officers, who are veterinarians, included scientific experts such as chemists, microbiologists, residue specialists, and food technologists. The teams gathered detailed information on foreign inspection operations, including data on laboratory equipment and procedures, sampling methods, and other aspects of residue evaluation and control programs.

As of 1986 each of the foreign countries eligible to export meat to the United States had been visited once. Data from these reviews, along with assessments of foreign laws, regulations, and inspection operations, have been used to develop each eligible country's risk profile.

Monitoring Activities in Foreign Countries

After the desk review and team visit have established a foreign country's eligibility to export meat items to the United States, foreign programs officers posted abroad periodically monitor the country's inspection system to ensure that it remains in compliance with USDA requirements. They gather data by

- observing all phases of livestock slaughter and processing in foreign plants,
- reviewing foreign inspection officials' supervisory reports relating to the plants,
- determining to what extent the work of foreign inspection officials reflects relevant standards,
- talking with foreign inspectors about plant operations,
- checking that violations identified by inspection officials have been corrected, and
- visiting laboratories that test meat items for prohibited chemical residues.

Information Remains Fragmentary and Outdated

FSIS' Assistant Deputy Administrator for International Programs told us that FSIS obtains information on foreign country meat inspection systems on an ad hoc basis. He said that the foreign programs officers get information where there is information to be gotten. He told us that some countries actively exporting meat to the United States keep FSIS informed of changes and some countries have stable inspection systems.

However, he said that, in general, data relating to changes in laws and regulations of foreign meat inspection systems are obtained piecemeal.

The Assistant Deputy Administrator also indicated that information that is on file with respect to eligible foreign countries needs to be updated. He said that the original country risk profiles, developed in response to the 1979 task force, are not useful any more.

Without current relevant data on animal drug and agricultural and environmental chemical use in countries eligible to export meat to the United States, FSIS, as noted earlier, bases its annual import residue testing plan on its domestic residue testing plan, adjusting for the volume imported. FSIS does not have the necessary information to determine which compounds should be targeted in testing imported meat from a given country.

At the time of our audit, FSIS officials told us that they were revising the forms used to collect data at foreign livestock slaughter and processing plants and at residue testing laboratories. They also said that FSIS had hired a consultant to draw up an entire information system for foreign country data gathering, accessing, and updating.

Quality Control Reports

We evaluated the feasibility of requiring foreign plants exporting meat and meat food products to the United States to furnish quality control reports to USDA. For our analysis, we assumed that the focus of such reports would parallel FSIS requirements for domestic livestock slaughter and meat processing operations, as follows:

- Antemortem and postmortem inspection procedures must be undertaken in such a manner as to remove any unwholesome carcass, part, or organ from human food channels.
- Reinspection and control of processed products must assure that only sound, wholesome products are distributed into human food channels.
- Sanitation must permit production of wholesome products, product handling, and processing without undue exposure to contaminants.
- Potable water is required when water is used in areas where edible products are slaughtered, eviscerated, dressed, processed, handled, or stored.
- Sewage and waste disposal control must be evident by absence of sewage and waste material, undue accumulation or development of odors, and rodents or insects.

- Pest control programs must be capable of preventing or eliminating product contamination.

With respect to prohibited chemical residues in meat, quality control reports from foreign livestock slaughter plants could focus on whether antemortem and postmortem examinations at the plants had identified animals that were diseased and/or had been injected with a drug. Beyond the antemortem and postmortem examinations, it is not clear how inspectors in slaughter plants could assist in detecting residues from chemicals in meat that were absorbed during the livestock production process, which is the primary source of chemical residue contamination of red meat. Although hypodermic injection sites are sometimes visible during antemortem and postmortem examinations, the preponderance of drugs administered to animals on the farm are given by mouth, through feed, or if injected, are not apparent to inspectors due to the passage of time. Such drug presence and that of all agricultural chemicals would not be apparent to inspectors at livestock slaughter plants.

At foreign processing plants, inspectors' observations about chemical presence in the plant itself seem to us to be the major component of quality control relevant to prohibited chemical residue presence in imported meat, in addition to screening tests, if performed at the plant. Although it would be possible for foreign livestock slaughter and meat processing operations to furnish plant-level quality control information to USDA, we do not believe that it would be a good idea to require them to do so for the following reasons.

First, plant quality control data reflects an individual plant orientation, in contradiction to the useful progress that USDA has made in implementing the systems approach, which focuses on the integrity of a foreign country's entire livestock slaughter and meat processing inspection system. An overall emphasis is appropriate because USDA is required by law to judge whether a country wishing to become or remain eligible to export meat to the United States has an equivalent inspection system.

Even if a systems approach were not required, a strong plant focus by foreign programs officers abroad could not assure that a given plant is operating satisfactorily all year long, since these officers rarely visit a plant more than four times a year. In fact, quality control reports from foreign plants could provide a false assurance to the public that the relevant operations are acceptable. Short of requiring FSIS meat inspectors' presence in every eligible foreign plant on a continual basis, there is no

way to be sure that foreign plants always operate in a manner consistent with USDA standards for domestic plants.

The second reason that we believe it would not be a good idea for USDA to require foreign meat exporting plants to furnish quality control reports is that such a requirement could be interpreted by U.S. trading partners as constituting a nontariff trade barrier. This could be so because USDA does not require domestic livestock slaughter and meat processing plants to submit quality control reports relative to their operations.

Third, countries importing meat items from the United States do not require originating plants to provide quality control reports to them.

Fourth, quality control reports, according to the Assistant Deputy Administrator for International Programs, are increasingly being viewed as management tools, to be developed according to individual characteristics of plants and firms. (USDA maintains a Voluntary Total Quality Control program for domestic processing plants that maintain established standards of quality control, including records and reports. The presence of USDA meat inspectors in such plants can be reduced as long as quality control requirements are met, including elimination of revealed operating violations of USDA standards.)

Other Observations About the Domestic and Import Plans

Despite the basic similarity of the import and domestic plans with regard to compounds covered, several differences exist between the plans. These differences, which include the rate of sampling, variations in emphasis of sampling, specific omissions in the import plan, and testing of imported processed meats and muscle tissue, show some sensitivity to chemicals used in foreign countries but not in the United States.

Rate of Sampling

A basic difference between the domestic and import plan concerns the overall rate of sampling. Although imports account for 7 percent of the meat supply, they accounted for 26 percent (12,057 of 46,957 samples) of the chemical residue testing prescribed by the 1986 annual residue plan. Thus, sample unit analysis of imported meats occurs at a rate almost 4.6 times greater than the rate of sample unit analysis of domestic meats. One animal drug (chloramphenicol) and one group of pesticides (the chlorinated hydrocarbons) contributed the most to the higher rate of sampling in the import plan.

Variations in Emphasis of Sampling

The domestic and import plans show high levels of sampling for several of the same key compounds or families of compounds, but certain differences can be noted. Four compounds or families of compounds accounted for high percentages of the total sampling to be performed in 1986, as table 2.1 shows.

Table 2.1: Primary Compounds Targeted for Sampling in the 1986 Residue Plan

	Import		Domestic	
Compounds	**Number**	**Percent**	**Number**	**Percent**
Antibiotics	1,999	17	7,500	21
Chloramphenicol	2,962	25	1,500	4
Chlorinated hydrocarbons	3,122	26	4,560	13
Sulfonamides	1,642	14	8,400	24
Total	**9,725**	**82**	**21,960**	**62**

Ten compounds or families of compounds accounted for the remaining 18 percent of the import samples to be taken, while 16 compounds or families of compounds comprised the remaining 38 percent of domestic samples.

We believe that such variations indicate an effort by FSIS to make the import plan sensitive to special concerns or conditions regarding use of chemicals in foreign countries. (The sensitivity, however, reflects a contrast only between the United States and all foreign countries. Testing for specific compounds occurs at the same high rate in all foreign countries, even for those that have historically shown less of a problem with a given compound.) FSIS officials said that the high number of samples for chloramphenicol represents a response to domestic concerns about possible illegal use of chloramphenicol in foreign countries. They also said that the rate of testing for CHCs is greater in the import plan than in the domestic plan, because CHCs were used in foreign countries, particularly in Central and South America, after their use was banned in the United States and because CHCs persist for a long time in the environment.

Specific Omissions in the Import Plan

Twenty major compounds or families of compounds were to be tested according to the 1986 domestic plan;[1] 14 of these were to be tested in the 1986 import plan. The six omitted from the import plan included clopidol, decoquinate, estrogenic compounds, halufuginone, ipronidazole, and PCP. FSIS officials provided the following information on the reasons for omission from the import plan of each of the six compounds or any change in the status of coverage.

1. Clopidol: This animal drug is used to prevent disease in chickens and turkeys and is not used in beef cattle, hog, or sheep production. The low volume of chicken and turkey imports does not justify including the drug in the import residue plan.

2. Decoquinate: This animal drug is predominantly used to prevent disease in poultry. The rationale for omitting it from the import plan is similar to that for clopidol.

3. Estrogenic compounds: This class of animal drugs, which are used for growth promotion, includes the synthetic hormonal drugs, DES and zeranol. In the domestic program male calves are first screened for exposur to estrogenic drugs by examining the prostate gland (an organ not avail able for examination in imports) for disease-related tissue changes indic ative of treatment. Liver and muscle tissue from positive calves are the analyzed for DES and zeranol. The prostate gland screening used domestically reduces the monitoring cost significantly. However, imported ve is tested directly for DES and zeranol, since the prostate gland is not available for screening.

4. Halufuginone: This animal drug was approved in 1986 for commerci use to prevent disease in chickens. Use in cattle is still experimental. FS officials told us that coverage of imports does not seem warranted at present.

5. Ipronidazole: This animal drug is used to prevent diseases in turkeys and swine. In the United States it is approved only for use in turkeys. FSIS officials indicated that although this drug was not shown in the pl for import coverage, they had planned to do some testing during the la ter part of 1986, and would include it in the domestic and import testir

[1]The compounds or families of compounds are antibiotics, arsenic, benzimidazoles, chloramphenicc chlorinated hydrocarbons, clopidol, clorsulon, cyromazine, decoquinate, diethylstilbestrol (DES), estrogenic compounds, halufuginone, ipronidazole, ivermectin, levamisole, organophosphates, pentachlorophenol (PCP), sulfonamides, trace elements, and zeranol.

plans for 1987. Subsequent difficulties with the availability of analysts to conduct this test prevented its inclusion.

6. Pentachlorophenol: This pesticide and industrial contaminant can leave residues in meat through contaminated feed, inhalation in confined areas, or ingestion from licking or chewing treated wood. Since EPA has not established a tolerance level for action, FSIS does not interpret tests of PCP. In general, FSIS takes the position that it does not believe there is a problem with PCP residues in meats, although it has been conducting exploratory tests (the reason for its inclusion in the domestic plan) to gather data for EPA.

Testing of Imported Processed Meats and Muscle Tissue

FSIS' direct access to livestock in domestic slaughter plants enables the agency to test for residues in the most appropriate (or target) tissues where residues are easiest to detect. For imported meats, FSIS lacks this direct access to some target tissues (such as the kidney or liver) because the two primary forms of imported meats are processed meat and muscle tissue (i.e., red meat) where some residues are more difficult to detect. In addition, the import plan states that 50 percent of samples for several important chemical residues are to be taken from processed meats, a type of coverage not necessary in the domestic plan because of access to the complete animal carcasses. (For a more detailed discussion of the importance of and problems posed by processed meat and muscle tissue, see chapter 3.)

Conclusions

FSIS developed an annual residue plan in 1986 which included 406 chemicals for consideration and 100 for testing. The plan helps to assure the safety of both domestic and imported meat. However, FSIS lacks a system for collecting detailed information regarding what chemicals are in use in foreign countries. FSIS officials told us that some chemicals used in foreign countries are not used in the United States. They could not identify these chemicals and stated that an exploratory effort to compare animal drugs in use in the United States and abroad was discontinued due to lack of information and nonuniformity of terminology. Representatives of some of the meat industry and consumer organizations with whom we talked expressed concern about chemicals used in foreign countries, but were also unable to identify specific chemicals used in foreign countries that have not already been included in FSIS' annual residue plan. We believe that FSIS needs to address this gap in information regarding additional chemicals to better assure that its residue detection

activities address all potentially harmful chemicals used in foreign countries.

The import plan does not include any chemicals that are not in the domestic plan. The three reasons for the parallelism—lack of a system for collecting information regarding chemicals abroad, resource constraints and efficiency, and equitable treatment—do not adequately support this policy. FSIS recognizes the need, and has plans, to develop more complete information about chemicals used in foreign countries; it has stated that public safety takes precedence over concerns with resource constraints and efficiency; and it has become more flexible on the issue of equitable treatment.

Parallel testing for chemical residues in the domestic and import plans may exclude potentially harmful chemicals used abroad. Despite FSIS' efforts to acquire specific information on residue evaluation and contro policies of exporting countries, data are collected on a piecemeal basis and need to be updated.

We believe that more remains to be done. In general, information needs to be collected more systematically and be updated regularly. In particu lar, risk profiles of countries eligible to export meat to the United State need to reflect current chemical presence and use abroad. It is also important for USDA to require that data relative to foreign country residue evaluation and control programs be timely, accurate, and easily accessible to FSIS managers who are responsible for the imported meat inspection program, including officials who develop the annual residue testing plan for imported meat.

While it may be possible to do so, there are a number of drawbacks to requiring quality control reports from plants that export meat items to the United States. Such reports would tend to refocus emphasis on individual plants--a practice that contrasts directly with FSIS' current emphasis on implementing the "systems approach." In addition, these reports would be limited in their ability to address prohibited chemical residue presence. Another key drawback involves the issue of fairness. Countries importing meat items from the United States do not require quality control reports from originating plants. Moreover, USDA does nc require such reports from domestic slaughter and processing plants. Requiring quality control reports from foreign plants could be perceive by our trading partners as a trade barrier and possibly invite reciproca treatment of U.S. meat exports. In view of these drawbacks, with no

apparent offsetting benefit, we do not recommend adopting a quality control report requirement at this time.

Several specific differences exist between the domestic and import plans. These differences include a 4.6 times higher rate of testing in the import plan, with particular emphasis on testing for chloramphenicol and CHCs. FSIS offered plausible reasons for the omission of six specific compounds from testing in the import plan. This and other differences between the two plans show some sensitivity to special concerns or conditions regarding use of chemicals in foreign countries.

Recommendations to the Secretary of Agriculture

We recommend that to develop an import residue testing plan that is sensitive to conditions regarding chemical use in foreign countries, the Secretary of Agriculture direct the Administrator, FSIS, to implement a continuous, systematic effort to identify and evaluate chemicals in use abroad that are not used in the United States. We also recommend that if such chemicals are identified, FSIS evaluate them to determine which ones pose a potential hazard, develop methods for their detection if methods are lacking, and include them in the import plan for testing. In addition, we recommend that the risk profiles of countries eligible to export meat products to the United States be updated to better assure the safety of imported meat.

Agency Comments

In commenting on a draft of this report, USDA said that while FSIS is now seeking detailed information on approvals, uses, and controls on agricultural chemicals in eligible exporting countries, its review of such information will not provide a proper basis for the import residue sampling plan. USDA said that the collection of detailed, up-to-date information on chemical use abroad is not designed to serve as a basis for the import residue sampling plan. Rather, collection of such information is designed to provide data through which FSIS can evaluate the "equal to" status of residue control programs in other countries more thoroughly.

USDA stated that if a compound is used in a country, but not tested for in the import residue testing plan, it does not mean that U.S. consumers are unprotected from harmful residues of that compound. USDA added that the first line of defense is the residue control program in the foreign country, which may be testing for the compound, even if USDA is not. USDA went on to say that such laboratory testing is routinely reviewed by Foreign Programs Officers abroad, may be the subject of special review efforts, is reported on annually to FSIS, and these data are

reviewed for coverage and completeness. Further, USDA stated that this report incorrectly assumed that all of the activities directed by USDA at detecting prohibited chemical residues and foreign matter are through its port-of-entry testing of imported meat.

We recognize (see pp. 22-26) that USDA's review of foreign meat inspection systems for equivalence to the U.S. program, through multi-disciplinary team visits and continual monitoring by Foreign Programs Officers is a crucial component in USDA's total imported meat inspection program. We agree with USDA that the first line of defense against tainted imported meat should be with exporting countries' residue testing programs, in the sense that those testing programs are close to the source of the meat. We also recognize, however, that FSIS has instituted and continues to operate an active program in the United States for testing imported meat for prohibited chemical residues. Given that federal resources have been allocated for this latter purpose, we believe that chemicals found in meat exporting countries should also be the focus of such a program. Therefore, we believe that, consistent with currently available resources, FSIS should make a reasonable attempt to find out important information on chemical use in eligible exporting countries. We understand that FSIS' primary purpose in collecting such data is to evaluate the "equal to" status of residue control programs in other countries, but we also believe that such information should be considered in developing the import residue testing plan. We believe that such action would be consistent with USDA's statement in its letter to us, in which USDA said that the purpose of import testing is to obtain data which contribute to determining if the country's residue control program is operating acceptably.

Additional Issues in Residue Testing

We identified five other important areas of concern relating to the effectiveness of FSIS' program for detecting chemical residues in meat. FSIS has taken some action to address these areas of concern, but further work remains to be done.

Three of these areas relating to both domestic and imported meats—evaluation of compounds, assessment of methods detection, and methods development—are important because they directly affect FSIS' ability to identify the chemical residues of greatest concern. Although progress is evident in each of these three areas, the work remains unfinished or basic difficulties have not been resolved. FSIS has taken steps to improve its evaluation of compounds; as of November 1986 the agency had completed its review of 74 compounds under its new evaluation system with several hundred remaining to be done. The agency has also assessed the status of methods for detecting about 100 animal drugs (and a few other compounds) through a joint task force with FDA. A similar joint task force with EPA to assess the status of methods for detecting pesticides and environmental contaminants has been proposed but was not established at the time of our audit work. With regard to methods development, FSIS has been faced with basic difficulties because of what it believes were resource constraints and a lack of authority to conduct basic research.

Two other areas of concern—processed meat imports and target tissues—relate specifically to import residue testing methods development. Considerable quantities of imported beef and pork are processed; however, methods of analysis that are developed for unprocessed tissue do not always give reliable results for processed tissue. Moreover, FSIS frequently lacks sufficient information about the fate of residues in processing to determine whether there is a need to test for residues in processed products and to assess human exposure. As a result, FSIS must devise new methods for detecting certain residues in the tissue (generally muscle tissue) that is available.

Problems relating to gaps in the information about chemicals at FDA and EPA affect FSIS' residue inspection activities. FDA and EPA in conjunction with FSIS are making efforts to close these gaps and to coordinate their activities.

Compound Evaluation System

The Compound Evaluation System (CES), introduced in 1986, has begun to play an important part in developing the annual residue plan. The CES is intended to facilitate movement of compounds into or out of the plan

and highlight the need for methods development for compounds identified as high risk but without a suitable residue detection method. The FSIS official in charge of developing the CES said that it will accomplish these goals by providing more detailed, comprehensive information than the previous evaluation system.

The CES is a two-tier system that evaluates the hazard level and the exposure potential. The hazard level relates to the intrinsic toxicity or danger of the compound, while the exposure potential relates to the likelihood of actual occurrence of residues in meat. The previous system did not distinguish between hazard level and exposure potential. The distinction is helpful in evaluating the potential danger posed by a chemical because it can draw attention to those compounds with the highest toxicity and likelihood of exposure; in other cases, where toxicity may be high but the chance of exposure is minimal, it can reduce the level of concern.

In addition, the CES distinguishes between low risk and unknown or unevaluated risk. The previous system grouped both low risk and unknown or unevaluated risk in one category, called category D. More than 220 of the 406 compounds listed for consideration were grouped in this category in the 1986 plan. Thus, more than half the compounds considered were placed in a category that could indicate either negligible or significant risk to human health.

The Acting Director, REPD, noted that 25 compounds in this category, such as cyromazine and ivermectin, were nonetheless included in the 1986 plan. These compounds have been selected for testing on the basis of their general toxicological qualities and uses, according to FSIS. FSIS officials emphasized that even now a designation of "D" has not prevented FSIS from acting on the basis of risk.

FSIS plans to use the CES to reevaluate all the compounds in its list of compounds for consideration. In addition to compounds in the D category, compounds assigned to previous A, B, and C categories are being reevaluated by means of the CES. As of November 1986, 74 compounds had been analyzed. FSIS officials told us that contracts had been awarded to prepare hazard and exposure profiles for an additional 39 compounds which will be ranked as the reports become available. FSIS also is planning an additional contract for 32 additional chemicals in 1987. However, the timetable for completing the evaluation of the approximately 400 compounds is uncertain.

Methods Assessment

Methods assessment is important to FSIS because it enables the agency to determine whether it has a suitable regulatory method for detecting residues in meat and poultry. In January 1986 FSIS and FDA formed an interagency task force, consisting of six representatives from FSIS and five from FDA, to define the status of detection methods for more than 100 compounds or families of compounds. The assessment was aimed at identifying gaps in FSIS' existing methodology and prioritizing research to cover those gaps. The group completed its work in August 1986. Almost all the compounds the task force addressed were animal drugs, but the review did include certain pesticides and industrial contaminants.

The task force classified the compounds for methods development needs as follows:

a = Compounds where regulatory methods are not available or where available methods have been determined unsuitable for regulatory purposes.

b = Compounds where adequate quantitative methods for regulatory analysis are available and employed, but no technology has been developed or evaluated for confirmation.

c = Compounds where improved methodology has been developed and should be evaluated for regulatory suitability.

d = Compounds where only microbiological screening or quantitative analyses are available but require chemical methods for quantification or confirmation.

e = Compounds where the existing methodology is suitable for present needs, including confirmation.

f = Compounds where use, residue data or toxicity indicate method development is not warranted.

The Director of FSIS' Chemistry Division said that the first two categories (a and b) represented the most serious gaps and that compounds in those categories would be prioritized for methods development work. Of the roughly 100 compounds or families of compounds evaluated, 16 were classified in category a and 7 were classified in category b. Ten other compounds or families of compounds were included in category c. Microbiological screening methods (d) were available for five. Sixty-two

compounds or families of compounds were categorized as either e or f. (The Director, Chemistry Division, cautioned that the numbers can be misleading because the individual compounds and the families of compounds are each counted as one. For example, five sulfonamides were counted as one; the single compound, amprolium, was also counted as one.) As of November 1986 the task force findings were being incorporated in a report to be sent to FSIS' Deputy Administrator, Science, and the Director, Center for Veterinary Medicine, FDA. According to the Director, Chemistry Division, methods development work on compounds identified in categories a and b will begin in 1987.

The Director, Chemistry Division, told us in October 1986 that he was drafting a proposal for a joint FSIS/EPA task force to assess the status of methods for detecting pesticides. He said that the FSIS/FDA task force's success could be attributed to an interagency relationship evolving over a 3 or 4 year period and that FSIS will need to develop a closer relationship with EPA. He also said that the Chemistry Division had identified more than 50 pesticides of concern to FSIS because no suitable regulatory methods of detection are available. Of these pesticides, 40 are used in treating feed and were identified after a 1986 contamination incident in Arkansas involving heptachlor focused attention on the problem. At the time of our audit, FSIS was taking steps to prioritize these compounds for methods development. For pesticides other than the 50 mentioned above, the Director, Chemistry Division, told us that a joint FSIS/EPA task force evaluation of the status of pesticide detection methods, many of which were developed in the early 1970s, is essential to provide updated information and identify where further methods development research needs to be done.

In commenting on a draft of our report, FSIS officials stated that FSIS has developed a priority listing of these pesticides for methods development and that the list relative to research addressing FSIS' needs for multiresidue methods has been made available to ARS.

New Methods Development

New methods development relates to discovering or improving ways of detecting chemical residues in meat. A method of detection for some compounds is lacking altogether; other compounds can be detected, but the methods should be simplified or improved. A June 1985 report by the National Academy of Sciences (NAS), entitled Meat and Poultry Inspection, recommended greater emphasis on new methods development, including rapid, inexpensive screening tests to detect a broad

array of hazardous compounds and more accurate, sensitive, less expensive tests as well as tests for new hazards. FSIS officials told us that despite some past accomplishments and current methods development research, resource constraints and a lack of authority to conduct such research have hampered FSIS' progress in methods development.

Past and Current Research

FSIS' Microbiology and Chemistry Divisions have been active in methods development. The Microbiology Division has developed ways of using microorganisms to detect the presence of antibiotics. The Chemistry Division has developed tests for detecting sulfa drugs, chloramphenicol, and other compounds.

Some methods development research has been conducted via contracts let by FSIS to focus on specific problems. Contracted work led to the development of a method for detecting steroidal compounds (such as DES and zeranol) in 1986. Chemistry Division officials expect contracted research into a new method of screening for CHCs to lead to a satisfactory method within the next 5 years.

FSIS officials told us that, in general, once a compound is targeted for methods development and resources are made available, a method can usually be devised within one to two years. They also said, however, that occasionally a compound or family of compounds can pose unforeseen difficulties, creating delays in the discovery of an effective method.

FSIS' Concern With Resource Constraints and Lack of Authority to Conduct Basic Research

According to FSIS, two problems have constrained its research for new methods development. In responding to NAS' 1985 study, FSIS stated in a June 1986 report, entitled FSIS Future Agenda: Response to the NAS Recommendations, that it had been unable to take full advantage of scientific advances to develop new inspection technologies because it did not have adequate funding for the methods development and other research that this requires. Further, the report cited FSIS' lack of authority to conduct basic research as a factor limiting FSIS' research activity. The problem of resource constraints was being addressed in September 1986 when FSIS began hiring additional staff to conduct methods development. The lack of authority to conduct basic research, however, remains a problem for FSIS.

Resource Constraints

FSIS indicated in its June 1986 response to the NAS study that it had received $5 million spread over the last 7 years to cover basic laboratory services first and then used what was left to solve critical inspection problems. FSIS said that no money was available for nonemergency developmental projects and that, as a result, it found itself unprepared to address effectively some immediate inspection problems such as rapid, flexible, inexpensive methods for detecting hazardous chemicals.

According to FSIS officials, one result of resource constraints was the elimination of the Chemistry Division's Methods Development Branch, which served as a focal point for developing new methods until 1985. This cutback involved the loss of 18 staff years, which were not transferred elsewhere or replaced at that time. FSIS officials said that as a result of the cutback, FSIS pursued only one new methods development project through the first 9 months of 1986.

In September 1986 the FSIS Administrator authorized the establishment of a Development and Investigation Group at each of FSIS' three field laboratories. According to FSIS officials, staffing for the groups include about 15 chemists, who were to be assigned to new methods development.

FSIS Authority to Conduct Basic Research

According to the Deputy Administrator, Science, while FSIS lacks authority to conduct basic research, such authority has been delegated to the Agricultural Research Service (ARS) within USDA, including activities that may be associated with methods development research. To the extent that FSIS has engaged in methods development research, it has classified specific research activities in this area as applied research. (The Deputy Administrator said that administrative fiat, not legal authority, is the basis for FSIS' applied research activity but indicated that ARS has not opposed FSIS' involvement in this area.) The question of what constitutes basic and applied research, however, is a recurring problem for FSIS, and difficulties remain in FSIS' conduct of research related to methods development as a result.

The Director, Chemistry Division, told us that a wide variety of views exists about the proper classification of research projects, including those associated with methods development, and that these divergent views cause uncertainty about which agency is responsible for this research area. He said that ARS has shown some reluctance to pursue methods development research, because ARS regards some aspects of methods development research as falling more appropriately in the

applied research area for FSIS to pursue. In commenting on the relationship of FSIS and ARS, NAS' June 1985 report stated that in recent years FSIS had looked to ARS to meet its research and development needs but that both agencies recognized the limitation in the relationship. According to the Director, Chemistry Division, one important limitation involves time frames. FSIS' research needs often involve a short time frame, whereas FSIS' coordination of research with ARS may involve a longer time frame.

FSIS' Assistant Deputy Administrator, Science, also said that ARS emphasizes long-range basic research needs, whereas FSIS requires applied research that can be put in the hands of a meat inspector almost immediately. The Deputy Administrator, Science, told us that FSIS, after submitting a research request to ARS, generally has to wait at least a year for ARS to indicate whether or not it will do the research. According to FSIS' response to the NAS study, FSIS' lack of authority to conduct basic research has limited its scientific and technical development activities, complicated the process of initiating work, and created unnecessary inefficiencies in projects that had been undertaken.

In commenting on our draft report, ARS wrote that it has been able to positively respond to each of FSIS' needs conveyed in the last few years. Further, the Deputy Administrator of ARS said that ARS has never taken a year to indicate whether or not it would do research. Further, he wrote that ARS has never stated that it would not perform studies which it agreed to be research in nature. ARS may require a few months for orderly completion of ongoing studies before new FSIS projects can be undertaken, according to this official. Finally, he noted that FSIS' needs are open-ended, that more questions arise as the first studies are drawing to a close and the project does last several years.

As a result of its need for basic research in testing meat for prohibited residues, FSIS is seeking more efficient ways to meet its research requirements. The Assistant Deputy Administrator, Science, cited as one example the agency's desire for a closer working relationship with land grant colleges. He said that the laboratories at these colleges are more oriented toward applied research than are the ARS laboratories. He also indicated, however, that the problems associated with defining basic and applied research and ARS' uncertain role have made it difficult for FSIS to develop a closer relationship with the land grant college laboratories. The Deputy Administrator, Science, said that greater FSIS responsibility in the agency's conduct of research could increase the efficiency and

timeliness of its research activities in general and benefit the area of methods development in particular.

FSIS outlined five options for addressing these concerns in its 1986 FSIS Future Agenda report. Of the five options, the one the agency recommended was that ARS and FSIS increase their efforts to foster closer working relationships to more nearly meet the scientific and technical needs. Three of the remaining four options involved a more direct role for FSIS in meeting its research needs, for example, through an appropriation by the Congress to support FSIS research in this area. The other option was to supplement ARS research by drawing on the resources of the international community. This option included, for instance, the discussion of potential projects with scientists in foreign countries where funds are available. FSIS recommended in its 1986 FSIS Future Agenda report that these latter four options be pursued by USDA's Assistant Secretary for Marketing and Inspection Services for review.

The Deputy Administrator, Science, told us that the issue of FSIS research needs in methods development and its relationship with ARS in this area was discussed at a conference in December 1986.

In commenting on this report, USDA stated that the report did not reflect the current ARS/FSIS working relationships with respect to research needs. It indicated that meetings between the Deputy Administrator, Science, FSIS, and the Associate Deputy Administrator, National Program Staff, ARS, now occur each month, and that ARS is increasing its research commitment to meeting FSIS' needs by at least $2 million during FY 1987.

Two Areas of Concern for Methods Development Specifically Involving Imported Meats

FSIS officials identified two areas of concern for methods development research directly related to residue testing of imported meats: (1) the effects of processing on residues in imported meats and (2) detecting residues in animal muscle tissue.

Effects of Processing

FSIS scientists told us that they lack sufficient data to understand whether processing has no effect or whether it diminishes or enhances dangers posed by eating meat containing some harmful compound. They said that it may be more difficult to detect residues in processed than raw meats because the heat of processing may break down a parent compound into potentially dozens of other compounds. The problem is of particular concern in regard to imported meat because considerable

amounts are imported in processed form. In 1985 about 14 percent (180 million pounds) of imported beef and 43 percent (360 million pounds) of imported pork were processed.

Despite the difficulties in testing for chemical residues in processed meats, the FSIS import plan includes coverage of this area. The plan provides for about 50 percent of all samples for several specific compounds (chloramphenicol, CHCs, cyromazine, and the sulfonamides) to be taken from cooked and cured products.

According to the Deputy Director, REPD, a request for funding to investigate the effects of processing on residues in meats was included in a request sent to the Deputy Director, Science, in November 1986. The Deputy Director told us that more research in this area is necessary.

Target Tissue

Target tissue is the portion of an animal where residues deplete to the permitted (or tolerance) level last. (When the target tissue residues are at or below the tolerance level, all other edible tissues will be at or below the tolerance level also.) Usually the target tissue is an organ such as kidney or liver, although occasionally, depending on the compound, it may be the fat or muscle tissue.

As part of the preclearance requirements for new animal drugs and pesticides, sponsors of these chemicals are required to provide analytical methods for enforcement of residue tolerances in the raw food product. However, for the last 10 years, FDA has required sponsors of new animal drugs to provide such methods for the target tissues of only that animal species for which drug use is approved. Previously, FDA had required methods for enforcement of the tolerances in all tissues. Consequently, according to USDA, there is a gap in the availability of methods to monitor for residues in products from animal species for which there are no U.S. approvals, in non-target tissues, and in processed products. Moreover, many of the methods provided years ago by sponsors of animal drugs and pesticide chemicals have been found inadequate by contemporary standards.

Generally speaking, when an adequate method is available FSIS methods development activities focus first on the target tissue of animals for which there are U.S. approvals. If the need arises, methods are extended for target tissues of other species, non-target tissues, and processed products.

Target tissues are available for testing residues after animals are killed in domestic slaughter plants. Imported meats, however, consist almost entirely of muscle tissue, which is a nontarget tissue for certain compounds. As a result, new methods are needed to detect potential residues in muscle tissue of imported meats. The annual residue plan for 1986 indicated that in the case of five compounds or families of compounds (benzimidazoles, clorsulon, DES, ivermectin, and levamisole), muscle tissue of imported meat would be tested, depending on the validation of a method for muscle tissue. FSIS officials told us that suitable tests of muscle tissue for all of these compounds have been developed.

Nevertheless, the Acting Director, REPD, remains concerned about the need for further work to develop methods for detecting additional residues in muscle tissue. She told us that the lack of methods for nontarget tissues continues to play a major role in determining whether FSIS includes a compound in the import plan for testing. She said that FSIS is often involved in attempting to extend a detection method for muscle tissue to additional species. The Acting Director also cited the need for studies that would provide data correlating residues in different types of target and nontarget tissues. According to her, residues occur in specific proportions in various tissues. With this data, FSIS could determine from one tissue whether there might be a problem requiring investigation in another tissue and allow estimates of human dietary exposure based on target tissue monitoring.

The Acting Director said that, in general, the lack of target tissue and of reliable tests for processed meat problems constitute important issues as they relate to coverage of imported meats and will require additional research. To provide a basis for such research, FSIS should develop a systematic plan for assessing available methods for detecting chemical residues in processed meat and nontarget tissue.

Problems at FDA and EPA Affect FSIS Work

FSIS activities relating to chemical residues in meat and poultry depend in several important respects on FDA and EPA. FSIS is authorized to inspect meat and poultry for the presence of chemical residues and to remove such products containing illegal residues from commerce. FSIS uses the tolerances set by FDA for new animal drugs and contaminants and by EPA for pesticides in defining the residue level above which FSIS will consider meat and poultry products adulterated. FSIS depends on FDA and EPA for accuracy and completeness of the data supporting its establishment of tolerances.

Criticisms of FDA and EPA activities involving residues have come from a number of sources (including congressional hearings, previous GAO reports, consumer groups, and FSIS). The criticisms have focused primarily on gaps in knowledge and regulatory activities regarding residues. The Acting Director, REPD, told us that gaps in knowledge represent the major area of concern for FSIS.

Issues Regarding FDA and EPA

A congressional hearing, entitled The Regulation of Animal Drugs by the Food and Drug Administration, before a Subcommittee of the Committee on Government Operations, House of Representatives, in July 1985 concluded that

- FDA cannot identify, and thus cannot regulate, the thousands of new animal drugs on the market that have never been approved as safe and effective, as required by law;
- adequate detection methods are not yet available to assure the safety of the nation's food supply;
- FDA has disregarded recommendations by its own experts to ban several carcinogenic drugs from the marketplace; and
- FDA and USDA have been unable, to date, to monitor the use of these illegal drugs and the extent to which these drugs have entered the food supply.

In response to these findings, FDA's Deputy Associate Director for Surveillance and Compliance, Center for Veterinary Medicine, said that generally FDA is aware of all the substances in use but cannot monitor all of them with the resources available. Instead, the agency focuses on those compounds considered to pose the greatest threat. According to the Deputy Associate Director, FDA believes that it has adequate detection methods for the compounds of greatest concern. He also said that a variety of factors contributes to reducing the alleged risk of carcinogenic compounds in food animals. He cited carbadox, a carcinogenic drug administered to piglets. By the time the pigs are ready for slaughter, the chemical has been depleted from their system. Overall, according to the Deputy, FDA believes that it exercises effective oversight of drug use in food animals.

Our April 18, 1986, report, Pesticides: EPA's Formidable Task to Assess and Regulate Their Risks (GAO/RCED-86-125), pointed out problems in EPA's efforts to reregister previously registered pesticides in accordance with current requirements. We found that

- At its current pace, EPA's reassessment and reregistration efforts will extend into the 21st century due to the magnitude and complexity of the tasks involved. Until EPA completes this effort, the health and environmental risks and benefits associated with older pesticides and their use will not be fully known.
- EPA's special review has generally been a lengthy process affected by data not being readily available and the competing demands on EPA resources. EPA had recently implemented changes to speed up the process.
- EPA's reregistration effort is further complicated by such emerging issues as (1) the need for an efficient mechanism to obtain test data on the effects of some inert ingredients and (2) the apparent legal inconsistencies that prohibit, under some circumstances, the use of a cancer-causing pesticide while, under other circumstances, allowing the use of the same pesticide.

The Acting Director, REPD, stated that FSIS has to depend on an inadequate safety data base for many compounds. She said that for some compounds, especially older ones, toxicity studies are insufficient; information on metabolites is lacking; and especially with imports, insufficient data are available to correlate residues in one type of tissue with the residues in tissues that FSIS receives for testing. She also noted that USDA has occasionally been held responsible for gaps in coverage due to unavailability of adequate testing methods for which it has no official responsibility. (Sponsors of new animal drugs and pesticides are responsible for providing methods to enforce the tolerances.) The Acting Director said that FSIS has become involved in methods development only because the agency believed it important to close some existing methodological gaps.

Efforts to Correct Problems

FDA and EPA, in conjunction with FSIS, have made various efforts to overcome the gaps in knowledge and address concerns about regulatory activities. FDA activities relating to animal drugs and FSIS' residue detection efforts include the following.

- The FSIS/FDA task force to assess the status of methods for detecting animal drugs, discussed earlier in this chapter, is one important example of interaction between the two agencies.
- FDA officials are members of the Surveillance Advisory Team (SAT), which reviews FSIS' proposed annual residue plan and makes suggestions for its improvement.

- FDA's Deputy Associate Director for Surveillance and Compliance, who is also FDA's liaison officer on the SAT, said that FDA's intelligence about animal drugs in use in foreign countries is improving. He said that FDA officials have participated in the International Consultation on Veterinary Drugs, which meets formally every 2 years with representatives from 20 to 30 countries in attendance. (FSIS officials have also participated.) He pointed to greater international cooperation to control the use of illegal animal drugs.
- FDA and USDA participate in the Codex Committee for Veterinary Drug Residues.
- The FDA liaison officer and USDA officials said that FDA and FSIS have been working together more effectively in the methods development area. They have discussed which agency should be responsible for methods development regarding specific compounds. In cases where a rapid screening method is needed for use by meat inspectors, FSIS is more likely to develop the method; in cases where a suitable regulatory method is needed, FDA is more likely to develop it.

In commenting on a draft of this report, FSIS said that it recognizes that quantitative and confirmatory procedures are necessary to support rapid screening methods for its regulatory program and that FSIS develops these needed methods when they cannot be supplied by FDA or other sources.

EPA activities relating to pesticides and environmental contaminants and FSIS residue detection efforts include the following.

- EPA officials are members of the SAT, along with FDA and FSIS officials. They review FSIS' proposed annual residue plan and make suggestions for its improvement.
- EPA has been aware of the issue of pesticide residues in food animals. The Kentucky heptachlor contamination incident mentioned earlier in this chapter intensified EPA's focus on this problem. According to EPA officials, as a result of this incident, EPA believes that the contamination of animal feed by pesticides used in treating seed is a major source of such residues. EPA participated with FSIS and FDA in a task force to evaluate the hazard posed by these pesticides in animal feed.
- EPA approved its "Pesticide Assessment Guidelines" in 1982 to assess the nature of potential residues in livestock and set tolerances (legal residue limits) for compounds. The guidelines have been important from an international standpoint because they have influenced the Codex Committee on Pesticide Residues affiliated with the Codex Alimentarius Commission, which was established to implement the Joint Food and

Agricultural Organization (FAO)/World Health Organization (WHO) Food Standards Programme. The Codex Committee is developing uniform international standards for pesticide tolerances. An EPA official said that EPA's guidelines provided a starting point for the Codex Committee's work in this area. The Committee is finalizing the international guidelines.

- Proposed revisions to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), one of the major pieces of legislation that EPA is responsible for enforcing, would have required EPA to expedite its review of pesticides in general and close the existing gaps in knowledge regarding pesticides more quickly. An EPA official said that although the 99th Congress did not approve the proposed revisions, EPA has organized a task force of key officials to seek ways to accelerate the pace of its review.
- According to a National Resources Defense Council official, another proposed revision to FIFRA that was not enacted could have related to residues in imported meats. He said that at present, U.S. chemical manufacturing companies export a variety of pesticides that have never received EPA review and approval for use in the United States. Companies have been required to notify only the receiving agent that the pesticide has not been granted EPA approval. As a result, the country itself generally does not know the legal status of the pesticide. According to the official, foreign countries, when informed that a specific pesticide is not approved for use in the United States, have shown a greater reluctance to permit its use in their own agricultural programs. To the extent that such pesticides may be ingested by animals that are then imported into the United States, the proposed revisions to notify the country directly of the pesticides' legal status may help to avoid the problem.

Conclusions

Gaps involving information about chemicals and techniques for detecting them are being addressed by FSIS. However, in several major areas of ongoing FSIS activity—the CES, methods assessment, and methods development—work remains to be done or problems remain to be resolved. In addition, FDA and EPA are working with FSIS to improve its residue detection activities, but gaps in knowledge about animal drugs, pesticides, and environmental contaminants also remain to be overcome.

The CES represents a significant improvement over the earlier evaluation system, but as of November 1986, it had been applied to only 74 of the 406 compounds considered by FSIS. Completing the evaluation of compounds is an important step in assuring greater consumer protection.

Progress is being made in FSIS methods assessment, but work in this area also remains to be done. The 1986 FSIS/FDA task force to assess the status of methods primarily for animal drugs was an important step, leading to the identification of compounds lacking methods for detection and prioritizing them for methods development research. A proposal was being drafted in November 1986 for a similar task force with EPA to assess the status of methods for detecting pesticides and environmental contaminants. We support the establishment of such a task force.

FSIS has had some success in developing new detection methods, but problems with resource constraints have hampered greater progress. This problem has been addressed through the hiring and reassignment of additional staff. FSIS has recommended a closer working relationship with ARS and is exploring other options. It is too soon to know how successful these efforts will be.

Two areas relating to methods development specifically for imports—processed meats and non-target tissues—also require further attention from FSIS. The agency has extended methodology in these two areas, but additional research could help improve the quality of import coverage. For example, a better understanding of the effects of processing on a chemical would improve FSIS' identification of those residues which should be monitored in both raw and processed products. FSIS recognizes the importance of pursuing research in these areas. However, before effective research can take place, a systematic assessment of available methods for detecting chemical residues in processed meat and in nontarget tissues must be undertaken.

Although FDA and EPA are working with FSIS regarding FSIS residue detection responsibilities, gaps in FDA's knowledge relating to animal drugs and EPA's knowledge relating to pesticides and environmental contaminants continue to affect FSIS residue detection efforts. Continued joint progress to overcome these gaps will be an important contributor to success in assuring a safe meat supply.

Recommendations to the Secretary of Agriculture

We recommend that the Secretary of Agriculture direct the Administrator, FSIS, to systematically assess the status of methods for detecting harmful chemicals in processed meat and muscle tissue to provide a basis for deciding on the additional research needed to develop more effective methods.

Agency Comments

In our draft report we proposed that the Secretary of Agriculture direct the Administrator, FSIS, to work with the Administrator, EPA, to develop a joint FSIS/EPA task force to assess the status of methods for detecting pesticides and environmental contaminants. In commenting on our draft report, USDA wrote that the joint task force with EPA and FDA to assess the status of methods for detecting pesticide residue and environmental contaminants in foods had been initiated. Further, USDA said that the first formal meeting was held in March 1987, and that it expected FSIS to propose the development of a pesticide priority list for methods development comparable to the FDA/FSIS task force on veterinary drugs at the second meeting which is scheduled for August 1987.

With respect to methods development for processed meat and muscle tissue, USDA stated that the report is incorrect when it says that detection of some harmful residues is more difficult in imported meat because target tissues are not available. USDA said that target tissues are available in the exporting country and have been tested in the exporting country using USDA-approved methods. Further, USDA stated that the purpose of testing imported meat in the United States is to obtain data which contribute to determining if the exporting country's residue control program is operating acceptably. USDA said that effective control is established when a residue testing method is used in a foreign residue control program and does not depend on FSIS using an appropriate testing method on imported meat.

USDA added that, because port of entry testing of imported meat for residues in the United States is not a "primary control" system, it is less worthy of a separate methods development agenda. USDA stated that where development to extend a method from the target tissue to the tissue imported can be accomplished with a reasonable expenditure of resources, it is justifiable. USDA also wrote that decisions about methods development need to be subject to more thorough review than suggested by the recommendation in the draft report. It went on to say that if there are compounds in use in other parts of the world which would present risks comparable to those for which methods development is being undertaken in the United States, methods development ought to be encouraged. Finally, USDA expressed doubt about how the cost burden associated with methods development to detect harmful chemical residues ought to be shared among countries.

We believe that in part, because foreign countries' testing of meat to be exported to the United States is important in ensuring the integrity of imported meat, appropriate residue detection methods should be utilized

in the foreign countries. However, we also believe that, since USDA operates an active program of testing imported meat in the United States for chemical residues, it should ensure, to a reasonable degree, that the residue testing methods employed in the import program are effective when applied to imported processed meat and non-target tissue.

Incomplete Residue Monitoring and Inconsistent Removal of Violative Products Affect Imported Meat Program

FSIS would have better assured the wholesomeness of imported meat during 1986 if its Automated Import Information System, a computerized program for scheduling the inspection, sampling, and laboratory testing of imported meat, had worked as designed. AIIS was developed to (1) schedule all required types of inspection for imported meat, (2) issue assignments for FSIS inspectors at the ports of entry to draw samples of imported meat for subsequent residue testing, (3) schedule residue testing to be conducted at the laboratories, and (4) revise sampling and testing instructions appropriately, as residue test results become available.

AIIS did not handle all the compounds and families of compounds specified in the 1986 annual residue plan because, according to FSIS officials, the number of such compounds exceeded the number of permissible categories specified in the computer system. As a result, FSIS managers relied on ad hoc approaches for scheduling residue tests and for reporting on and responding to residue test results. For chemical residue evaluation, FSIS relied on AIIS for directing inspectors to draw samples of imported meat for subsequent residue testing. AIIS was also used to note detected residue violations. However, specification of the types of tests necessary to fulfill the requirements of the 1986 annual residue plan was left to headquarters personnel and regional laboratory employees.

We found that as a result of the ad hoc system, goals specified in the import section of the 1986 annual residue plan for several targeted compounds (and families of compounds) for major exporting countries were reached prior to May 1. FSIS policy during 1986 directed that after the plan's goals were met for a particular country/species/compound combination, laboratory personnel were to schedule the least expensive residue test for subsequent samples of that combination received from the import inspectors, regardless of the likelihood that the residue being tested for would be present. Hence, while samples received by the laboratories early in the year for major exporting countries were subject to testing for the full range of compounds, many of those received later in the year were subject to only the least expensive test.

We also found that FSIS did not have a consistent policy governing the disposition of the lots from which residue-laden meat samples were taken during 1986. At times import inspectors at the ports of entry were notified of residue violations detected at the testing laboratories and were instructed to refuse entry on that portion of the lots remaining in or near import inspection facilities. At other times import inspectors were not notified of residue violations.

Further, we found that delays in entering detected residue violations into AIIS, which is supposed to trigger increased testing of meat from the plant involved, permitted subsequent meat shipments from some such plants to enter the U.S. food supply without being subjected to and passing residue tests.

In response to our findings, FSIS officials told us in February 1987 that enhancements had been made to AIIS as of January 1, 1987, to permit residue designations for the full range of compounds specified in the 1987 annual residue plan. In addition, reports are to be developed that will permit analysis of, among other things, progress in implementing the import section of the annual residue plan. Such progress reports could provide FSIS managers with a useful tool to assure that residue testing patterns reflect the flow of imported meat throughout the year.

The officials also said that FSIS' policy regarding the disposition of products from lots associated with residue violations had been clarified, and they described changes in responsibilities and procedures that are intended to improve the dissemination of residue testing results. It is too early to tell whether these actions to enhance AIIS and to clarify inspection policies will adequately deal with the conditions noted above.

Activities of the Import Residue Monitoring Program

During 1986 FSIS analyzed 15,541 samples of imported meat for residues from animal drugs and agricultural and environmental chemicals. Thirty-eight violations of FSIS' residue standards were identified. Sulfa drugs and chlorinated hydrocarbons were involved in 37, or 97 percent, of the 38 violations. Table 4.1 shows the number of residue violations for calendar years 1984-86 by type of compound identified and exporting country.

Table 4.1: Import Residue Violations, 1984-86

	Sulfa drugs			Chlorinated hydrocarbons			Others		
Country	**1984**	**1985**	**1986**	**1984**	**1985**	**1986**	**1984**	**1985**	**1986**
Argentina	•	•	•	•	•	1	•	2	•
Australia	•	•	1	•	1	1	•	•	•
Belgium	•	•	5	•	•	•	•	•	•
Canada	1	•	4	1	•	•	•	•	1
Costa Rica	•	•	•	1	•	•	•	•	•
Czechoslovakia	•	•	1	•	•	•	•	•	•
El Salvador	•	•	•	•	1	•	•	•	•
Guatemala	•	•	•	•	1	•	•	•	•
Hungary	•	•	1	•	•	•	•	•	•
Ireland	•	•	•	•	•	•	•	•	•
New Zealand	•	1	•	1	•	2	•	•	•
Poland	•	•	1	1	•	•	•	•	•
Romania	•	•	•	1	•	•	•	•	•
Sweden	•	•	•	•	•	•	•	1	•
Taiwan	•	7	1	•	•	•	•	•	•
Yugoslavia	•	•	19	•	•	•	•	•	•
Total	**1**	**8**	**33**	**5**	**3**	**4**	**0**	**3**	**1**

These data indicate a low level of residue violations overall. However, we were unable to determine if the small numbers reflect a generally safe imported meat supply or if they reflect shortcomings in detecting such residues, such as those discussed in chapter 2.

Residue Testing of Imported Meats From Major Exporting Countries Not Spread Out Over the Entire Year

FSIS officials told us that AIIS' configuration, as developed in 1979, did not permit expansion to include all the compounds and families of compounds specified in the 1986 residue plan. Hence, at the beginning of 1986, FSIS laboratory officials were instructed to analyze each sample received from import inspectors for as many listed compounds as possible, until the goals specified in the residue plan were attained. When the required number of tests for a particular compound in meat from a given country had been completed, laboratory workers were to stop testing for that compound in meat from that country. As a result of this policy, compounds in the annual residue plan were tested heavily early in the year, and goals for many of the compounds for meat from major exporting countries were met prior to May 1. (See table 4.2.) Coverage for the last 8 months of 1986 was significantly lower than coverage during the first 4 months.

Table 4.2: Residue Monitoring Program Status for the Four Major Exporting Countries, Amount of the Annual Residue Plan Completed by May 1, 1986

Compound or compound group name	Australian beef Tests[a] Planned Number	Scheduled	Percent complete	New Zealand beef Tests Planned	Scheduled	Percent complete	Danish Pork Tests Planned	Scheduled	Percent complete	Canadian pork Tests Planned	Scheduled	Percent complete
Chloramphenicol (2)	240	279	116	220	243	110	215	258	120	225	204	91
Antibiotics (21)	240	478	199	220	258	117	199	322	161	225	233	104
Sulfas (5)	120	156	130	110	117	106	108	126	119	113	117	104
Arsenic (11)	•	•	•	•	•	•	21	22	105	22	19	86
Chlorinated hydrocarbons (17)	240	315	131	220	129	59	205	62	29	225	179	80
Organo-phosphates (16)	48	21	44	44	30	68	40	39	98	45	30	67
Trace elements (8)	•	•	•	•	•	•	21	19	96	22	14	93
Larvadex (1)	48	75	156	44	48	109	•	•	•	•	•	•
Levamisole (1)	48	15	31	44	3	7	•	•	•	•	•	•
Clorsulon[b] (1)	•	•	•	•	•	•	•	•	•	•	•	•
DES[c] (3)	•	•	•	•	•	•	•	•	•	•	•	•
Ivermectin (2)	48	8	17	44	6	14	40	6	15	45	2	4
Zeranol[c] (1)	•	•	•	•	•	•	•	•	•	•	•	•
Benzimidazoles (3)	48	4	8	44	1	2	•	•	•	•	•	•

[a]Scheduled means the tests are determined as the samples arrived. Actual testing occurs several weeks later.

[b]Residues of this compound are tested for in sheep.

[c]Residues of this compound or compound group are tested for in calves.

Note: Two compounds were added to the monitoring plan late in the year as tests became available.

Program documents indicate that the laboratories were instructed to continue testing the meat samples they received even after residue plan goals were attained for a specific compound so that some benefit could be derived from the otherwise unused samples, which, in the past, had been discarded. When plan goals were reached for all targeted compounds for pork, for example, subsequent pork samples were tested for many sulfa residues through a sulfa screening test. Under the same conditions, beef was subjected to a broad screening test that targets 21 antibiotics. According to a memorandum from FSIS' Science component, these two tests were selected not because they targeted compounds more likely than other compounds to be found in imported meat products after May 1, but because their costs in terms of staff and supplies were low.

As table 4.2 indicates, a beef sample from Australia or New Zealand was likely to be tested early in 1986 for any of the 68 chemicals targeted for beef from these countries. However, later in the year, after the residue plan goals were met, beef samples from these countries would be scheduled for the antibiotics screening test only (unless the screening test indicated the presence of a specific antibiotic(s), whereupon a confirmatory test for the relevant antibiotic(s) would be scheduled). For example, when we visited FSIS' Western laboratory on June 4, 1986, it had completed scheduling samples for testing chemical residues in Australian beef. Because no additional Australian beef samples were needed to meet the residue plan goals, Australian beef samples received that day were instead scheduled for the antibiotics screening test only.

When we visited FSIS' Eastern laboratory on July 1, 1986, ivermectin tests were being scheduled for Australian beef samples. The laboratory scheduling official told us that after ivermectin testing goals were met, this laboratory would shift to scheduling Australian beef for the antibiotics screening test only.

According to FSIS officials, the residue plan is designed to provide for continuous testing of imported meat for toxic residues so that any residue problems will be identified and FSIS will be able to take appropriate corrective action. When the planned testing of a compound is completed early in the year, conditions that might result in excessive residues of such compounds later in the year would not be identified for FSIS' corrective action unless a compound covered by the least expensive test is involved.

The importance of continuous monitoring is underscored by the types of corrective actions FSIS takes when violations are found. Action ranges from increased sampling to prohibiting future shipments from a country when repeated residue violations occur. During 1985 and 1986 plants in Taiwan and Yugoslavia, respectively, were shipping meat to the United States containing excessive levels of sulfa drugs. The problems were identified in monitoring samples, and succeeding surveillance samples showed that the problems were not corrected.[1] FSIS took delistment action during 1986 against plants in both countries to protect U.S. consumers. If a similar problem had existed in meat during the latter part of 1986 in one of the four major exporting countries, it would not have

[1]Monitoring sampling is conducted to obtain information on the frequency and levels of residues. Surveillance sampling is designed to investigate and control the movement of potentially adulterated products. When monitoring uncovers a violative residue, the program shifts to surveillance of products from the source of the violation.

been identified unless it involved a compound covered by the least expensive test.

We estimate that the early completion of the residue plan goals for the four major countries resulted in a large volume of meat not being monitored for the full range of residues. For 1986 the amount with reduced monitoring was about 1.3 billion pounds, out of an estimated total of 2.0 billion pounds imported from those countries.

In February 1987 FSIS officials told us that they had acted to correct AIIS' prior deficiencies, which hampered residue testing in 1986. They said that as of January 1, 1987, the system became fully operational in carrying out its functions relative to the 1987 annual residue plan, including issuing instructions for drawing samples of imported meat and specifying compounds to be targeted for each sample drawn, and for reporting test results to AIIS. In addition, as of the same date, the Director of IP's Import Analysis Staff was assigned analytic responsibility for implementing the import section of the annual residue plan, including developing reports to permit analysis of (1) progress in implementing the annual residue plan, (2) quality of data in the AIIS data base, (3) demands on laboratory resources, and (4) exporting countries' status relative to residue testing. Reports on progress in implementing the annual residue plan could provide FSIS managers with a useful tool to assure that residue testing patterns reflect the flow of imported meat throughout the year.

Incomplete Removal of Residue-Laden Meat Imports

The import inspectors had not attempted to remove from commerce meat containing volative levels of chemical residues in 10 of the 28 cases we examined. In our opinion, this situation resulted from (1) conflicting FSIS policies regarding when meat with violative residues must be removed and (2) FSIS' failure to notify import inspectors when residue violations were detected.

We noted conflicting FSIS policies regarding removal of imported meat containing violative residues. One policy, discussed in 1985-86 budget documents, states that "efforts will be made to locate any part of the shipment [with violative residues] that is still available. Products recovered are not allowed to be used for human food." We believe that this broadly stated policy conflicts with the Import Inspection Division's operating policy, as explained to us by the Director, IID, and somewhat amplified by a May 5, 1986, memorandum.

Under IID's operating policy, meat from surveillance lots only is subject to removal, while violative lots associated with monitoring samples are not subject to removal. The policy in operation during 1986 as it applied to surveillance samples was partially clarified by the May memorandum, which states that "REPD[a division of FSIS' Science component] will evaluate residue test results and call IID to inform them of the test results and recommend disposition of the product [meat] being held." The recommendation, according to the Director, IID, should be based on an assessment of human health risk. However, the operating policy does not address how the human health risk will be determined.

On monitoring samples, the Director of IP's Import Analysis Staff told us in a September 1986 letter that it has always been IID's policy not to take action on monitoring sample lots unless Science deems the violation to represent "an imminent health hazard." The Director said that this is true even if the meat is still within an import establishment. The Director also told us that IID regards any meat that its inspectors have passed as "domestic" meat and, hence, the responsibility of FSIS' Meat and Poultry Inspection Operations (MPIO) component. (We did not find any indication that MPIO is informed of residue violations in imported meat.)

Not only are the broad policy and the operating policy inconsistent and the operating policy incomplete, but FSIS actions with respect to locating and removing meat containing excessive residues have not consistently reflected either policy.

For example, the 28 lots of import meat failing residue tests from January 1985 through April 1986 included 15 monitoring lots and 13 surveillance lots. For 10 of the violative monitoring lots, we found that the relevant Import Field Office (IFO) was not informed of the violation. Further, we did not find any attempt by FSIS to locate and remove any remaining meat from these 10 lots. Such a lack of action is inconsistent with the broadly stated policy, which requires the removal of all tainted meat possible.

Although import inspectors attempted to remove meat associated with the remaining 18 lots from commerce, we did not find any evidence that FSIS had determined that the violations detected in these lots constituted a human health hazard. The agency was successful in removing meat remaining in the import establishments associated with 17 of the 18 lots. However, these removal actions were inconsistent with FSIS' stated policies in three respects. First, the removal of tainted meat was limited to that remaining at the import inspection facilities and, hence, incomplete.

Second, removals of meat from the surveillance lots were not based on an articulated determination by the agency that the residue violations constituted human health hazards. Third, even though the Director, IID, told us that action is not taken on monitoring lots except when violations represent an imminent health hazard, we found that action was taken to inform the IFOs about and to remove from commerce 5 of the 15 monitoring lots in which violations, not health hazards, were identified.

The following examples illustrate that it is reasonable to believe that considerably more residue-laden meat would have been removed from the meat supply if action had been taken on all violative lots.

The monitoring samples from two lots (one each from Canada and New Zealand) were found to contain sulfa residues. Both lots were accepted by the inspectors at the ports of entry after sampling. Information in FSIS' files shows that the monitoring samples took up to 6 days to be analyzed. Neither field office's files contained any indication that the inspectors were ever notified of the violations. The files do not reflect any efforts to locate any portion of either lot. The lots remained in commerce and presumably were consumed.

In contrast, in a case involving a chlorinated hydrocarbon violation in beef from Australia, an inspector was notified of the violation, identified from a monitoring sample, 14 days after the sample was collected. The inspector found the remainder of the associated lot, put it on hold, and reexported it. The lot contained about 9,000 pounds of meat.

In February 1987 we discussed with FSIS officials our findings regarding incomplete removal of tainted meat and inconsistent policies relating to meat appropriate for removal. They provided us a directive (in draft) that lays out FSIS' policy relative to removal of tainted meat from the domestic meat supply. According to the new policy, the import inspector is to be notified of each residue violation detected in a lot that came to the import office over which he/she exercises responsibility. Upon notification, the import inspector is to designate any meat product from the violative lot remaining at the import inspection location as "refused entry." At the same time, MPIO's Emergency Programs Staff is to be notified of each residue violation. This staff has been instructed to base its decision about instituting a recall of available product on the same factors that determine the disposition of a tainted meat product of domestic origin. The Deputy Administrator for International Programs told us that the new policy has been operational since January 1987.

Untimely Follow-Up on Subsequent Shipments of Imported Meat

We believe FSIS could improve its monitoring of imported meat for residues and contamination by taking steps to ensure that violative results are promptly reported and entered into AIIS. We found that the time required to collect and analyze samples and report residue violations allowed numerous lots from the foreign plants involved to enter the United States before inspection/sampling activities for meat from those plants could be increased. Similarly, reports of contamination violations were delayed, permitting related lots to enter the United States uninspected.

Residues

When a chemical residue violation is entered into AIIS, each of the next 15 lots from that foreign plant is to be sampled and tested for the suspect residue. (In some cases, other plants in that exporting country also may be placed on increased sampling for the same residue.) Each lot is to be held at the port pending the outcome of testing of the sample(s) from that lot. The lots held are allowed to enter the United States once the testing gives no indication of violative residues.

We found that because of the time consumed in the sampling, testing, and reviewing process, a number of subsequent lots from plants whose monitoring samples were found to contain violative residues were allowed to enter the United States before increased sampling began.

For each of the 28 violations found from January 1985 through April 1986, we calculated the time that elapsed from the collection of the sample until its test results triggered an increased level of inspection. We did this to determine how many lots from the exporting plant entered U.S. commerce before sampling was increased. Table 4.3 shows that in 12 cases, 6 or more lots entered the meat supply before the residue violation was confirmed and sampling for the plant was increased, while in 13 cases, fewer than 6 lots came in between the same activities.

Table 4.3: Lots Entering Prior to Increased Sampling

Number of lots	Number of cases[a]
0	2
1 to 5	11
6 to 10	6
over 10	6

[a]The table shows only 25 cases because 3 involved test results that caused delistment, precluding further lots from entering the United States

The amounts of meat involved are significant. For example, a sample of pork product from a Taiwan plant was collected on October 16, 1985, and the analysis identifying a sulfa violation was completed on October 25, 1985. The violation was entered into AIIS on November 8, 1985, and increased sampling began. During the period from sampling to completion of testing, three lots from the plant, containing about 80,000 pounds of meat, entered the United States; one of the lots, containing about 20,000 pounds, was subjected to routine sampling and no residue was detected. During the period between completion of testing and entry of the violation into AIIS, four more lots from the plant, containing another 120,000 pounds, entered the United States. Only one of these lots was sampled.

Opportunities exist to improve timeliness and to ensure that lots associated with a residue violation are sampled. For example, increased sampling could be triggered by AIIS when screening tests, which identify the presence, but not the amount, of chemical residues indicate possible violations. As an alternative, increased sampling could be triggered when confirming test results are available from the laboratory rather than waiting until the Science staff complete their review, as is the case now. Foreign country notification would still be delayed until the results are reviewed by the Science staff in Washington.

We believe that either alternative would reduce the amount of time between a lot's being sampled and increased inspection of subsequent lots. We recognize, however, that the amount of sampling and testing could increase because more potential violations are initially identified than are ultimately confirmed.

Contamination

Contaminated meat—meat containing hair, dirt, feces, or other unsanitary material or foreign matter—requires immediate attention to protect the safety of the food supply. FSIS officials told us that FSIS' policy is to require an inspection of the next 10 lots from the plant involved whenever a contamination finding is made. However, as in the case of residue violations, delays in reporting contamination findings have permitted subsequent lots from the plants involved to enter the U.S. meat supply without full inspection.

We examined the records on 14 contamination findings from 8 plants. Five of the 14 findings were immediately entered into AIIS and the next 10 lots were inspected. In the other 9 cases, 40 lots, containing a total of 1,056,172 pounds of meat, were not subjected to increased inspection, as

called for by FSIS policy. The records show that in one case the problem involved a temporary lack of staff. However, we did not establish the cause for delay in each case. The longest delay involved a violation identified in Sacramento, California, on February 21, 1986. In that case, the results were not entered into AIIS until March 5, 1986, an 11-day delay. During the elapsed time, 15 lots, containing 255,500 pounds, entered the United States from the plant involved. Only two lots, comprising 22,680 pounds, were inspected.

Conclusions

FSIS has taken action to address our findings relating to AIIS' shortcomings. According to FSIS officials, AIIS' enhancements now permit the system to issue instructions for all compounds in the 1987 annual residue plan. In addition, reports are to be developed that will permit analysis of, among other things, the progress in implementing the import section of the annual residue plan. Such progress reports could be a useful tool in assuring that residue testing is spread throughout the year to reflect imported meat flows.

FSIS is taking action to address our findings relating to the conflicts in FSIS policies on removing tainted meat from the domestic food supply. As of February 1987 a draft directive had been developed which assigns responsibility for notifying (1) import inspectors, who are to remove any meat from violative lots remaining at the inspection location, and (2) the Emergency Programs Staff, which must determine whether a recall of the products that have left the inspection location is necessary.

The directive also sets forth procedures for disseminating information about residue violations. However, it is not clear whether implementation of these procedures will reduce delays in reporting violations so that timely actions can be taken, as required, to inspect subsequent lots from the same plants for similar conditions. Our analysis indicates that the time span between the initial drawing of an import meat sample for residue testing and alerting the system of a violation so that subsequent lots can be inspected could be shortened if FSIS would increase the sampling level when a screening or confirmation test indicates a violation, or when subsequent confirming test results indicate a violation, rather than waiting for officials in Washington to complete their review, as was the case in 1986.

Our limited review of contamination findings indicates that action is needed also to ensure prompt reporting of such findings so that appropriate steps can be taken to inspect subsequent lots.

Agency Comments

In a draft of this report, we proposed that the Secretary of Agriculture direct the Administrator of FSIS to monitor the changes made to enhance AIIS and to clarify inspection policies to determine whether the changes result in

- balanced residue testing patterns that correspond to the flow of imported meat from major exporting countries throughout the year,
- uniform implementation of FSIS' recently stated policy on removing tainted imported meat from the domestic meat supply, and
- more timely reporting of residue violations and contamination findings involving imported meat so that increased monitoring of lots from the same plants can be implemented as intended by FSIS policy.

In commenting on this report, USDA stated that the first three recommendations have largely been accomplished. Specifically, it said that changes to AIIS are being monitored so that residue testing is balanced throughout the year and residue violations are reported in a more timely manner. The Import Analysis staff is manually adjusting sampling intervals to assure balance throughout the year. Further, USDA indicated that the recently stated policy on removing tainted imported meat from the U.S. meat supply is being implemented uniformly. We believe that it is important for FSIS to continue to monitor the corrective actions to assure itself that the changes made are sufficient.

Imported Live Animals—Do They Present an Unacceptable Risk to U.S. Consumers?

Live animals may be imported for various purposes, including breedin dairy, feeding or grazing, and slaughter. Animals presented for entry a required to be accompanied by health certifications and are examined a the time of entry for evidence of disease. However, the U.S. governmen does not require port-of-entry inspection to detect prohibited chemical residues in live animals imported for food purposes because, for practical reasons, samples needed to test for such residues cannot generally b taken from an animal's liver, kidney, and/or muscle tissue while the animal is alive.

Eventually, regardless of the purpose for which imported, the animals that enter the United States are slaughtered and the meat becomes a part of the U.S. food supply. At the time of slaughter, the animals are subject to the same FSIS inspection and residue sampling procedures tha apply to domestic animals at slaughter. In a few cases, FSIS has performed special tests at time of slaughter on imported animals suspected of having specific residues. While these special tests have not disclosed evidence of chemical residue problems, concerns about chemical residues in imported animals still exist.

The extent to which chemical residues in imported live animals may pose a threat to the U.S. food supply is difficult to judge. Substantial numbers of cattle and swine are imported each year—their meat constituted the equivalent of 16 percent of the total beef and pork meat imported in 1985. FSIS' routine domestic testing has disclosed chemical residues in meat from animals slaughtered in U.S. plants. However, the residues were mainly at nonviolative levels and evidence was not available to relate test results to imported animals.

A December 1985 amendment to the Federal Meat Inspection Act gives the Secretary of Agriculture discretionary authority to prescribe the terms and conditions under which animals that have been administered an animal drug or antibiotic banned for use in the United States may be imported for slaughter and human consumption. FSIS is responsible for developing regulations pertaining to residues in imported live animals. As of February 1987, regulations had not been developed.

Import Trends

The United States imports live cattle and swine, primarily from Canada and Mexico, for food purposes. As table 5.1 shows, the number of imported live animals has fluctuated from year to year. For cattle, the greatest fluctuations have been in the number of cattle imported from Mexico. During the 5 years from 1981 through 1985, the total number of

cattle imported annually ranged from 646,000 to 989,000; for Mexico, the number ranged from 321,000 to 562,000. The number of swine imported annually increased dramatically over the 18 years from 1968 through 1985, rising from 22,000 for 1968 to over 1.2 million annually for 1984 and 1985. In fact, the number of imported swine, which came almost entirely from Canada, rose almost tenfold, from 145,695 in 1981 to 1,322,017 in 1984.

Table 5.1: Number of Live Cattle and Calves and Swine Imported Into the United States, Calendar Years 1968-85

Figures in Thousands

	Live cattle and calves[a] Number by country of origin				Live swine[b]
Calendar year	Canada	Mexico	Other	Total[c]	Number
1968	306	702	[d]	1,008	22
1969	188	810	[d]	998	13
1970	171	937	[d]	1,108	68
1971	180	752	2	934	78
1972	228	915	[d]	1,144	89
1973	330	669	2	1,001	88
1974	111	435	[d]	547	196
1975	183	196	1	381	30
1976	448	508	1	957	46
1977	528	581	[d]	1,110	42
1978	424	815	[d]	1,240	202
1979	334	380	[d]	714	137
1980	334	332	[d]	667	247
1981	324	321	[d]	646	146
1982	479	510	[d]	989	295
1983	337	562	[d]	898	447
1984	349	390	[d]	739	1,322
1985	338	476	[d]	816	1,227
1986	227	1,085	[d]	1,312	501

[a]Excludes bulls imported for breeding purposes and dairy cows

[b]Virtually all live swine were imported from Canada. Fewer than 1,000 swine in any year were imported from other countries.

[c]May not add because of rounding.

[d]Less than 1,000 head.

Source: Data on number of cattle and calves and swine imported were obtained from U.S. Department of Commerce, Bureau of the Census, and annual reports.

Although we did not study the causes for the fluctuations in the number of live animal imports, available information indicated that the fluctuation in the number of cattle imported from Mexico was due, at least in

part, to export limitations established from time to time by the Mexican government. In the case of swine imports, a July 1985 report by the United States International Trade Commission on its investigation of live swine and pork imports from Canada said that the following conditions contributed to the sharp increase of live swine imports starting in 1984:

- Declining meat packer wage rates in the United States placed the Canadian meat packing industry at a competitive disadvantage compared with the U.S. industry.
- Labor unrest and strikes in the Canadian meat packing industry beginning in June 1983 and lasting through the fall of 1984 limited Canadian slaughtering capacity.

From 1968 through 1985, at least 1.3 billion pounds of meat, excluding relatively minor quantities of mutton and lamb, horsemeat, and miscellaneous meats, were imported annually by the United States. From 1981 to 1985, quantities increased by nearly one third, from about 1.8 billion pounds in 1981 to about 2.4 billion pounds in 1985. Because most imported animals are imported for food purposes and are eventually slaughtered in domestic slaughter plants, we considered the meat of these live animals as part of the total imports of beef and pork. Our estimates of the pounds of meat, on a dressed weight basis,[1] of these imported animals are shown in table 5.2. From 1968 through 1985, the pounds of meat from imported live animals ranged from about 8 percent to 18 percent of the total amount of imported beef and pork meat, including the estimated dressed weight of the live animals.

[1]Weight after removal of blood, viscera, heart, liver, etc.

Table 5.2: Estimated Pounds of Imported Beef and Pork Meat and Meat Products, Including Estimated Dressed Weight of Imported Live Animals, Calendar Years 1968-85

Figures in Thousand Pounds

Calendar year	Estimated dressed weight of imported live animals			Pounds of imported beef and pork meat and meat products	Total imports of beef and pork meat and meat products[a]	Dressed weight of imported live animals as a percent of total imports
	Cattle/calves	Swine	Total			
1968	205,242	3,985	209,227	1,381,961	1,591,188	13
1969	190,301	3,248	193,549	1,454,751	1,648,300	12
1970	206,925	12,033	218,958	1,646,535	1,865,493	12
1971	b	b	b	1,550,770	b	b
1972	214,068	19,537	233,605	1,630,655	1,864,260	13
1973	215,979	19,139	235,118	1,973,765	2,208,883	11
1974	124,321	33,229	157,550	1,520,516	1,678,066	9
1975	141,018	7,022	148,040	1,677,627	1,825,667	8
1976	296,792	11,046	307,838	1,785,841	2,093,679	15
1977	327,530	9,958	337,488	1,676,584	2,014,072	17
1978	334,486	28,971	363,457	2,059,082	2,422,539	15
1979	193,297	24,218	217,515	2,148,964	2,366,479	9
1980	186,315	42,093	228,408	2,051,414	2,279,882	10
1981	165,623	27,171	192,794	1,751,641	1,944,435	10
1982	274,892	47,587	322,479	1,880,401	2,202,880	15
1983	275,681	70,002	345,683	1,952,034	2,297,717	15
1984	264,529	190,008	454,537	2,121,589	2,576,126	18
1985	287,441	168,239	455,680	2,371,445	2,827,125	16

[a]Includes estimated dressed weight of imported live animals

[b]Data not available

Source: Data on number of cattle/calves and swine and live weights were obtained from annual reports published by the U.S. Department of Commerce, Bureau of the Census. Data on imports of beef and beef products and pork and pork products are from USDA's annual reports to the Congress on meat inspection activities. Number of cattle/calves and swine slaughtered are from USDA-published agricultural statistics. Estimated dressed weights are GAO computations based on USDA-developed conversion factors that are expressed as a percentage of live weight.

USDA's Animal and Plant Health Inspection Service, which is responsible for examining imported animals for evidence of disease, requires importers to designate whether animals are being imported for breeding or dairy, feeding or grazing, immediate slaughter, or other purposes. As table 5.3 shows, imports of cattle for immediate slaughter, all of which came from Canada, declined from 305,721 in 1984 to 191,317 in 1985, while cattle imported for feeding or grazing, most of which came from Mexico, increased from 360,435 to 562,778 during the same period.

Table 5.3: Live Cattle and Swine: U.S. Imports From Canada and Mexico, Calendar Years 1984 and 1985 and January-March 1985 and 1986

Type of animal, country, and purpose for which imported	Number of head			
			January-March	
	1984	1985	1985	19
Cattle:				
Canada:				
Purebred[a]	6,410	4,304	1,081	5C
Breeding or dairy	20,283	19,914	4,487	3,75
Feeding or grazing	23,144	124,393	68,137	3,5
Slaughter	305,721	191,317	54,693	69,21
Other[b]	11,599	18,743	5,202	1,79
Total	**367,157**	**358,671**	**133,600**	**78,80**
Mexico:				
Purebred[a]	0	0	0	
Breeding or dairy	15	154	0	
Feeding or grazing	337,291	438,385	8,627	173,27
Slaughter	0	0	0	
Other[b]	1,371	919	289	95
Total	**338,677**	**439,458**	**8,916**	**174,22**
Canada and Mexico				
Purebred[a]	6,410	4,304	1,081	50
Breeding or dairy	20,298	20,068	4,487	3,75
Feeding or grazing	360,435	562,778	76,764	176,81
Slaughter	305,721	191,317	54,693	69,21
Other	12,970	19,662	5,491	2,74
Total cattle	**705,834**	**798,129**	**142,516**	**253,02**
Swine[d]:				
Canada				
Purebred[a]	3	8	0	
Breeding	2,481	3,418	487	35
Feeding	11,050	79,083	3,539	16,08
Slaughter	1,335,167	1,088,011	477,349	84,99
Other	7,321	257	0	28
Total swine	**1,356,022**	**1,170,777**	**481,375**	**101,728**
Cattle and swine:				
Canada (cattle and swine)	1,723,179	1,529,448	614,975	180,53
Mexico (cattle)	338,677	439,458	8,458	174,221
Total	**2,061,856**	**1,968,906**	**623,891**	**354,756**

Note Some differences exist between figures in this table and those in table 5 1 We did not attempt to verify the accuracy of the figures in either table.

[a]Purebred, as used with regard to cattle and swine, is a term applicable to animals that are the progeny of known and registered ancestors of the same recognized breed and for which three generations of ancestry can be traced

[b]Other includes export shipments in transit to other countries such as Mexico as well as exhibition animals

[c]Other is primarily rodeo stock.

[d]No swine were imported from Mexico during these periods.
Source Quarterly reports obtained from APHIS

Almost 100 percent of the cattle imported from Mexico during 1984 and 1985 were for feeding or grazing. Over 90 percent of the swine (all from Canada) was imported for immediate slaughter. Swine represented over 77 percent of the approximately 3.25 million head of cattle and swine imported from Canada during 1984 and 1985. For the first quarter of 1986, swine accounted for 56 percent of the total. Mexico's exports of live animals, primarily feeder cattle, to the United States (for eventual slaughter and use in the domestic food supply) amounted to about 16 percent and 22 percent of the total imports of live cattle and swine from both countries in 1984 and 1985. For the first 3 months of 1986, Mexican cattle comprised 49 percent.

Federal Government Responsibility for Detecting Chemical Residues in Live Animals

Until passage of Section 1702(b) of the Food Security Act of 1985, the Federal Meat Inspection Act, while providing for the inspection of imported meat and meat products, was silent with respect to imported live animals. (As noted earlier, imported live animals have been treated the same as domestic animals once they entered domestic slaughter establishments.) Section 1702(b) amended the Federal Meat Inspection Act to add the following provision:

"The Secretary may prescribe terms and conditions under which cattle, sheep, swine, goats, horses, mules, and other equines that have been administered an animal drug or antibiotic banned for use in the United States may be imported for slaughter and human consumption. No person shall enter cattle, sheep, swine, goats, horses, mules, and other equines into the United States in violation of any order issued under this subsection by the Secretary."

FSIS' International Programs component has been delegated responsibility for administering Section 1702(b). However, as of February 24, 1987, regulations had not been developed to implement the section. IP officials told us that other changes made by the 1985 act had a higher priority. These changes, which are time-critical, have to do with amendments to the Poultry Products Inspection Act and new annual certification requirements that foreign countries are in compliance with U.S. standards for residues in meat products.

The IP officials also said, with respect to animals imported from Canada that they were not concerned about residues because of the similarity of livestock production and marketing practices in the United States and Canada and their knowledge about drugs and other chemicals being used in Canada. They added that FSIS has determined that Canada's meat inspection and residue control program is at least equal to that of the United States and, as a result, Canada is permitted to export over half a billion pounds of beef and pork products to the United States annually.

The IP officials said that they knew little about drug and chemical use in Mexico but that they were not overly concerned about the live animals being imported from Mexico because, according to the officials, the animals were mostly feeder cattle coming off grassland in Mexico and going to pastures in the United States. They said that sufficient time would elapse prior to slaughter to allow any prohibited residues the animals might have had when they arrived from Mexico to dissipate.

Ranchers and cattle importers, who import feeder cattle from Mexico, told us that the cattle are raised on open grasslands and are not likely to be subjected to chemical pesticides that do not dissipate over time. They said that Mexican ranchers/farmers generally could not afford to use pesticides and herbicides on grasslands. They also said that the Mexican ranchers/farmers did not give the animals drugs either. An official of FSIS' Residue Evaluation and Planning Division told us that pesticides are used in Mexico for treating cattle for parasite control as well as to meet U.S. health requirements (e.g., eliminating fever ticks) for entry into the United States. However, he also said that because feeder cattle from Mexico typically weigh only several hundred pounds on entry into the United States (less than half their eventual slaughter weight) and because pesticide residues accumulate in fatty tissues, any pesticides present at time of entry will be dispersed throughout the animals' bodies as they grow, thus reducing the concentration in a given amount of edible tissue.

However, we believe that until more is known about livestock production and marketing practices and the use of drugs and other chemicals in Mexico, the relative risk to U.S. consumers from live animals imported from Mexico cannot be adequately judged. While the risk with respect to live animals from Mexico is not known, the United States has prohibited meat and meat products from Mexico since 1984 because of an FSIS determination that Mexico did not have an adequate residue testing program for meat and meat products. From the mid-1950s until the mid-

1970s, Mexico had exported substantial quantities of meat, mostly fresh beef, for manufacturing purposes—the type of meat that would be provided by the imported animals when they are slaughtered. However, Mexico's beef shipments decreased after the mid-1970s as USDA gradually removed Mexican meat processing plants from the list of processing plants eligible to export to the United States. This action was taken after pesticide residues were found during USDA's random sampling of meat products coming from Mexico. Since early 1984 Mexico has not been allowed to export meat and meat products to the United States.

Procedures for Inspecting Imported Animals

Three federal agencies—the U.S. Customs Service, APHIS, and eventually FSIS—are or will be involved in the process of regulating imported live animals.

Importers of any merchandise into this country must file a customs entry form with the District Director of Customs. However, with respect to live animals, Customs Service regulations (19 C.F.R. 12.24) provide that:

"The importation into the United States of domestic animals, animal products, and animal feeding materials is subject to inspection and quarantine regulations of the Department of Agriculture . . . . Inspection by an inspector of the Animal and Plant Health Inspection Service, Veterinary Services is required for all horses, cattle, sheep, other ruminants, and swine as a prerequisite to their entry from any foreign country . . ."

Live animals arriving at the port of entry must be accompanied by a health certificate signed by an inspection official of the exporting country, and they must go through customs. The Customs Service then advises the APHIS port veterinarian of the animals' arrival.

APHIS' primary mission is to protect U.S. animal and plant resources from diseases and pests in order to preserve the marketability of U.S. agricultural products within this country and abroad. Its mission is carried out through:

- Animal and plant disease and pest control. APHIS conducts inspection and quarantine activities at U.S. ports of entry to prevent the introduction of exotic animal and plant diseases and pests; survey, diagnostic, and inspection activities in the United States to locate and prevent the spread of agricultural pests and diseases; and control and eradication programs to combat new and endemic infestations and infections. The

agency also participates in inspection, survey, and control activities in foreign countries to reinforce its domestic activities.

- Other regulatory activities. With respect to animals, these include the development of standards for and licensing and testing of veterinary biologicals (viruses, serums, toxins, and analogous products for use in preventing, detecting, or treating diseases) to ensure their safety and effectiveness; inspection of certain establishments that handle animals intended for research, exhibition, and pet purposes to ensure their humane treatment; and regulation of the import and export of endangered species.

APHIS does not identify the presence of prohibited chemicals in live imported animals. From a practical standpoint, APHIS could not easily determine whether imported live animals have prohibited residues because it is generally impossible to detect the presence of most residues in a live animal. Residues of drugs, pesticides, and herbicides accumulate mostly in fat, muscle tissue, and organs. Samples of these tissues or organs have to be removed from animals suspected of having residues and then be tested to determine the presence and level of residues.

APHIS procedures for inspecting imported animals prior to permitting entry into the Unites States vary according to whether the animals are for immediate slaughter or for feeding or grazing, with slaughter to occur later—sometime several months after arrival in the United States.

Animals Imported for Immediate Slaughter

Although animals allowed into the country are, for all practical purposes, considered domestic animals, APHIS does exert minimal control over animals imported for immediate slaughter until the time of slaughter. The number of animals designated for immediate slaughter are listed on a document entitled "Animals Imported for Immediate Slaughter." The form also lists species, truck license numbers, consignor and address, as well as the name and address of the consignee. Another form entitled "Report of Animals, Poultry or Eggs Offered for Importation" contains the same type of information. This document provides a space for the port veterinarian's signature to show that he/she has inspected the animals and found them to be free of evidence of communicable disease and meeting all entry requirements. According to the APHIS port veterinarian at Pembina, North Dakota, animals for immediate slaughter are not unloaded from the truck if the papers are in order and the animals appear to be free of disease as he observes them in the truck. If he is satisfied that they are disease-free, he seals the truck, allowing the animals to be taken to their destination. (The forms cited above must

accompany the animals to their destination. A copy of "Report of Animals, Poultry or Eggs Offered for Importation" is given to the Customs Service, permitting Customs to release the animals.)

Shipments of animals for immediate slaughter cannot be diverted from their destination without the port veterinarian's approval. When the animals arrive at their destination, the seal on the truck is broken and the animals are counted. They must be kept separate from domestic animals until the time of slaughter, to ensure that they do not come in contact with domestic animals that might be withdrawn from the slaughter plant and returned to possibly infect a domestic herd. Either the FSIS veterinarian at the slaughter plant or a plant employee authorized by APHIS must break the seal affixed by the port veterinarian. APHIS also requires that animals imported for slaughter be killed as soon as possible but in any case no later than 2 weeks after entry. The FSIS veterinarian in charge at the slaughter plant must certify that the imported animals have been slaughtered by indicating such in the space provided on the "Animals Imported for Immediate Slaughter" form. The signed form must be returned to the port veterinarian.

Animals Brought in for Feeding or Grazing

Animals presented for import for feeding or grazing are also accompanied by health certifications. However, unlike animals for immediate slaughter, these animals are more closely examined at the port-of-entry to make certain they exhibit no symptoms of disease. Once the APHIS port veterinarian is satisfied that the animals are disease-free, they are allowed to be transported to the designated destination. For all practical purposes, they become domestic animals.

Import documents showing the initial destination and ownership designation of animals imported for feeding or grazing are not required to accompany the animals and therefore are of limited use for determining the animals' ultimate destination. To illustrate, animals imported from Mexico are often brought in by cattle importers who sell them to ranchers/cattlemen in various states. Further, because many imported cattle weight 400 pounds or less, they are put on pastures in the United States for several months and then sent to feedlots, which may or may not be owned by the pasture owners. We talked with three individuals responsible for importing about 240,000 head of cattle from Mexico from the fall of 1985 through July 1986. They told us that they imported most of the animals for other buyers. The cattle were trucked to such states as Arizona, California, Missouri, Texas, and Kansas, where they were put on pastures for several months and then sent to

feedlots for 90 to 140 days. Because import documents do not accompany animals imported for feeding or grazing purposes throughout thei lives, the animals lose their identities as imported animals after they ar allowed entry into the United States.

Slaughter of Animals

Existing USDA regulations do not deal specifically with residues that ma; be in live animals at the time they are imported. In general, imported animals are subjected to the same residue sampling and tests applied to domestic animals at slaughter plants. These tests were developed without consideration of drugs/chemicals used in foreign countries. (However, from time to time, FSIS has performed some special tests on imported animals at time of slaughter.) The chief, Evaluation Branch, REPD, told us that the annual domestic residue plan does not specifically recognize that some domestic plants may be slaughtering imported animals and that different residue tests may be warranted for such plants. We visited five plants that according to APHIS records, were slaughtering imported animals. FSIS veterinarians at four plants told us that at their plants, imported animals were included along with domestic animals when selecting samples for residue testing purposes. At the remaining plant, the veterinarian said that he excluded imported animals from selection for residue testing because he believed there would be a problem in identifying the original owner if there was a residue violation. This veterinarian subsequently told us that immediately after our visit, he discussed this issue with his supervisor and was told that imported animals should be included when making selections for residue sampling and that they were now being included.

Under the monitoring phase of the annual residue plan, FSIS inspectors at slaughter plants collect meat samples on the basis of computer-generated instructions sent through the mail to the slaughter plants. These instructions direct the submission of a sample from a specific species to be taken on a specific date, and they indicate the type of tissue (i.e., muscle, organ, etc.) and the laboratory to which the sample is to be sent for processing. The results are usually reported within 7 or 8 days after the samples have arrived at the laboratory. However, by that time most of the product from which any samples having prohibited residues were drawn will likely have passed into consumer channels.

In-plant testing procedures done under the surveillance phase of the residue testing plan may be performed by the inspector, or a sample of suspected tissue may be submitted to an FSIS laboratory for analysis. Samples are taken if observations during antemortem or postmortem

inspection indicate that adulterating levels of residues may be present. Two tests developed by FSIS are routinely used for in-plant testing. The STOP (Swab Test on Premises) test is used if the FSIS inspector suspects that an animal may have an antibiotic residue. The STOP test's results are known within 24 hours, during which the carcass is held. If the test is positive, the sample has to be submitted to a laboratory for confirmation of the results. If the results are confirmed, all or portions of the carcass are condemned. At plants slaughtering calves, inspectors use the CAST (Calf Antibiotic and Sulfa Test) test to determine antibiotic and sulfa residues in bob veal calves (calves up to 3 weeks of age or weighing less than 150 pounds). However, unlike the STOP test, where the results have to be confirmed by a laboratory, the CAST test's results are the basis for immediate condemnation.

During fiscal year 1985, 103,734 analyses were done using STOP(13,816) and CAST (89,918) tests. About 9 percent of the STOP and about 2 percent of the CAST tests were positive, resulting in condemnation of the carcasses. For the first 9 months of fiscal year 1986, 14,879 STOP tests were done, of which about 9 percent were positive; and 89,287 CAST tests were done, of which about 1.4 percent were positive.

Domestic Testing Program Found Residues but Generally Did Not Establish If Imported Animals Were Involved

FSIS' domestic testing activities in 1984, 1985, and 1986 disclosed chemical residues in some meat from animals slaughtered in U.S. plants. However, evidence was generally not available to relate test results to imported animals.

The 1984 and 1985 residue testing results showed that some samples contained residues of sulfonamides, antibiotics, and other chemicals—mostly chlorinated hydrocarbons (pesticides), such as dieldrin, BHC (benzene hexachloride), DDT(dichlorodiphenyltrichloroethane), and heptachlor. However, because residue levels found did not exceed the legal tolerances in most cases, the number of violations was considerably less than the number of incidences in which residues were found. Excessive residues of sulfonamides and antibiotics constituted almost all the violations.

The Acting Director, REPD, confirmed that while most of the domestic violations involved antibiotics and sulfa residues, some of the violations were attributable to pesticides. FSIS officials said that pesticide violations receive immediate attention. That is, the Contamination Response

System is notified and in those cases involving pesticides and environmental contaminants, a team is assembled as soon as possible to determine the causes for such violations. FSIS' Emergency Programs Staff directs and coordinates the FSIS Contamination Response System teams.

Although residue violations involving pesticides and environmental contaminants are promptly reported to the Contamination Response System for investigation, not all cases can be fully investigated. For example, the Contamination Response System initiated investigations for 25 cases during 1985; however, in 7 cases involving residues in cattle, calves, and swine, the animals' owners could not be identified and, consequently, there was no way of knowing whether any of those animals had been imported or at what point in their lives they had been exposed to the pesticide or environmental contaminant. Similarly, animal ownership could not be established for 7 of the 24 cases the Contamination Response System teams investigated in 1986. According to an Emergency Programs Staff officer, the remaining case investigations disclosed that the animals had not been imported.

During our visit to the FSIS North Central Regional Office in Des Moines, Iowa, we explored further the issue of chemical residues and their relationship to imported animals. Our analysis of test results of random samples taken at slaughter plants in the region for the 16-month period ending April 30, 1986, showed that FSIS found 75 violations out of 11,031 samples collected. Records did not show the number of incidences where residues were found but did not exceed the established tolerance. The Regional Office initiated investigations for 58 of the violations, which were mostly residues of sulfa drugs and antibiotics in swine and calves. Investigative cases were not initiated for 17, or about 23 percent, of the 75 violations because the last owner of the animal could not be identified, making it impossible to establish the causes for the violations and initiate corrective action. One case that was not investigated by the Regional Office, involving residues of chlorinated hydrocarbons in a sow, had been reported to the Contamination Response System. Although 58 of the 75 violations were investigated, the scope of the investigations did not include discussions with the last owner to ascertain whether the animal had been imported or what caused the residue violation.

We also noted that the North Central Region opened 508 investigative cases involving selective samples (such as CAST tests) taken at slaughter plants during the same period—16 months ending April 30, 1986. About 83 percent of those cases involved antibiotics and sulfa residues in

swine. Here again, the investigative effort did not include discussions with the last owner to ascertain whether the animal had been imported or what caused the residue violation.

Concerns About Chemical Residues in Imported Animals Exist

In response to complaints or in recognition of special residue problems, FSIS has supplemented the annual residue plan by establishing special testing programs or by increasing sampling levels. While these programs have not disclosed evidence of major chemical residue problems, some concerns still exist.

In September 1984 FSIS implemented a special program to test for chloramphenicol residues in swine imported from Canada. According to FSIS, the program was initiated after domestic swine producers raised the possibility that swine and pork from Canada could be contaminated with chloramphenicol residues because Canada permitted chloramphenicol's use in swine. (Chloramphenicol, an antibiotic, has been banned for use in food-producing animals in the United States.) FSIS, working with APHIS, identified plants slaughtering swine from Canada and tested tissue samples from about 800 swine mostly during the last quarter of 1984. FSIS also conducted about 250 tests on randomly selected shipments of Canadian pork products during the same period for chloramphenicol residues.

No chloramphenicol residues were found, and the special testing program was ended in March 1985. FSIS officials told us that the drug dissipates rapidly and therefore is difficult to detect. Moreover, the FSIS officials could not say whether the metabolites resulting from a transformation of the drug were or were not harmful. According to USDA scientists, no generally acceptable valid tests are available to detect the metabolites of chloramphenicol.

Testing for chloramphenicol has been included in the residue testing program since 1981. The Acting Director, REPD, told us in August 1986 that FSIS was again considering a special testing program for chloramphenicol on the basis of information that the drug was being used illegally in both the United States and Canada. (According to the Secretary of Agriculture's 1985 report to the Congress on FSIS activities, Canada banned the use of chloramphenicol in June 1985.) This special testing was to have been done in selected slaughter plants using a new urine testing procedure that provides immediate results. However, the plans

for this special testing were subsequently dropped because of difficulties with in-plant testing. FSIS veterinarians and other FSIS and APHIS officials told us that despite the ban on its use on food-producing animals in the United States, chloramphenicol was still being used because it is highly effective.

In 1984 FSIS initiated a major program to reduce the high incidences of antibiotic and sulfa residues in bob veal calves, including those being imported from Canada. The program led to the development of the CAST test, which enables inspectors to perform rapid in-plant testing. Development and implementation of CAST testing was followed by a marked decline in the incidence of antibiotic and sulfa residues in bob veal calves. No evidence was available to indicate the effect the program had on residue levels in imported animals.

FSIS is contemplating implementing a stringent program to control sulfa residues in swine because of the high incidence of sulfa residues at time of slaughter in domestic plants. As of mid-1986 sulfa violations in swine were running at about 6 percent at time of slaughter.

Conclusions

FSIS has yet to develop regulations for implementing the December 1985 amendment to the Federal Meat Inspection Act that authorized the Secretary to prescribe terms and conditions for importing live animals that may have been given antibiotics and other drugs banned in the United States. Except for being subject to some limited special testing programs, imported animals have been subjected to the same kinds of tests that apply to domestic animals at the time of slaughter under the domestic residue testing program. The estimated dressed weight of imported live animals constitutes a significant percentage of the total pounds of beef and pork being imported into the United States, and concerns exist that these animals may contain harmful levels of residues.

Live animals are imported primarily from Canada and Mexico. FSIS does not have enough information about the risks of chemical residues in these live animals. This is particularly important with respect to Mexico, which has been ineligible to export meat to the United States since 1984 because prohibited pesticides were detected in Mexican meat. Imported live animals are eventually subject to testing for residues when slaughtered in domestic plants. However, there is no assurance that such testing would reflect chemical use in Mexico because such information is collected only for countries currently eligible to export meat to the United States. FSIS needs to undertake a risk assessment to determine

whether live animals entering the United States present an unacceptable risk to consumers.

Recommendations to the Secretary of Agriculture

We recommend that the Secretary of Agriculture direct the Administrator, FSIS, to determine whether live animals entering the United States present unacceptable risk to consumers. Such a risk assessment should consider

- the source of imported live animals (country of origin and location within country);
- livestock production and marketing practices in pertinent foreign countries, including controls over and use of animal drugs and other chemicals;
- residue testing results from domestic plants where the imported animals are likely to have been slaughtered and whether those results are different from those at plants that do not slaughter imported animals; and
- if appropriate, special test programs to determine whether imported animals have unacceptable chemical residues.

We recommend that if such risk assessment indicates an unacceptable risk for any country, FSIS take steps to ban live animal imports from that country until the foreign government can provide assurance that animals for export to the United States are free of prohibited residues.

Agency Comments

In commenting on a draft of this report, USDA wrote that the recommendation that a risk assessment be conducted to determine whether live animals should be accepted into the United States, given their likely residue status, is impractical. USDA indicated that because Canadian animals come from an environment where the production methods, agricultural chemical use, and inspection controls are so similar to those of the United States, the animals can appropriately be subject to the same residue testing program as U.S. animals. Further, USDA wrote that risk assessment would be expensive, time-consuming, and unnecessary and likely be perceived as a trade barrier.

With respect to animals from Mexico, USDA stated that risk assessment would not be appropriate under the provisions of the Food Security Act of 1985 because the Act only includes antibiotics and animal drugs banned in the United States and does not address pesticides or environmental contaminants. USDA said that it is willing to consider the feasibility of requiring that countries which are not eligible to export meat to

the United States, but do export live animals, first supply data about pesticide and other environmental compound exposure in the country. USDA also commented that appropriate action could be designed depending on what the data demonstrate. We believe that these actions are consistent with the intent of our recommendations.

In order to permanently identify animals from Mexico, APHIS officials noted that it has amended the Code of Federal Regulations to require "M" branding on all steers imported into this country from Mexico in an effort to improve surveillance for bovine tuberculosis in cattle. APHIS officials also suggested that FSIS consider utilizing the "M" brand as a means of identifying steers from Mexico in order to sample them for prohibited chemical residues.

Issues Involving Country-Of-Origin Labeling for Imported Meat

Section 304 of the Tariff Act of 1930, as amended (19 U.S.C. 1304), administered by the Treasury Department's Customs Service, requires that every imported article (or its container) be marked in a conspicuous place to indicate to an ultimate purchaser in the United States the English name of the article's country of origin unless one of a list of exceptions to the statute applies. The "ultimate purchaser," as defined by the Customs Service, is generally the last person in the United States who will receive the import in the same form in which it was imported.

The Food Security Act of 1985 directed us to study the feasibility of requiring all imported meat and meat food products to be labeled by country of origin. Although neither the Act nor its legislative history indicated how far through the food chain such a requirement would extend, we assumed for purposes of our study that the requirement would apply throughout the food chain until the food items, in either their original or changed form, reach the ultimate consumer. The Act also directed us to evaluate the feasibility of requiring eating establishments that serve imported meat or meat food products to inform individuals purchasing food from such establishments that the meat or meat food products served there may be imported.

Over the past 20 years or so, interested parties in this country have expressed their views on extending country-of-origin labeling of meat and meat food products until they reach the ultimate consumer. Generally, livestock producers and their trade associations have favored the concept, while meat importers, processors, food service operators, other users of meat, and their trade associations have opposed it. Proponents of the idea have cited the consumers' "right to know" the country of origin of the meat that they are purchasing, while opponents have indicated that such a requirement is unnecessary and likely to be costly.

Why Meats Are Imported

Imported meats are purchased and/or used by, among others, brokers, packers, processors, wholesalers, restaurants, food manufacturers, and large chain supermarkets.

Food industry representatives told us that they purchased imported meat because of its (1) availability in needed quantities, (2) low bacterial count, (3) consistent texture, which meets quality specifications, and (4) low cost. For example, a food manufacturer official who purchases imported meat used for processing by several domestic food

manufacturers said that he purchases directly from the foreign countries' slaughter plants because of packaging consistency, the absence of contaminants, and the low price.

Some food manufacturers' representatives told us that their companies used imported meats because domestic meat that meets their specifications for making certain products was not available on a consistent basis. They said that the quality of imported meats meets their established standards and formulas for use in manufacturing their products.

Forms and Types of Meats Imported by the United States

During calendar year 1986 about 1.06 billion pounds of manufacturing beef; 554 million pounds of pork for manufacturing, carcasses, and cuts; 279 million pounds of canned hams, and 39 million pounds of fresh and frozen lamb were imported into the United States. Other imported meats included canned corned beef, prepared sausages, and pickled and preserved products. More than 800,000 head of cattle, the majority from Mexico and Canada, and 1 million swine, virtually all from Canada, were imported during 1985.

Most of the meat was manufacturing grade meat, which is further processed by grinding, chopping, dicing, cooking, or canning, thereby altering the taste, consistency, or appearance of the meat. Imported fresh, chilled, or frozen beef or pork is usually either mixed with domestic meat to produce such items as sausage or hamburger patties or may become an ingredient in canned or frozen food products. The ratio of the imported to domestic meats in any domestically processed product depends on such factors as availability and cost at the time of purchase, as well as attaining the mix necessary to meet product specifications.

Beef

In the late 1950s and early 1960s, the United States produced much manufacturing grade beef, and imports were insignificant. Australia and New Zealand emerged as the primary sources of U.S. meat imports by the late 1950s and have continued to dominate, as domestic manufacturing grade meat has declined. Meat shipped from these countries is mostly in the form of manufacturing grade boneless beef or veal that may be fresh, chilled, or frozen.

In the past 20 to 25 years, domestic grain-fed beef cattle have produced high-value table beef cuts, such as roasts and steaks. The Food Marketing Institute, a trade association of food retailers and wholesalers, has been working with domestic producers to develop a product that would

meet the standards for manufacturing meat products. According to some food industry representatives, manufacturers prefer imported beef at an 85 to 90 percent lean/fat ratio compared with domestic processing beef at 65 to 70 percent. Most of the imported beef is for further processing, more than half of which goes into hamburger patties and ground beef; the remainder is used in sausages, chili, stews, soups, and frozen dinners. Australia and New Zealand provided about 581 million and 371 million pounds, respectively, in 1985. About 7 percent of the beef consumed in the United States is imported, although nearly 40 percent of the domestic ground beef supply contains imported beef.

Pork

According to a representative of the National Pork Producers Council, which represents about 90 percent of the domestic commercial hog producers, about 7-1/2 percent of the pork consumed in the United States is imported. According to the Council representative, fresh and frozen imported pork is purchased by packers, processors, wholesalers, and retailers. Most of the imported fresh, chilled, or frozen pork is in the form of fresh hams, shoulders, bacon, and ribs. Canned hams, mostly for retail sale, are also imported. In a May 1981 cost analysis on imported meat labeling, FSIS estimated that most of the imported fresh and chilled pork came from Canada (about 334 million pounds in 1985) and assumed that most of this product moved directly to wholesalers, retail outlets, or food service establishments. Most imported canned hams came from Denmark, about 12 million pounds, or 51 percent, in 1985.

Lamb

A representative of the American Sheep Producers Council (ASPC), the promotional arm of the domestic lamb and wool industry, told us that between 5 and 14 percent of the total lamb supply, at any given time, is imported. The ASPC representative also said that imported lamb is mostly frozen retail cuts and chilled whole lamb carcasses from Australia and whole frozen legs of lamb from New Zealand. During calendar year 1985 New Zealand exported about 26 million pounds and Australia exported about 7 million pounds of lamb to the United States.

The Issue of Extending Country-Of-Origin Labeling Requirements Is Not New

An extended country-of-origin labeling requirement for imported meat and meat food products has been pursued, at various times, by different organizations and interest groups for over 20 years. Since 1963 various bills that would have required country-of-origin labeling of imported meat and meat food products have been introduced in the Congress. However, none of these bills have become law.

During a June 24, 1980, hearing before the House Agriculture Committee's Subcommittee on Livestock and Grains on imported meat inspection and labeling, the National Cattlemen's Association (NCA), whose membership includes all segments of the nation's beef cattle industry, including cattle breeders, producers, and feeders, stated that it had established a policy that all meat items containing imported meat should be so identified. (As discussed later in this section, at the time of our audit, NCA no longer had a policy on requiring imported meat to be labeled.) In its prepared statement, NCA supported legislation under consideration at that time that would have required extended country-of-origin labeling of meat and meat food products. NCA representatives said that the consumers have a right to know what they are buying and to compare and evaluate in order to make an informed and intelligent choice in food purchasing. Some of the other witnesses at the hearing also favored the labeling requirement on the basis of the consumers' right to know.

At the same hearing, the Meat Importers Council of America, Inc. (MICA), a national trade association for beef importers, stated that MICA was opposed to the proposed labeling legislation. It stated that the labeling bill, as well as a bill that would have imposed more stringent testing and inspection requirements for imported meat and meat food products, would seriously burden and restrict the importation and distribution of imported beef by fueling inflation, burdening trade, and working against the economic interests of all U.S. consumers. MICA stated that imported beef was needed for production of hamburger, sausage, and other manufactured food items. Further, MICA stated that these bills would serve no legitimate consumer purpose and were not prompted by the consumers' "right to know." MICA said that passing the legislation would act as a serious and disruptive nontariff trade barrier, which would create a serious commercial disadvantage for imported beef by raising the costs to those who would otherwise handle or use it.

During the 1980 hearing, USDA's Assistant Secretary for Food and Consumer Services said that the administration recognized the importance of the consumers' right to know and favored strengthening public health

and consumer protection legislation. She stated, however, that the administration was opposed to the labeling legislation. She said that adoption of mandatory country-of-origin meat labeling legislation could result in higher prices on imported meat and meat food products and higher taxes imposed on U.S. citizens to cover the cost of administering the requirements. The National Restaurant Association testified that it opposed a country-of-origin labeling requirement because of the additional cost to implement and enforce such a requirement.

During our review we obtained published information on the issue of extending the requirement for country-of-origin labeling and discussed the issue with representatives of various parties that would be affected by such a requirement. Most of the arguments had not changed.

According to a September 1985 Congressional Research Service (CRS) study on imported meats, proponents of country-of-origin labeling for imported meats—mostly domestic beef cattle producers—argue that consumers have the right to know what they are buying, that is, whether the meat item purchased contains imported meat, and to make their choices accordingly.

An NCA representative told us that some NCA members no longer favor country-of-origin labeling of imported beef. Hence, at the time of our audit, NCA no longer had a policy on an imported meat labeling requirement.[1] The NCA official stated that NCA was neither in favor of nor against requiring imported meat to be labeled by country of origin.

The American Sheep Producers Council told us in August 1986 that it favored mandatory country-of-origin labeling because USDA permits imported whole lamb carcasses to be quality graded in this country. ASPC told us that on the basis of a July 1985 commissioned study of consumers' attitudes prepared for ASPC, it believes that some customers find imported cuts of lamb inferior in quality to domestic cuts. ASPC maintains that domestic sheep producers suffer when unlabeled fresh imported lamb is sold in the retail store along with domestic lamb. Under present requirements, once the carcass is dismantled, imported lamb cuts are not required to bear the country-of-origin label. Hence, consumers are often unable to distinguish between imported and domestic cuts of lamb in the grocery store.

[1] We learned that, subsequent to our audit, NCA adopted a policy in favor of requiring country-of-origin labeling of imported meat.

Lamb of both domestic and foreign origin may be graded by USDA. According to ASPC, at one time the consumer was able to distinguish between domestic and imported lamb by the USDA stamp. Before 1985 domestic lamb carcasses were permitted to be quality graded and stamped with the USDA grade (e.g., choice or good), while imported carcasses could not be quality graded and were inspected only for wholesomeness by USDA and stamped "USDA Inspected." According to ASPC, beginning about 1985 this distinction was eliminated, and USDA was permitted to quality grade imported lamb carcasses. Thus, imported lamb can now be advertised as a "USDA Choice" product, leaving the consumer with no way of identifying imported cuts of lamb. According to USDA, imported fruits and vegetables and any imported meat can be graded, but meat usually is not because most imported meat is of manufacturing grade. USDA grades domestic livestock only at the point of slaughter except when an exemption request is received from domestic processing plants to have only whole carcasses of imported lamb graded at their sites. USDA will then grade whole lamb carcasses, imported mostly from New Zealand and Australia, at U.S. processing plants. According to USDA, fewer than 100 imported lamb carcasses had been quality graded in the year since permission to do so was granted.

Some food industry representatives told us that they viewed country-of-origin labeling of meat as being discriminatory to users of imported meats. Representatives of the meat processing and restaurant industries told us that their industries have traditionally opposed labeling of meat, claiming that it would unfairly burden their industries without targeting those manufacturers who incorporate imported food articles other than meat with domestic commodities in food processing, such as mixing imported cocoa and domestic sugar in making chocolate candy. Representatives of food manufacturing companies that use imported meats also expressed concern that requiring extended labeling for imported meat would encourage additional legislation requiring country-of-origin labeling for imported nonmeat food items such as vegetables and spices, that they also use in their products.

Most food industry representatives we talked with strongly opposed extending country-of-origin labeling. In their views, imported meat does not pose health or safety problems because imported meat cannot be introduced into domestic commerce until it passes inspection. They viewed country-of-origin labeling to be of no redeeming value or benefit to consumers. They said that in their opinion, consumers are more interested in purchasing a wholesome, quality product at a reasonable cost.

During our review, we were informed by some USDA officials and representatives from various components of the food industry, including trade and food manufacturing representatives, that they were not aware of any studies of consumers' views on labeling imported meats and/or meat food products.

Industry Costs of Complying With Labeling Requirement

Industry representatives told us that compliance with a country-of-origin labeling requirement for imported meat would lead to additional industry costs that ultimately would be passed on to the consumer. However, the industry representatives were not able to provide us with any specific studies on the costs to industry of complying.

Currently, all containers of fresh, frozen, or chilled imported meat are required to indicate the country of origin. After such containers are federally inspected and passed for entry, the products lose their identity if they change form or are removed from labeled containers, and they are treated by USDA as domestic products. Most imported processed meat food products, such as canned hams, canned corned beef, and prepared sausages, indicate the country of origin on their containers when they finally reach the household, because these products are usually sold at retail in their imported forms to the ultimate purchasers, who in such cases are the ultimate consumers. Some imported items, such as canned hams, are sold to establishments such as delicatessens. In such cases, the ultimate consumer may not be aware of the country of origin if the meats are removed from the can before sale to consumers. Some imported frozen lamb cuts are sold in retail stores in their imported form and, hence, are still labeled by country of origin when they reach the household.

Livestock offered for import to the United States are inspected for signs of disease by USDA's Animal and Plant Health Inspection Service. After APHIS inspection and acceptance, imported live animals are, for all practical purposes, considered part of the domestic food chain and are not labeled as to country of origin.

If country-of-origin labeling of imported meat was required up to the point of final consumption, each component of the food chain, including consumers, would be affected, directly or indirectly. Users of imported meat in the food industry would likely incur additional operating costs, logistical problems, and/or increased recordkeeping, as discussed below, in order to maintain country-of-origin identity of imported meat throughout the food chain. The food industry would experience initial

costs to implement the requirement and then additional recurring costs to carry out the requirement. The costs would likely be included in the price the ultimate consumer would pay for the products.

Meat Importers/Brokers

Meat importers/brokers who receive meat products directly from foreign plants often sell the meat products to food processors or wholesalers in their imported form. Under such conditions, the country-of-origin labels remain on the product containers because the buyer is the "ultimate purchaser." From this point forward along the food chain toward the consumer, however, under a country-of-origin labeling requirement, the quantity of imported fresh, chilled, and frozen meat demanded would decline because of higher costs for repacking and processing, and prices to importers/brokers could be lower. Over the long run, fewer pounds might be purchased by food processors, wholesalers, and retailers, including buyers for food service establishments.

Feedlots, Ranges, Slaughter Plants, and Packing Plants

Most imported live animals are shipped to feedlots, ranges, or slaughter plants, and after slaughter, their carcasses are shipped to meat packers and/or further processors. If country-of-origin labeling was required, imported animals would have to be kept physically segregated from the domestic livestock, or in some way marked in the feedlot or on the range. Slaughter plants would be required to maintain the country identity before and after slaughter. Plants with one slaughter line might have to establish "start/stop" periods whereby, for a given period of time, only imported animals would be slaughtered. Such procedures could lead to additional operating costs for domestic slaughter plants. We did not find any estimates of how many operations could be affected because the number of plants that slaughter imported livestock is not known.

Meat Processors and Food Manufacturers

Some meat processing operations and food manufacturers often integrate supplies of imported meat with domestic meat. These processors and manufacturers would have to separate their production lines or production runs to isolate items containing only domestic meats from items containing both domestic and imported meats or imported meats only.

If country-of-origin labeling was extended to the ultimate consumer, meat processors and food manufacturers would need additional labels according to whether or not a product contained imported meat and, possibly, what percentage of the product was imported meat. Printing

costs and costs of maintaining processors' label inventories would rise. Overhead costs would be higher to the extent that production would have to be stopped each time labels were changed as the origin and/or amount of the imported meat ingredient changed. Meat processors and food manufacturers would be required to track and follow the inclusion of even a small amount of imported meat if it is used in their production operations, depending on the requirements of the law.

In a July 1985 letter to the Chairman of the House Committee on Agriculture commenting on proposed labeling legislation, USDA stated that the labeling requirement could impose an unduly heavy burden on the meat processing industry and particularly on small businesses that lack the personnel and facilities to meet such requirements.

Some food manufacturers are also in the private label business; that is, they make products for other private companies, such as supermarkets, to sell, using their own brand names. Requiring country-of-origin labeling could increase overhead cost.

According to some food manufacturer representatives, the amount of imported and/or domestic meat used in a given product may be minimal. For example, a company making vegetable beef soup may use a small amount of beef compared with the other ingredients, such as the different kinds of vegetables, used in making the product. One food manufacturer representative told us that his company intermingles some fresh imported meat with fresh domestic meat to make one of its products. The product is then shipped to several different processing plants for further processing. This representative said that substantial costs would be involved if country-of-origin labeling was required. Each of the different processing plants would need to have different sets of labels because the percentage of imported and domestic meat used in production constantly changes with the availability and cost of the meats. The representative said the mere operation of the company would create logistical problems if country-of-origin labeling was required because the company is constantly shipping its products to the various processing plants.

Other food manufacturers said that they would also experience logistical problems because of the number of different products they produce and the constant changes in the amount of imported and/or domestic meat used to make a given product. They added that because most products are manufactured on a "batch" basis, the batches would have to be kept separate by lot and code number so as not to lose their identity.

One representative said that his company manufactured different prod ucts and has a producing plant and receiving plants. An "in-house" labe is used in the producing plant, and when the product is sent to a receiving plant, the consumer label is placed on the product's container. The representative said that, logistically, a country-of-origin labeling requirement would be difficult to implement because the company would have to make sure like batches remained together throughout the entire manufacturing process. He added that the company would have to stop the production line to change the labels to match the product being made, thus incurring additional production costs.

In May 1981 USDA analyzed the economic impact on the meat processing industry of changing labels if the extended labeling requirement went into effect. Three cost categories were analyzed: the cost of producing new films used to make the printing plates for printing labels; graphics design costs to redesign labels; and labor costs to prepare the label changes and have the labels approved by the industry's technical, management, and legal departments. USDA assumed the average incremental cost would be $150 per label. Using that assumption, USDA estimated that the direct, one-time costs to the meat industry for changing product labels would be from $11.7 million to $17.6 million. That would be equivalent to a range of $14.1 million to $21.2 million in today's prices.

According to USDA's May 1981 analysis, there also would be ongoing costs associated with monitoring, by industry and USDA, of imported products and labels in federally inspected plants. The cost of maintaining a dual system for inventory control procedures, one for domestic product and one for imported product, is one example of such costs.

As of September 30, 1985, there were about 6,700 federally inspected meat and meat and poultry slaughtering and/or processing plants. In its May 1981 study, USDA assumed that plants limited to slaughter only did not purchase imported meat. Eliminating such plants from the September 1985 total would leave about 6,400 plants that could be using imported meat. According to USDA's July 1985 letter to the Chairman of the House Committee on Agriculture, no explicit data exist on how many plants actually purchase imported meat, but meat industry representatives and meat industry consultants estimated in 1985 that 1,500 to 2,400 plants buy it.

These 1,500 to 2,400 plants would have to maintain double label inventories, segregate product inventories, and maintain continuous surveillance of domestic and imported meat to ensure a consistent product mix

for labeling purposes. Under a country-of-origin labeling requirement, USDA would have to establish regulations requiring meat processing operations using imported product to institute additional procedures to ensure proper final product labeling. In the July 1985 letter, USDA estimated that industry costs to develop and implement such procedures would be about $2,000 per plant. USDA estimated the total initial cost of setting up such procedures for all affected processors who buy imported meat at from $3 million to $4.8 million in 1985. USDAestimated that all industry costs together would range from $18.2 million to $27.6 million in the first year, if country-of-origin labeling is required, and that ongoing compliance costs thereafter would be between $750,000 and $1.2 million for all processors annually.

Meat Wholesalers and Retailers

Meat wholesalers buy and store meat for sale to grocery retailers, institutions, and other commercial users. Typically, meat wholesalers maintain large quantities of meat in their warehouses. Industry representatives told us that some large chain supermarkets maintain their own meat warehouses and would not be receptive to a country-of-origin labeling requirement. The representatives said that if country-of-origin labeling was required, duplicate inventory and display systems would have to be maintained by all meat wholesalers and retailers to ensure that imported meat retains its identity.

Restaurants

If country-of-origin labeling were required throughout the food chain, restaurant menus and/or notice changes would have to reflect country-of-origin information for all meat items sold. In the June 1980 hearing referred to earlier, a representative of the National Restaurant Association stated that recordkeeping and menu or notice change burdens imposed on the restaurant industry alone would place substantial costs on restaurateurs. He said that extensive recordkeeping systems would have to be set up to identify food items containing imported meat, changes would have to be made on restaurant notices/signs, and menus would have to be changed to reflect changes in imported meat content of the food offered for sale.

Industry representatives told us that some restaurants, including large fast food chains, use products made from imported meat mixed with domestic meat and meat products in their retail sales. Many of the chain fast food companies have central kitchens where products are made and then shipped to individual retail outlets. These mixed cuts produce an end product that meets each company's formula for such food items as

hamburgers, soups, and pizza. According to the National Restaurant Association representative, buyers for firms that purchase processed products such as hamburger patties often do not know if they are purchasing a total domestic meat or a mixed domestic and imported meat product. If country-of-origin labeling was required for restaurants, chefs preparing meals would have to isolate imported meat and products containing imported meat so that diners could be informed of the country of origin of food purchases. This could prove to be a burdensome task, according to some industry representatives.

Enforcement of Labeling Requirement

USDA and the food industry have expressed concern about enforcing an extended country-of-origin labeling requirement. In its July 1985 response to the House Committee on Agriculture, USDA stated that enforcing the proposed country-of-origin labeling requirements would be costly and difficult.

As noted earlier, industry representatives and consultants estimated in 1985 that 1,500 to 2,400 federally inspected meat processing plants buy imported meat. In livestock slaughter and processing plants where USDA inspectors are present now, the inspectors would have to undertake additional responsibilities. Inspectors would have to (1) monitor incoming product to identify imported meat and (2) ensure that appropriate labels designating the country of origin were attached to the final product if imported meat was an ingredient. If the plants were to use a dual system, some lots domestic and other lots imported, the inspection process would be further complicated.

According to USDA, it would have to expand its enforcement efforts at the retail level if country-of-origin labeling was extended to that level. There are no known tests available for identifying meat as to its origin, i.e., whether a piece of meat, either raw or cooked, could be tested and identified as domestic or as imported. Therefore, detailed monitoring systems would be required in order to check that the identity of the meat's originating country was retained throughout the food chain. Currently, meat and meat products for sale in retail outlets or restaurants are inspected by local health officials. USDA now has only a limited enforcement role in reviewing the activities of retail stores and restaurants, which are generally exempt from routine inspection under the Federal Meat Inspection Act. USDA becomes involved in these types of businesses if they are selling at a wholesale level. Although the costs of such expanded enforcement would depend on the level of enforcement chosen, the cost of enforcing country-of-origin labeling requirements at

the more than 500,000 U.S. retail food stores and restaurants would be substantial.

In a 1978 report, Economic Effects of Requiring Imported Meats To Be So Labeled, USDA stated that even if its inspectors checked labeling compliance at each retail store and eating establishment only three times a year, it would mean 1.3 million visits per year. At 1986 levels, that would imply more than 1.5 million inspections.

Current law requires that all costs of federal meat inspections, except for overtime and holiday work, be borne by USDA, which means that the public ultimately pays the costs through taxation. Industry representatives told us that the enforcement of a country-of-origin labeling requirement for imported meat would lead to additional expenses, which ultimately would be passed on to taxpayers or the consumers.

On the issue of requiring eating establishments to inform customers that they serve imported meat by displaying a sign containing such information or by including a statement on the menu, USDA stated in its July 1985 letter to the Chairman, House Committee on Agriculture, that such a requirement would be extremely difficult for the Department, as well as state and local governments, to enforce.

The Food Security Act of 1985 does not specify whether federal, state, or local governments would be responsible for enforcing this requirement. According to USDA, if it were assigned enforcement responsibility, some 280,000 eating facilities could come under its compliance program, requiring an additional 180 compliance officers to review each eating establishment at least once each year. USDA said that effective enforcement of such a requirement would necessitate continuous surveillance of all restaurant facilities, which would be more costly than once-a-year inspection. For these reasons, USDA believes the costs of implementing this requirement would far outweigh any benefits consumers would be likely to receive.

Other Factors to Consider With Respect to Extending Labeling Requirements

In addition to the costs of complying with and enforcing an extended labeling requirement, other matters that must be considered are the wording requirements for the labels used on the meat, meat products, and food items that contain imported meats; possible trade issues; and legal issues.

Wording of Labels

The additional wording and revision and/or updating of current labels that might result from an extended country-of-origin labeling requirement could also result in additional costs to the industry through compliance and to the government through enforcement, which would ultimately be passed on to the consumer/taxpayer. Currently, USDA must approve all labels for meat, meat products, and food items containing meat before the labels are used. USDA requires certain information to be shown on the label, including an accurate name and description of the item, the packer's or distributor's name and address, a list of ingredients in descending order of weight, and the net weight of the contents. USDA also has specific regulations regarding the relationship of the size and location of the label to the size and shape of the product's container. Although labels have a limited amount of space on which to put a large quantity of information, USDA officials told us that requiring additional wording regarding origin should not present significant problems for the food industry.

One meat industry trade representative told us that his organization was concerned that if country-of-origin labeling was mandatory, the wording required on the label could have an adverse effect on domestic producers. He cited as an example a meat or food product made of both domestic and imported meats, of which 95 percent of the meat was domestic and 5 percent was imported. Requiring the label to state that the product contained "imported meat" could result in the consumer shying away from purchasing that particular product, thus in the long run economically hurting domestic meat producers.

Another factor related to labeling is the uncertainty of the specific language that would be required. For example, according to some food industry representatives, a requirement that the label simply state "this product may contain imported meat" would be less costly to administer and monitor for compliance than a requirement that the label state the specific amount of imported meat from a specific country or countries. This latter requirement could result in increased cost to the industry. Some of the food industry representatives told us that at various times their companies use different amounts or percentages of imported meat in manufacturing their food products, depending on the cost and amounts of imported and domestic meat available for production. Therefore, in our opinion, it would be easier and less costly to implement and monitor a label for "imported meat" than a label showing the percentage of imported meat used in production.

Possible Trade Issues

Some industry representatives told us that the labeling requirement could possibly be perceived as a trade barrier. CRS also made this point in its September 1985 study on imported meat. CRS stated that a labeling requirement may violate U.S. obligations under Article 3 of the General Agreement on Tariffs and Trade (GATT), which requires imported products to be treated no less favorably than domestic products. The GATT specifically prohibits countries from applying regulations to internal sales that would afford protection to domestic products. According to CRS, labeling could convey the impression that imported meat is not as safe as domestic meat, thus creating a nontariff trade barrier. According to the industry representatives, meat exporting nations could retaliate against the United States by placing certain requirements on our exports.

Legal Issues

State legislation relating to country-of-origin labeling has been struck down by the federal courts as unconstitutionally burdensome upon interstate and foreign commerce. Federal courts that have examined the matter have found significant commercial costs and burdens involved when foreign-origin labeling is required throughout the manufacturing and distribution chain all the way to the product's ultimate consumer.

Our review of cases involving state requirements indicates that they are not applicable to federal action. These cases conclude generally that the states cannot impose such requirements precisely because they impose unreasonable burdens on interstate commerce, the regulation of which is constitutionally reserved for the Congress. The cases also point out that the Commerce Clause, which reserves for the Congress power to regulate foreign trade, prohibits a state from using its regulatory power to protect its citizens from outside competition. However, the Congress can enact protectionist legislation. Thus, a federal labeling statute would not be vulnerable to the objections raised to the state laws.

Conclusions

Country-of-origin labeling for imported meat and meat food products as they move through the food chain has been an area of concern for federal and some state legislative bodies, domestic livestock producers, and food manufacturing companies for many years.

Proponents of the idea, primarily some domestic producers, have emphasized that consumers have a right to know if the meat and meat food products they may purchase contain imported meat and that such

labeling would help consumers make informed choices when buying food.

Some food industry representatives who use imported meat in their businesses, such as brokers, packers, processors, wholesalers, restaurants, food manufacturers, and large chain supermarkets, strongly oppose extending the country-of-origin labeling requirement. In their view, imported meat does not pose health or safety problems because imported meat cannot be introduced into domestic commerce until it passes inspection. Food industry representatives viewed extended country-of-origin labeling to be of no redeeming value or benefit to consumers. In their opinion, consumers are more interested in purchasing a wholesome, quality product at a reasonable cost.

We were unable to find written evidence indicating consumers' overall views on the labeling of imported meats. Although proponents of labeling have stated that consumers have the right to know what is being purchased, we have not been able to find much evidence that would indicate what consumers' reaction would be if they had such information, or whether they would increase or decrease their consumption of meat they knew to be imported.

Compliance with and enforcement of an extended country-of-origin labeling requirement would result in additional expenses for the food industry and the federal government. Increased costs would result for label approval, increased numbers of labels, and segregation of imported meat in inventory as well as during processing. In addition, a requirement that restaurant menus and/or notice changes state the country of origin of all meat items sold in such establishments would increase the consumers' cost of the product purchased. Enforcement costs of USDA and compliance costs to the industry could be substantial. The costs would ultimately be passed on to consumers/taxpayers either through increased costs of food products or increased taxes.

Costs, particularly to the industry, would also be influenced by the language required on food product labels and on restaurant menus. A requirement that labels state that the product may contain imported meats would be less costly than one that requires naming the specific country of origin and possibly the percentage of the contents. The latter requirement would place an additional burden on those segments of the food industry that alter the amount of imported meats in order to meet their established formulas.

In our opinion, insufficient evidence exists that the benefits gained by extending country-of-origin labeling throughout the food chain, including menu notices or signs in those eating establishments that serve imported meat, would justify the cost of implementing, monitoring, and enforcing such a requirement. Accordingly, we do not recommend a change at this time to the labeling requirements on imported meat and meat food products.

Agency Comments

In commenting on a draft of this report, USDA stated that it agrees with our conclusion that insufficient evidence exists that the benefits gained by extending country-of-origin labeling throughout the food chain would justify the cost of implementing, monitoring, and enforcing such a labeling law. USDA stated that the arguments against a country-of-orgin labeling should be more strongly presented. USDA suggested that we point out that meat and meat products are not different from other internationally traded commodities, and that presumably the consumer also has a right to know which parts of a motorcycle or computer have been imported. USDA stated that all imported meat, meat products, and live animals must fully comply with U.S. health and safety standards. Further, USDA said that, since no health and safety issues are involved, the proposed country-of-origin labeling is solely intended to act as a nontariff trade barrier.

USDA also stated that during this period of the Uruguay Round of Multilateral Trade Negotiations, the United States does not want to erect new nontariff trade barriers. Further, it said that passage of a country-of-origin labeling law would raise serious doubts about the U.S. commitment to a freer and more open international agricultural trading system. USDA also indicated that a country-of-origin labeling law would undermine the effectiveness of U.S. efforts to gain international agreement to eliminate market access restrictions and all other government-sponsored practices, which distort trade in agricultural products.

Foreign Plants Authorized to Export Meat And/Or Poultry to the United States[a]

Country[b]	Authorized 1/1/86	Plants delisted	Activity during 1986 Plants authorized	Plants reinstated	Authorized 12/31/86
Argentina	20	2	0	0	18
Australia	123	21	23	9	134
Belgium	3	0	0	0	3
Belize	1	0	0	0	1
Brazil	23	2	1	1	23
Canada[c]	559	12	33	1	581
Costa Rica	4	0	1	0	5
Czechoslovakia	2	1	0	1	2
Denmark	135	4	1	1	133
Dominican Republi	c 4	0	1	0	5
El Salvador	1	0	0	0	1
England	1	0	0	0	1
Finland	3	0	1	0	4
France[c]	91	0	6	0	97
Federal Republic of Germany	16	0	2	0	18
Guatemala	4	3	0	1	2
Honduras	5	1	0	0	4
Hong Kong[c]	1	0	0	0	1
Hungary	7	0	0	0	7
Iceland	3	0	0	0	3
Ireland	2	1	0	0	1
Israel[c]	24	0	4	0	28
Italy	22	2	9	0	28
Netherlands	31	1	1	0	31
New Zealand	66	3	4	2	69
Panama	1	0	0	0	1
Poland	29	2	1	2	30
Romania	7	0	5	0	12
Sweden	14	0	0	0	14
Switzerland	13	0	0	0	13
Taiwan	1	1	0	0	0
Uruguay	21	1	1	0	21
Yugoslavia	13	14	1	14	14
Total	**1,250**	**71**	**95**	**32**	**1,306**

[a]The following countries were eligible but did not export meat to the United States during 1986: Austria, Japan, Northern Ireland, Norway, Paraguay, Scotland, Spain and Venezuela.

[b]Nicaragua had four plants eligible on December 31, 1985, but no longer is on the eligible list. Taiwan

remains on the eligible list but its one authorized plant has been removed from the list of authorized plants

[c]Country eligible to export poultry products to the United States

[d]England became eligible on June 17 1987 to export poultry products to the United States

Source Meat and Poultry Inspection, 1986 National Provisioner, June 20 1987

Comments From the Department of Agriculture

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D C 20250

August 1 2 1987

Mr. J. Dexter Peach
Assistant Comptroller General
United States General Accounting Office
Washington, DC 20548

Dear Mr. Peach:

Thank you for the opportunity to respond to your June 17, 1987, letter enclosing your draft report entitled "Imported Meat and Livestock: Chemical Residue Detection and the Issue of Labeling." This response reflects comments from the Foreign Agricultural Service (FAS), the Animal and Plant Health Inspection Service (APHIS), the Agricultural Research Service (ARS), and the Food Safety and Inspection Service (FSIS).

We agree with your conclusion that insufficient evidence exists that the benefits (if any) gained by extending country-of-origin labeling throughout the food chain would justify the cost of implementing, monitoring, and enforcing such a labeling law. It is felt that perhaps the tone of the Country-of-Origin section contained in the Executive Summary of the draft could be made stronger.

I believe the General Accounting Office (GAO) report is satisfactory in its presentation and analysis of FSIS import controls. The report's weaknesses, some critical and some minor, are largely attributable to a single omission in its treatment of the existing program. To clarify, the report's purpose as stated on page 2 is: ". . . to study the U.S. Department of Agriculture's (USDA) effectiveness in detecting prohibited chemical residues and foreign matter in imported meat items and prohibited chemical residues in live animals."

As such, the report is not as complete as it could be due to its apparent assumption that USDA performs all the activities directed at detecting prohibited chemical residues and foreign matter by itself, through its port-of-entry (POE) reinspection efforts. This is not the case. As in many other U.S. Government programs, USDA accomplishes the major portion of that work through its direction of the efforts of others; in this case, the inspection systems in eligible, exporting countries. Whether there is agreement with this program design or not, this is the current law.

It is important to note that no mention was made, nor any analysis performed, on the residue control programs in foreign countries or the data USDA receives

from them on an annual basis. Not only are annual results data available, but there are also data available that reflect Foreign Programs Officers (FPO) conduct of laboratory reviews. USDA has designed its import residue control efforts in this way purposely. FSIS recognizes that the detection of chemical residues in meat is best done by random sampling of animals at the time of slaughter, with analyses performed on the target tissues. These were the essential features of the 1981 Farm Bill; all eligible exporting countries are complying with them on a continuous basis.

A misunderstanding of the primary control exercised by foreign residue programs has led GAO to various misconceptions. One has to do with the purpose of POE activities. (Such activities are correctly referred to as reinspection, clearly distinguishing them from the continuous inspection activities which have already been applied to the product in the origin country). POE testing is not designed to replace or function as a primary residue control program. It is statistically inadequate to accomplish such a purpose, even though its sampling rate is nearly five times that of the domestic program. The purpose of import testing is to obtain data which contribute to determining if the country's residue control program is operating acceptably.

Misconceptions about the purpose of POE testing have led to inaccurate statements such as in page 3, first full paragraph under the heading "Results in Brief." The collection of detailed, up-to-date information on chemical use abroad is not designed to serve as a basis for the import residue sampling plan. It is designed to provide data through which FSIS can evaluate the "equal to status" of residue control programs in other countries more thoroughly. Further, it is incorrect to say that the detection of some harmful residues is more difficult in imported meats because target tissues are not available. Target tissues are available and have been tested in the origin country using USDA-approved methods. All such activities have been verified through FPO reviews.

The same error surfaces on page 4, paragraph 1 under the heading "Chemicals Tested." It is incorrect to state that "To the extent that animal drugs and environmental chemicals used in exporting countries may have deposited harmful residues that are not covered by the domestic residue testing plan, consumers of imported meats have not been protected." Residue control in foreign countries, whether accomplished by testing or by other methods, is the primary protection for consumers. FPO reviews serve to check on all aspects of those controls. If your office were to complete its review of the means by which USDA detects the presence of harmful residues in foreign origin meat, we believe that a more useful picture would evolve.

I wish to point out that, in Chapter 3, the section beginning on page 50 and continuing through the second paragraph on page 52 should reflect that ARS and FSIS have, in fact, developed a very satisfactory ongoing working relationship in meeting FSIS' research needs. It is true that resources are limited but ARS and FSIS staffs have jointly set priorities and are working together to fulfill the mission of both agencies in the best way possible. Similarly, I would suggest that references on page 61 to FSIS' lack of authority to conduct basic research be deleted on the basis that such authority is delegated to ARS.

Below are comments on the specific recommendations made in your report:

1. Implement a continuous, systematic effort to identify and evaluate chemicals used in livestock production and processing operations of exporting countries.

In order to respond appropriately to this recommendation, it is useful for us to clarify what we believe is envisioned by its author.

We believe that GAO intends that FSIS gather detailed information about agricultural chemical compound approvals and uses in all eligible exporting countries; that FSIS continuously monitor and update such information, and that such information become the basis for the Import Residue Sampling Plan. Further, where there is a situation in which compounds are used in other countries but not in the United States or for some reason not tested for in the United States, FSIS would undertake methods development so that analytical testing of imported product from that country could occur.

If this sketch is generally correct, we would like to point out several aspects of the situation which need fuller consideration. Initially, we would point out such a scenario is based on a flawed concept of what can and should be accomplished at POE reinspection. This general omission in the report's coverage is addressed above. While it is true that FSIS is now seeking detailed information on approvals, uses and controls on agricultural chemicals in eligible exporting countries, FSIS review of this information will not be adequate for making decisions about methods development, nor will it provide a proper basis for the import residue sampling plan.

If a compound is used in a country but not tested for in the import residue sampling plan, it does not mean that U.S. consumers are unprotected from harmful residues of that compound. The first line of defense is the residue control program in the foreign country, which may be testing for the compound, even if USDA is not. Such laboratory testing is routinely reviewed by FPOs, may be the subject of special review efforts, is reported on annually to FSIS, and these data reviewed for coverage and completeness.

Suppose there is a compound in use in a foreign country, and testing is not occurring either in the foreign country or in the FSIS import residue sampling plan. In its review of the country's residue program, FSIS may have determined that the country control is adequate, making it comparable to the compounds in use in the U.S. which are effectively controlled without analytical testing. FSIS may then, consistent with its statute, determine that the country's control is at least equal to that in the United States and satisfactory.

The need for methods development within the U.S. far outstrips present capabilities. Estimates are that 70 percent of the agricultural chemicals lack methods adequate for regulatory purposes. Therefore, a committee comprised of members of the Food and Drug Administration (FDA) and FSIS has established priorities using established risk assessment principles. A major methods development project takes two or more years. Minor projects, such as an adaptation of an established method, can take seven months.

FSIS satisfies its methods development needs in the following ways: (1) by interagency agreements, (2) by contracting to universities and private industry, and (3) by in-house projects. Currently, FSIS has major ongoing development projects with Cornell University, Agricultural Research Service, Lawrence Livermore Research Laboratory, and EPA's Las Vegas laboratory. In addition, FSIS laboratories are engaged in five methods development projects and ten method extension projects.

Decisions about methods development need to be subject to more thorough review than is suggested by the recommendation. Certainly, if there are compounds in use in other parts of the world which would present risks comparable to those for which methods development is being undertaken in the United States, methods development ought to be encouraged. But there would appear to be doubt about whether that is the responsibility of the United States, and whether the cost of methods development for the world ought to be paid by the USDA.

It is FSIS policy, and will continue to be, that when methods development is successful in the United States such methods are shared with all eligible exporting countries, and subsequently, analytic testing of that compound is required in the foreign residue program if the compound is used. If the method can be adapted or extended to suit the tissue imported, then it will be included in the import residue sampling plan. However, effective control is established when the method is used in the foreign residue control program and does not depend on the appearance of the compound in the import residue sampling plan.

2. Systematically assess the status of existing methods for detecting harmful chemicals in processed meat and muscle tissue to provide a basis for deciding on additional research needed to develop more effective methods.

A joint task force with the Environmental Protection Agency (EPA) and FDA has been initiated to assess the status of methods for detecting pesticide residue and environmental contaminants in foods. The first formal meeting was held in March 1987. The second meeting is scheduled for August 1987. At the August meeting, FSIS will propose the development of a pesticide priority list for methods development comparable in scope to the Center for Veterinary Medicine/FSIS task force report on veterinary drugs.

Where development to extend a method from the target tissue to the tissue imported can be accomplished with a reasonable expenditure of resources, it is justifiable. However, because POE testing is not a primary control system, it is less worthy of a separate methods development agenda. The methods development which is occurring assists both U.S. and foreign primary residue control systems, and is definitely to be preferred.

J. Dexter Peach 5

3. Monitor the changes made to enhance the Automated Import Information System and to clarify inspection policies to determine whether the changes result in (1) balanced residue testing throughout the year, (2) uniform implementation of FSIS' recently stated policy on removing tainted imported meat from the U.S. meat supply, and (3) more timely reporting of residue violations so that increased monitoring of lots from the same plants can be implemented.

Elements 1-3 of this recommendation have largely been accomplished.

In December 1986, FSIS realigned responsibility for implementing the 1987 Import Residue Sampling Plan to the Import Analysis Staff (IAS). IAS incorporated the new chemical compounds called for by the plan into the Automated Import Information System, and the system began issuing assignments for residue tests for them on January 2, 1987. Currently, the IAS staff is analyzing the progress that has been made in meeting the annual plan and is manually adjusting the sampling intervals to spread the sampling out as evenly as possible over the year.

4. Undertake a risk assessment with respect to the potential of harmful residues in imported live animals.

The recommendation that risk assessment be conducted to determine whether live animals should be accepted into the country given their likely residue status, is interesting, but impractical.

Only two countries supply live animals to the U.S. for food purposes: Canada and Mexico, and their agricultural practices, and meat inspection systems are very different as are their relationships to FSIS.

Canadian animals are brought into the United States for immediate slaughter. These animals come from an environment where the production methods, agriculture chemical uses, and inspection controls are so similar to those of the U.S., that the animals can be considered from a single country. (In recognition of this, the EEC has relinquished its 90-day residency for meat animals from either Canada or the United States reiterating that practices are the same in both places.)

Therefore, it is appropriate that Canadian animals be subject to the same residue testing program as that applying to U.S. animals. Risk assessment would be expensive, time-consuming, unnecessary and likely be perceived as a trade barrier.

For animals of Mexican origin, the situation is different. These animals are brought in for feeding and during the feeding process, residues of animal drugs are largely depleted, so special testing for such compounds is not required. The 1985 Farm Bill provision relating to live animals includes only antibiotics and animal drugs banned in the United States and does not address

pesticides or environmental contaminants. This means that the risk assessment idea would not be appropriate under implementation of the 1985 Farm Bill live animal provision.

However, there is a legitimate concern about residues of pesticides and environmental contaminants in Mexican animals which do not deplete with the rapidity characteristic of animal drugs. Therefore, FSIS is willing to consider the feasibility of requiring that countries exporting live animals to the U.S. and not recognized as eligible to export meat, first supply data about pesticide and other environmental compound exposure. Appropriate action could be designed depending on what the data demonstrate.

I want to mention that FAS, APHIS, ARS and FSIS all have editorial and/or other minor changes which, for the sake of brevity, will be discussed informally with members of your Resources, Community, and Economic Development Division early this week.

Again, it is hoped that the information provided, along with the informal discussion this week, will be helpful to you and your staff in preparing the final report.

Thank you for the opportunity to review your draft report.

Sincerely,

Richard E. Lyng

Richard E. Lyng
Secretary

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