Pesticide Monitoring Program

Fiscal Year 2012 Pesticide Report

U.S. Food and Drug Administration

www.fda.gov/Food/FoodborneIllnessContaninants/Pesticides/default.htm

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Foreword

This report summarizes the results of the U.S. Food and Drug Administration's (FDA or the Agency) pesticide monitoring program for fiscal year (FY) 2012. Eight of the previous reports were published in the *Journal of the Association of Official Analytical Chemists and the Journal of AOAC International*; these presented results from FY 1987 through FY 1994. Results from FY 1995 through FY 2011 were published on FDA's website at http://www.fda.gov/Food/FoodborneIllnessContaminants/Pesticides/default.htm. This report includes findings obtained during FY 2012 (October 1, 2011 through September 30, 2012) under regulatory monitoring along with selected Total Diet Study (TDS) findings.

In the early 1990s, FDA conducted comprehensive incidence and level monitoring studies of four major foods and published the results [1, 2]. Due to resource constraints, incidence and level monitoring for pesticide residues conducted by FDA's field laboratories, which were typically non-regulatory in nature, have been replaced in recent years by regulatory based "focused sampling." Incidence and levels of pesticide residue data are provided by FDA's TDS program and the United States Department of Agriculture's (USDA's) Pesticide Data Program. The TDS program analyzes market baskets of about 300 foods four times per year.

Results in this and earlier reports continue to demonstrate that levels of pesticide residues measured by FDA in the U.S. food supply, are generally in compliance with the U.S. Environmental Protection Agency's (EPA's) permitted pesticide uses and tolerances.

FDA Pesticide Monitoring Program

Three federal government agencies share responsibility for the regulation of pesticides. The U. S. Environmental Protection Agency (EPA) registers (*i.e.*, approves) the use of pesticides and establishes tolerances (the maximum amounts of residues that are permitted in or on a food) [3]. Except for meat, poultry, and certain egg products, for which the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) is responsible, FDA is charged with enforcing tolerances in both imported foods and in domestic foods shipped into interstate commerce. FDA also acquires data on particular commodity and pesticide combinations by carrying out market basket surveys under the Total Diet Study (TDS). Since 1991, USDA's Agricultural Marketing Service (AMS) has carried out a pesticide residue monitoring program, called the Pesticide Data Program (PDP), directed at raw agricultural products and various processed foods through contracts with states to perform the sampling and analyses. The PDP emulates consumer practices (rinses, peals, cores, etc…) to provide as closely as possible, consumption data for use by EPA in risk assessments and registration of pesticides. FSIS and AMS report their pesticide residue data independently. Information about the PDP is available at http://www.ams.usda.gov/pdp. Information on the FSIS residue program can be found at http://www.fsis.usda.gov/wps/portal/fsis/topics/data-collection-and-reports/chemistry/residue-chemistry.

Regulatory Monitoring

FDA samples individual lots of domestically produced and imported foods and analyzes them for pesticide residues to enforce the tolerances established by EPA. Domestic samples are typically collected close to the point of production in the distribution system, i.e., growers, packers, and distributors. Import samples are collected at the point of entry into U.S. commerce. Although processed foods are also included, the emphasis is on the raw agricultural product, which is typically analyzed as the unwashed, whole (unpeeled), raw commodity. If illegal pesticide residues are found at a level above EPA tolerances or FDA Action Levels (guideline levels for unavoidable residues of cancelled pesticides that persist in the environment), or residues at a level of regulatory significance for which EPA has not established a tolerance on that food commodity are found in domestic foods, the lot of food, as available, will be removed from commerce. FDA can also issue Warning Letters to the responsible growers and invoke other sanctions such as seizure or injunction to correct the cause of the violation. Imported shipments with illegal residues are refused entry into U.S. commerce. Firms may be placed under an Import Alert (a listing is available at http://www.accessdata.fda.gov/cms_ia/ialist.html) and "Detention Without Physical Examination," or DWPE may be invoked for future imported lots of the commodity based on the finding of a single violative shipment. Congress has authorized FDA to refuse admission of regulated articles based on information, other than the results of examination of entries per se, that causes an article to appear to violate the Federal Food Drug and Cosmetic Act (FFDCA). Entries of imported foods which are suspected of containing illegal pesticide residues based on the results obtained from previous examinations of the same foods may be considered to appear to violate the FFDCA.

DWPE can be applied to product from specific growers, manufacturers, or shippers, or to a geographic area or country if the problem is demonstrated to be sufficiently broad-based. FDA's Import Alerts, describe current DWPEs for pesticide residues and other food issues. There are currently four Import Alerts that address food products that are under DWPE for pesticides:

- Import Alert 99-05, "Detention Without Physical Examination of Raw Agricultural Products for Pesticides"
- Import Alert 99-08, "Detention Without Physical Examination of Processed Foods-for Pesticides"
- Import Alert 99-14, " Countrywide Detention Without Physical Examination of Raw Agricultural Products for Pesticides"
- Import Alert 99-15, "Countrywide Detention Without Physical Examination of Processed Foods for Pesticides"

Growers, manufacturers, and shippers can have their product(s) removed from an FDA Import Alert by providing evidence establishing that the conditions that gave rise to the appearance of a violation have been resolved and that there is sufficient evidence for the Agency to have confidence that future entries will be in compliance with the FFDCA. Additionally, a minimum of five consecutive non-violative commercial shipments, as demonstrated by providing FDA with acceptable reports of private laboratory analyses, is required to remove a grower's, manufacturer's, or shipper's product from Import Alert. Removal of a countrywide or geographic area Import Alert would typically require submission to FDA of an effective, detailed approach to correcting the problem, along with acceptable laboratory reports demonstrating compliance of the commodity(ies) in question.

The U.S. diets have changed since the 1990's. Most of the U.S. domestic fresh fruit and vegetables are produced during the North American growing season. However, U.S. consumers enjoy having fresh fruits and vegetables year-round as well as a greater variety. To achieve this, the U.S. imports most of these commodities from countries in the equatorial region and Southern Hemisphere during the off growing season of the Northern Hemisphere. With its diverse ethnic and immigrant populations ethnic foods, tropical fruits and vegetables, and spices, which do not grow in North America, are also being imported year-round. Imported foods also serve to offset supply shortages in domestic foods due to weather and disease problems and to reduce fluctuations in retail prices[4].

Although different climatic and ecological regions of the world often have their own unique pest issues, growers in these regions exporting their products to the U.S. must comply with U.S. pesticide tolerances and only use those pesticides registered for use in the U. S. The diets of Americans are different than those of other countries and the U.S. tolerances reflect these differences. The USDA conducts surveys (what we eat in America)[5] periodically and the EPA uses this data in their risk assessments process when

registering pesticides. In the U.S., a pesticide must be registered by the manufacturer for use on each specified crop.

Factors considered by FDA in planning the types and origin of commodities to sample include the following:

- analysis of past problem areas
- commodity/pesticide findings from recently generated state, USDA, and FDA monitoring
- available foreign pesticide usage data and regional intelligence on pesticide use;
- dietary significance of the food;
- volume and product value of individual commodities of domestic food produced and entered into interstate commerce and of imported food offered for entry into the U.S.
- the origin of imported food;
- chemical characteristics and toxicity of the pesticide(s) used.

Analytical Methods and Pesticide Coverage

To analyze the large numbers of samples whose pesticide treatment history is usually unknown, FDA uses analytical methods capable of simultaneously determining multiple pesticide residues. These multi-residue methods (MRMs) can determine the majority of the approximately 400 pesticides with EPA tolerances, and many others that have no tolerances. The most commonly used MRMs can also detect many metabolites, impurities, and alteration products of pesticides [6].

Selective or single residue methods (SRMs) are also used to determine targeted pesticide residues in foods; a SRM determines one pesticide or a small number of selected pesticides and/or chemically related residues. SRMs are more resource intensive per residue and therefore employed more judiciously. A suspicion of a violation or a need to acquire residue data in select commodities will usually trigger use of these methods.

The lower limit of residue measurement in FDA's determination of a specific pesticide is usually well below tolerance levels. Tolerance levels generally range from 0.1 to 50 parts per million (ppm). Residues present at 0.01 ppm and above are usually measurable; however, for individual pesticides, this limit may range from 0.005 to 1 ppm. Trace levels of pesticide residues are also reported. The term “trace” is used to indicate residues that are detected and positively identified at levels greater than, or equal to, the limit of detection (LOD) and below the residue’s limit of quantitation (LOQ) for the method employed.

FDA conducts ongoing research to update its pesticide monitoring program. This research includes testing the behavior of new or previously untested pesticides through existing analytical methods, as well as developing new methods to improve efficiencies and detection capabilities. In recent years, newer extraction procedures and more

sensitive detection techniques have increasingly replaced older methods, allowing for a greater level of pesticide coverage.

FDA-State Cooperation

FDA field offices interact with their counterparts in many states to enhance the effectiveness of the Agency's pesticide monitoring program. Memoranda of Understanding (MOU) and Partnership Agreements have been established between FDA and many state agencies. These agreements provide for more efficient residue monitoring by both parties by coordinating efforts, broadening coverage, and eliminating duplication of effort. These agreements are specific to each state and take into account available resources. The agreements stipulate how FDA and the state will jointly plan work, for collecting and analyzing samples, sharing data, and enforcing compliance follow-up responsibilities for individual commodities of imported and domestic products.

Animal Feeds

In addition to monitoring foods for human consumption, FDA also samples and analyzes domestic and imported animal feeds for pesticide residues. FDA's Center for Veterinary Medicine (CVM) directs this portion of the Agency's monitoring via its Feed Contaminants Compliance Program. Although animal feeds containing violative pesticide residues may present a potential hazard to a number of different categories of animals (e.g., laboratory animals, pets, wildlife, etc.), CVM's monitoring focuses on feeds for livestock and poultry animals that ultimately become or produce foods for human consumption.

International Activities

FDA is subject to the obligations placed on countries by the World Trade Organization on the Application of Sanitary and Phytosanitary Measures (WTO SPS) Agreement. Pesticide residue tolerances and monitoring activities are included as sanitary measures under the SPS Agreement. FDA's obligations under this agreement include the requirement that standards are based on an assessment, as appropriate to the circumstances, of the risk to human and animal life or health, and on international standards except when a more stringent standard can be scientifically supported. The standards must also be applied equally to domestic and imported products unless there is scientifically based justification for doing otherwise.

Similarly, FDA is subject to obligations arising from several free trade agreements, the most notable of which is the North America Free Trade Agreement (NAFTA). These bilateral or multilateral free trade agreements contain provisions on sanitary measures that are consistent with the provisions of the WTO SPS Agreement. As with the WTO SPS Agreements, the sanitary provisions of these agreements include provisions relating to pesticide residues.

FDA pesticide residue monitoring activities, for domestic and imported products, are a part of the Agency's overall food safety programs and are in keeping with these international obligations. Additionally, arrangements FDA makes with other countries with respect to food safety programs, and the activities that FDA carries out internationally with respect to food safety, can also affect how some of our monitoring is conducted.

FDA maintains a number of arrangements with counterpart agencies in foreign governments. Such arrangements include MOU, Confidentiality Agreements, and Exchanges of Letters. These arrangements most often contain information-sharing provisions that include the ability to share analytical findings about pesticide residues. Several of the MOUs have specific provisions relating to pesticide residue information sharing or cooperative efforts relating to pesticide residues.

FDA participates regularly in meetings with food safety regulatory agencies of foreign governments, in a variety of settings including bilateral and multilateral fora, and in formal and informal technical and policy meetings. For example, FDA participates in the work of the quadrilateral discussions on food safety, comprising senior food safety officials from Australia, Canada, New Zealand, and the United States. FDA also participates in the Food Safety Cooperation Forum (FSCF) of the Asia Pacific Economic Cooperation (APEC), which promotes regulatory cooperation in food safety including pesticide Maximum Residue Levels (MRL). FDA carries out bilateral discussions on food safety with our regulatory partners from around the world. Pesticide control programs and pesticide residue issues can be subjects for discussion at these meetings.

FDA participates in the work of international standards-setting organizations, including that of the Codex Alimentarius Commission (Codex). Within Codex, FDA is an active participant in the work of the Codex Committee on Pesticide Residues. In addition, FDA supports the Joint Institute for Food Safety and Applied Nutrition (JIFSAN), which implements several training programs on pesticide risk assessment and the use of pesticide residue analytical methods.

Focused Sampling

FDA's pesticide monitoring program frequently includes what this report describes as "focused sampling." This approach is primarily regulatory in nature, with the necessary protocols followed to ensure enforcement action can be pursued if a violation is detected. Focused sampling is generally used to follow-up on suspected problem areas or to acquire residue data on select commodities not usually covered during regulatory monitoring. Focused sampling is carried out by short-term field assignments that require collection of specific commodities to be analyzed for pesticide residues using routine MRMs, or targeted residues of interest using SRMs.

Focused sampling differs from what was previously described in FDA's pesticide monitoring program as incidence and level monitoring. Incidence and level monitoring

to obtain pesticide residue data generally consisted of non-regulatory analyses of selected samples of commodities of interest. Incidence and level monitoring typically required a follow-up collection and analysis of a regulatory sample to confirm a violation before an FDA enforcement action could ensue. However, due to resource constraints, incidence and level monitoring as done in the past by FDA has been replaced by focused sampling, with the exception noted below for samples collected as part of FDA's TDS program.

FDA Total Diet Study

The TDS is distinct from regulatory monitoring in that it determines pesticide residues not in the raw commodity, but in foods that are prepared table-ready for consumption [5]. The sampled foods are washed, peeled, and/or cooked before analysis, simulating typical consumer handling. Residues found in the TDS program are not regulatory in nature but considered incidence and level monitoring.

TDS foods are sampled as "market baskets," with each market basket comprising samples of about 280 different foods that represent the average U.S. consumer's diet. Four regional market baskets are planned for each year and for each market basket, and samples are collected in three different cities within each region. The three samples of each food are combined to form a single composite prior to analysis. In addition to being analyzed for pesticide residues, TDS foods are also selectively analyzed for toxic and nutrient elements, industrial chemicals, and other chemical contaminants. Additional information about the history and design of the TDS as well as analytical results can be found in several FDA publications [7,8,9,10,11,12,13] and on FDA's website (http://www.fda.gov/Food/FoodScienceResearch/TotalDietStudy/default.htm). The TDS data on this website is less current than the pesticide regulatory monitoring data. The Agency is in the process of updating the website with additional TDS data.

Another distinction from FDA's pesticide residue regulatory monitoring is that the TDS foods are analyzed using methods that are modified to permit enhanced measurement of residues, generally at levels up to 10–100 times more sensitive than regulatory monitoring procedures. TDS residue levels as low as 0.1 parts per billion are routinely reported.

FDA Pesticide Monitoring Program Sampling Design

The goal of FDA's pesticide monitoring program is to carry out selective monitoring to achieve an adequate level of consumer protection. Many of the FDA samples are of the surveillance type; that is, there is no specific prior knowledge or evidence that a particular food shipment contains illegal residues. However, FDA's monitoring is not random because bias is introduced by emphasizing sampling of commodities and places of origin with a past history of violations, and to a lesser extent emphasizing larger-sized shipments.

For FY 2012, the import violation rate was 11.1 percent and the domestic violation rate was 2.8 percent. The FY 2012 domestic sample violation rate is consistent with those in recent years which have ranged from 0.7 – 2.4 percent; however, the import sample violation rate is up from 2.6–7.6 percent range from previous years. The increased violation rate is primarily due to the expanded analytical scope, *i.e.*, detection of additional new pesticide residues, of the pesticide program as a result of implementation of new analytical technologies in 2010 and 2011.

Sampling levels and bias for particular imported or domestic commodities can vary significantly from year to year (*e.g.* changing weather patterns, new or re-emergent pests, new invasive pest species, or developed resistance to pesticides). Pesticides and pesticide use changes due to these factors and others and some countries historically have more problems than others. Targeted commodities may not be the largest imported volume from a particular country. FDA does not infer statistical significance to results within a fiscal year or from year to year.

FDA has legal jurisdiction over both imports and domestic foods in interstate commerce. FDA allocates more of its resources towards testing imported samples (4365) as opposed to domestic samples (1158). Several states have their own monitoring programs for pesticides. As stated previously, FDA collaborates with these states and other federal monitoring programs. These other pesticide monitoring programs have agreements to inform FDA of any violative samples found in the domestic commerce. FDA utilizes this data and can follow up on any violations. This allows leveraging and focusing of FDA's resources to where they are most efficient and effectively used.

An important complement to FDA's pesticide monitoring program is its TDS Program previously discussed in this report. By its design, the TDS serves as an early warning system, capable of detecting many more pesticide residues and at much greater sensitivity when compared to FDA's regulatory program (FDA's regulatory program is designed to detect residues in violation of EPA tolerances).

Considering the above and coupled with available Agency resources, FDA has not attempted to develop a monitoring program that would be statistically based. However, it is FDA's opinion that the current sampling levels, coupled with broad-based enforcement strategies for imports, allow FDA to achieve the program's main objective of adequate consumer protection by selective enforcement. As described previously, import enforcement strategies that are available to the Agency are placement on Import Alert with DWPE for future entries of commodity/grower combinations that are found in violation of U.S. pesticide tolerances, (i.e., residue level exceeds the established tolerance level for a specific residue/item combination, or residues were found at a level of regulatory significance in a food for which no tolerance has been established), and country-wide Import Alert and DWPE of particular commodities if the violations are numerous and from multiple growers within any given country. Once a problem is identified, FDA can achieve broad enforcement by employing these strategies and detaining at their entry points the suspect imported foods. This procedure places the

burden of demonstrating product compliance with U.S. residue tolerances on the importer before the entry can be released into domestic commerce.

In FY 2012, FDA reviewed 570 private laboratories analyses of food shipments coming into the U.S. for pesticides. FDA scientists review the methods, LODs, and LOQs to ensure that the pesticides of interest can be detected and quantified by the private laboratory performing the analysis. Again, this frees up FDA resources to collect and test other targeted samples.

Identification of Imports (Products or Countries) Requiring Special Attention or Additional Studies

Addressing products and countries that warrant special attention is best carried out by providing specific guidance to the Agency field offices and laboratories to conduct increased sampling, both surveillance and focused, by means of field assignments under FDA's "Pesticides and Industrial Chemicals in Domestic and Imported Foods Compliance Program." FDA's sampling strategy of focusing on products that have a history of recurring violations will continue to be applied to future program coverage. Though specifics are provided in this report regarding import commodities and countries of origin that, based on FY 2012 data, may warrant special attention, FDA's sampling guidance provided to its field districts is typically based on multi-year data. FDA also utilizes available foreign pesticide usage data and data from USDA's PDP to develop sampling guidance. However, meaningful violative episodes that do occur are addressed in real-time as much as possible through use of the Import Alert system or enhanced sampling.

When attempting to compare FDA's import pesticide residue data by product or by country against its domestic data several factors should be considered:

- The import violation rate has typically been three to four times that of domestic foods. Therefore, it is expected that many imported food products in this report have a violation rate exceeding that of domestic products, and that many foreign countries will have a violation rate exceeding that of the U.S.

- The data analysis by commodity in this report was compiled according to FDA product codes (i.e., distinct commodities). For FY 2012, 766 different import food commodities and 164 different domestic food commodities were tested.

- FDA's pesticide monitoring program should not be viewed as random or statistical, rather it is focused towards products and countries of origin that have a history of violations or are suspected of violations based on available intelligence.

Review by Commodity

Considering the above factors, the following criteria were applied to the FY 2012 data to select import commodities that may warrant special attention (this is the same criteria applied since FY 2008):

- Commodities with at least 20 samples analyzed OR with a minimum of 3 violations
- AND a violation rate of 10 percent or higher

Table A lists the import commodities that meet the criteria. The commodities are sorted by violation rate and include the total number of samples analyzed for FY 2012. Commodities reported under non-specific product codes (e.g., leaf and stem vegetables, not elsewhere classified) were excluded.

Table A. Import Commodities That Warrant Special Attention Based on FY 2012 Sampling Results

Commodity	Samples Analyzed	Violation Rate (%)
Tea, oolong	3	100.0
Paprika, whole spice	10	80.0
Culantro*	5	80.0
Raspberries, red puree	4	75.0
Coriander sativum	6	66.7
Gluten, wheat	5	60.0
Rice, wild	5	60.0
Capsicums whole spice	19	52.6
Capsicums ground spice*	21	52.4
Ginseng*	27	48.1
Mushroom, sliced	20	45.0
Durian	7	42.9
Rice, basmati	169	41.4
Taro, dasheen	27	40.7
Rice, whole grain	13	38.5
Basil whole spice	21	38.1
Schizandra	8	37.5
Sweet Potato, yams	39	35.9
Lime	9	33.3
Papaya (Papaw)*	42	31.0
Rice, white	53	30.2
Snow Peas	18	27.8
Tomato, dried	18	22.2
Raisins*	18	22.2
Pepper*, hot, dried, or paste	40	20.0
Scallions, green onions	20	20.0
Blackberries*	42	19.0
Prickle pear*	16	18.8
Spinach	39	17.9
Orange, juice or concentrates	184	16.8
Ginger root	25	12.0
Cherry fruit	28	10.7

*Commodity was on the FY 2011 table of import commodities warranting special attention.

Review by Country of Origin

Table B lists countries of origin with a minimum of 50 samples analyzed and a 7 percent or greater violation rate for FY 2012.

Table B. Countries of Origin That Warrant Special Attention Based on FY 2012 Sampling Results

Country	Samples Analyzed	Violation Rate (%)
India	418	29.2
Brazil	72	27.8
Costa Rica	80	22.5
Vietnam	74	20.3
Korea, Republic (South)	63	19.0
Taiwan	54	18.5
Ecuador	63	14.3
Peru	130	11.5
China	628	10.4
Dominican Republic	51	9.8
Guatemala	126	9.5
Spain	55	9.1
Thailand	155	8.4
Mexico	532	7.3

Note: Violation rate does not always equate to risk. The majority of the violations are no-tolerance violations and many of these are at low levels (<0.1 ppm). Violations of a commodity exceeding a tolerance are counted the same as a low level no-tolerance violation in this table.

Acknowledgments

This report was compiled through the efforts of the following FDA personnel: Laurie A. Bates, Julie Callahan, Terry Councell, Nathaniel R. Esaw, Delores A. Flenoury, Standra Purnell, Kaniz Shireen, Young Lee, and Xuhui Zhao, in the Center for Food Safety and Applied Nutrition; Krisztina Z. Atkinson and Randall Lovell, in the Center for Veterinary Medicine; and Chris A. Sack, in the Office of Regulatory Affairs.

The database containing the FY 2012 data from which this report was derived is also available from FDA web at http://www.fda.gov/Food/FoodborneIllnessContaminants/Pesticides/default.htm. The 1996 through 2011 reports and databases are available on the same website. FDA pesticide monitoring data collected under the regulatory monitoring approach in 1992, 1993, 1994, and 1995 are available on personal computer diskettes and may be

purchased from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161; (telephone 1-800-553-6847); or at http://www.ntis.gov. Order numbers are: 1992, PB94-500899; 1993, PB94-501681; 1994, PB95-503132; and 1995, PB96-503156.

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Results and Discussion

Regulatory Monitoring

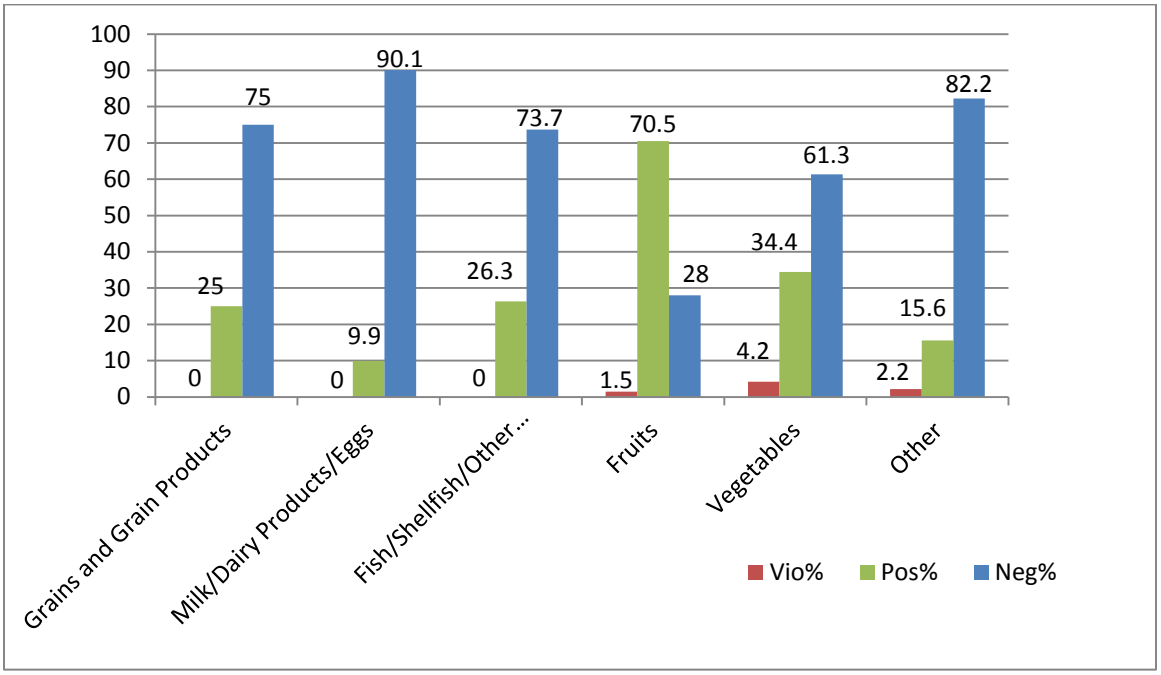
Discussion

Under regulatory monitoring, 5,523 samples were analyzed. Of these, 1,158 were domestic foods and 4,365 were imported foods.

Figure 1 shows the percentage of the domestic samples by commodity group with "No Residues Found," "Residues Found; No Violation," and "Violative" (a violative residue is defined in this report as a residue which exceeds an EPA tolerance or "FDA Action Level", or a residue at a level of regulatory significance for which no tolerance has been established in the sampled food.)

Figure 1 - Results of Domestic Samples by Commodity Group

Vio = Violative Samples; Pos = Samples with Residues – No Violation; Neg = Samples with No Residues



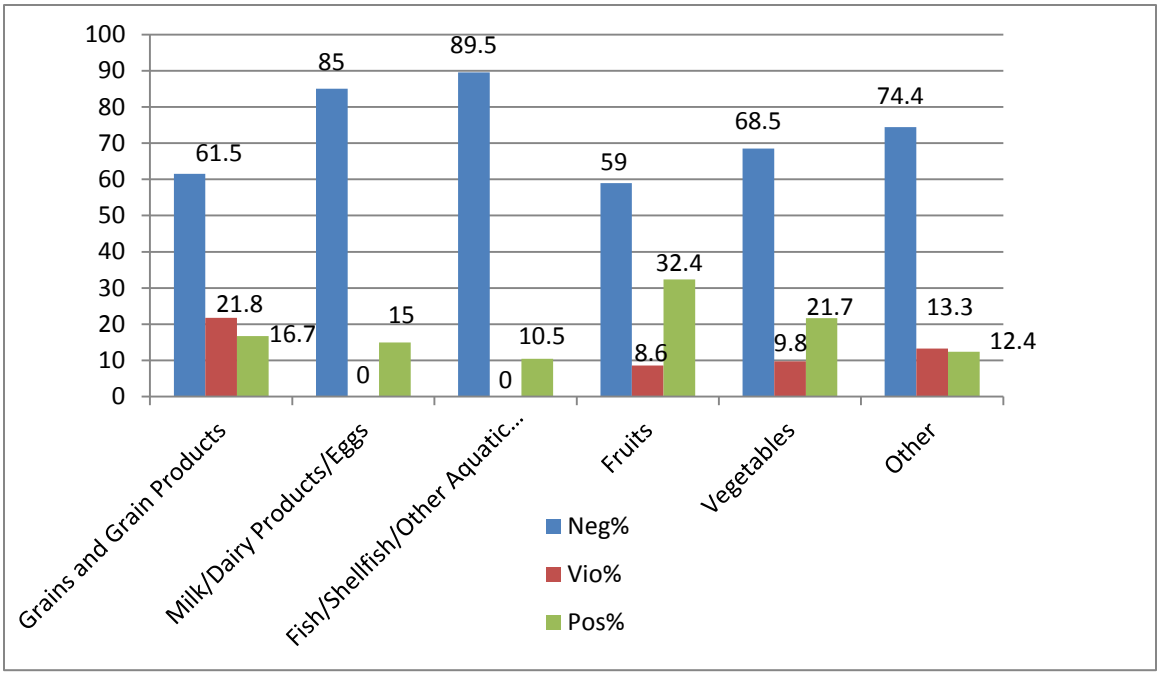
In FY 2012, 97.2 percent of all domestic foods analyzed by FDA were in compliance, i.e., no residues were found or residues found were not at violative levels. The compliance rate for domestic foods for FYs 1996 to 2011 was between 97.6 percent and 99.3 percent. As in earlier years, fruits and vegetables accounted for the largest proportion of the domestic commodities analyzed in FY 2012, comprising 75.0 percent of the total number of domestic samples.

Appendix A contains more detailed data on domestic monitoring findings by commodity, including the total number of samples analyzed, the percent samples with no residues detected, and the percent of violative samples including the nature of the violation (over-tolerance vs. no-tolerance). Of the 1158 domestic samples, 57 percent had no detectable residues and 2.8 percent had violative residues. In the largest commodity groups, fruits and vegetables, 28.0 percent and 61.3 percent of the samples, respectively, had no residues detected; 1.5 percent of the fruit samples and 4.2 percent of the vegetable samples contained violative residues (Figure 1). In the grains and grain products group, 75.0 percent of the samples had no residues detected, and none had violative residues. In the fish/shellfish/other aquatic products group, 73.7 percent had no detectable residues and there were no samples with violative residues. In the milk/dairy products/eggs group, 90.1 percent of the 81 samples analyzed had no detectable residues and none were violative. In the "Other" foods group that covers nuts, seeds, snack foods, and spices among other foods, 82.2 percent of the 90 samples analyzed had no detectable residues, and 2.2 percent were violative.

Findings by commodity group for the 4,365 import samples are shown in Figure 2. Overall for all imported foods, 88.9 percent of the samples analyzed in FY 2012 were in compliance. This compares with a compliance rate for imported foods for FYs 1996 through 2011 of 94–98 percent. Fruits and vegetables accounted for 67.5 percent of import samples.

Figure 2 - Results of Import Samples by Commodity Group

Vio = Violative Samples; Pos = Samples with Residues – No Violation; Neg = Samples with No Residues



Appendix B contains detailed data on import samples. Of the 4,365 import samples analyzed, 66.4 percent had no residues detected, while 11.1 percent had violative

residues. No residues were detected in 59.0 percent of imported fruit samples and 8.6 percent samples contained violative residues. Of the vegetable samples 68.5 percent of samples had no residues detected and 9.8 percent samples had violative residues. No residues were found in 85.0 percent of samples of the imported milk/dairy products/eggs group and no violations were detected. No residues were found in 89.5 percent of the imported fish/shellfish group and no violations were found in this food group. In the imported grains and grain products group, 61.5 percent had no detectable residues, and 21.8 percent contained violative residues. In the "Other" foods group consisting largely of nuts, seeds, oils, honey, candy, spices, multiple food products, and dietary supplements, 74.4 percent of the samples analyzed had no residues detected, while 13.3 percent of the samples (mostly dietary supplements and spices) contained violative residues.

Pesticide monitoring data collected under FDA's regulatory monitoring approach in FY 2012 are available to the public as a computer database. This database summarizes FDA FY 2012 regulatory monitoring coverage and findings by country/commodity/pesticide combination. The database also includes monitoring data by individual sample from which the summary information was compiled. Information on how to obtain this database as well as those for FY's 2004–2011 is provided in the acknowledgements section of this report.

Geographic Coverage

Domestic: A total of 1158 domestic samples were collected in FY 2012 from 43 states and Puerto Rico. Table 1 lists the number of domestic samples from each state and territory, in descending order.

Table 1. Domestic Samples Collected and Analyzed per State

State	# of Domestic Sample Collected/Analyzed
Washington	106
Minnesota	86
Michigan	80
Florida	80
California	70
Virginia	67
Texas	61
Wisconsin	61
Colorado	58
Oregon	54
New York	51
Louisiana	45
Wyoming	32
Georgia	32
Ohio	24

State	# of Domestic Sample Collected/Analyzed
Illinois	24
Indiana	22
Maryland	21
Missouri	17
Tennessee	16
Pennsylvania	16
Massachusetts	15
New Jersey	15
North Dakota	12
North Carolina	11
Kansas	9
South Carolina	8
Mississippi	8
Kentucky	8
Idaho	7
New Mexico	5
New Hampshire	5
Utah	5
Vermont	5
Arizona	4
Maine	3
Iowa	3
South Dakota	3
Puerto Rico	2
Delaware	2
Rhode Island	2
Alabama	1
Nebraska	1
West Virginia	1

No domestic samples were collected from the District of Columbia or the states of Alaska, Arkansas, Connecticut, Hawaii, Montana, Nevada, and Oklahoma. Puerto Rico is a U.S. Territory and as such, is included in the states and domestic counts.

Imports: A total of 4,365 samples representing food shipments from 104 countries (excluding U.S. goods sampled in import status) were collected in FY 2012. Table 2 lists the number of samples and country from which 10 or more samples were collected. Table 2a lists the countries of origin that had less than ten samples collected in FY 2012.

Table 2. Import Samples Collected and Analyzed per Country of Origin

State	# of Import Samples Collected/Analyzed
China	628
Mexico	532
Canada	440
India	418
Thailand	155
Peru	130
Chile	129
Guatemala	126
Turkey	109
Italy	101
Costa Rica	80
Vietnam	74
Pakistan	73
Brazil	72
Argentina	71
South Korea	63
Ecuador	63
Lebanon	60
United States*	44
Spain	55
Taiwan	54
Egypt	54
Dominican Republic	51
Poland	48
Greece	47
France	47
Germany	36
Jamaica	36
Israel	32
Honduras	31
Philippines	26
Hong Kong	25
Belgium	23
Colombia	22
United Arab Emirates	22
United Kingdom	19
Guam	19

State	# of Import Samples Collected/Analyzed
Netherlands	18
South Africa	18
El Salvador	17
Sri Lanka	14
Indonesia	14
Japan	12
Serbia	12
New Zealand	12
Nicaragua	12
Morocco	11
Bulgaria	11

*Foods reported sampled in import status but of U.S. origin, including U.S. goods returned (U.S. products originally exported and subsequently returned). Also includes imported foods collected in the domestic avenues of trade.

Table 2a. Countries From Which Less Than Ten Samples Were Collected and Analyzed

Afghanistan
Armenia
Australia
Austria
Bangladesh
Belize
Bolivia
Bosnia-Hercegovina
Cyprus
Denmark
Dominica
Ethiopia
Fiji
Georgia
Ghana
Grenada
Guinea
Haiti
Hungary
Iraq
Ireland
Jordan
Kenya
Latvia
Lithuania
Macedonia
Madagascar
Malawi
Malaysia
Malta & Gozo
Moldova
Nigeria
Norway
Palestinian Territory
Panama
Papua New Guinea
Paraguay
Portugal
Romania
Russia
Saint Lucia
Saudi Arabia
Singapore
St. Vincent & The Grenadines
Sweden
Switzerland
Syrian Arab Republic
Tanzania
Togo
Trinidad & Tobago
Tunisia
Uganda
Ukraine
Uruguay
Vanuatu
West Bank
Yemen

Domestic/Import Violation Rate Comparison

In FY 2012, 1,158 domestic and 4,365 import samples were collected and analyzed. Pesticide residues were detected in 43.0 percent of the domestic samples and in 33.6

percent of the import samples. Violative residues were found in 2.8 percent of the domestic samples and 11.1 percent of the import samples. Among grains and grain products, the violation rate was 21.8 percent for imports; none of the domestic samples contained violative residues. No violations were found in the milk/dairy products/eggs group or the fish/shellfish/other aquatic products group for either domestic or import samples. In fruit samples the violation rate was 1.5 percent for domestic samples and 8.6 percent for imports. For vegetables, 4.2 percent of domestic samples and 9.8 percent of import samples contained violative residues. In the category "Other" (mostly nuts, seeds, oils, honey, candy, spices, multiple food products, and dietary supplements),the violation rate was 2.2 percent for domestic samples and 13.3 percent for import samples. Dietary supplements and spices accounted for most of the samples with violative residues for the import "Other" foods group.

Of the 30 domestic violative samples, 29 were found to contain pesticide residues that have no published EPA tolerance, i.e. "no-tolerance" violation; and one was found to contain pesticide residues that exceeded a tolerance, i.e. "over-tolerance" violation.

Of the 484 import violative samples, 472 were found to contain no-tolerance, violative pesticide residues; and 34 were found to contain over-tolerance/action level pesticide residues. Additionally, 22 of the 472 import violative samples that contained no-tolerance, violative residues also had other pesticide residues that exceeded a tolerance.

Pesticide Coverage

Table 3 lists the 484 pesticides that can be detected (Detectable) by the methods used in FY 2012; each of the 195 pesticides that were actually detected (Found) is indicated by an asterisk (*).

Table 3. Pesticides Detectable, New and Found by Methods Used in FY 2012

2,6-DIPN	3,4-dichloroaniline	Abamectin
Acephate*	Acetamiprid*	Acetochlor
Acibenzolar-S-methyl*	Acrinathrin	Alachlor
Alanycarb	Aldicarb*	Aldrin
Allethrin	Alpha cypermethrin	Ametryn*
Amicarbazone	Aminocarb	Amitraz
Anilazine	Aramite	Aspon
Atrazine*	Azinphos ethyl	Azinphos-methyl*
Azoxystrobin*	Benalaxyl*	Bendiocarb
Benfluralin	Benfuracarb	Benodanil
Benomyl	Benoxacor	Bensulide
Bentazon	Benzoximate	Benzoylprop ethyl
BHC	Bifenazate*	Bifenox
Bifenthrin*	Biphenyl*	Bitertanol
Boscalid*	Bromacil	Bromophos

Bromophos-ethyl	Bromopropylate*	Bromuconazole
Bufencarb	Bulan	Bupirimate*
Buprofezin*	Butachlor	Butafenacil
Butocarboxim	Butoxycarboxim	Butralin*
Butylate	Cadusafos	Captafol
Captan*	Carbaryl*	Carbendazim*
Carbetamide*	Carbofuran*	Carbophenothion
Carbosulfan*	Carboxin	Carfentrazone ethyl ester
Chlorantraniliprole*	Chlorbenside	Chlorbromuron
Chlorbufam	Chlordane	Chlordecone
Chlordimeform	Chlorethoxyfos	Chlorfenapyr*
Chlorfenvinphos*	Chlorfluazuron	Chlorflurecol methyl
Chlormephos	Chlornitrofen	Chlorobenzilate
Chloroneb	Chloropropylate	Chlorothalonil*
Chlorotoluron	Chloroxuron	Chlorpropham*
Chlorpyrifos methyl*	Chlorpyrifos*	Chlorthiophos
Clethodim	Clodinafop-propargyl	Clofentezine*
Clomazone	Cloquintocet-mexyl	Clothianidin*
Coumaphos*	Crotoxyphos	Crufomate
Cumyluron	Cyanazine	Cyanofenphos
Cyanophos	Cyazofamid*	Cycloate
Cycluron*	Cyflufenamid	Cyfluthrin*
Cymoxanil	Cypermethrin*	Cyprazine
Cyproconazole*	Cyprodinil*	Cyromazine*
Daimuron	DCPA*	DDT*
DEF	Deltamethrin*	Demeton
Desmedipham	Desmetryn	Diafenthiuron
Dialifor	Diallate	Diazinon*
Dichlobenil	Dichlofenthion	Dichlofluanid
Dichlone	Dichlormid	Dichlorvos*
Diclobutrazol	Diclofop	Dicloran*
Dicofol*	Dicrotophos*	Dieldrin*
Diethatyl-ethyl	Diethofencarb*	Difenoconazole*
Diflubenzuron*	Dimethachlor*	Dimethametryn
Dimethenamid	Dimethoate*	Dimethomorph*
Dimoxystrobin	Diniconazole*	Dinitramine
Dinobuton	Dinotefuran*	Dioxacarb*
Dioxathion	Diphenamid	Diphenylamine*
Disulfoton*	Diuron*	DNOC
Doramectin	Edifenphos	Emamectin benzoate*
Endosulfan*	Endrin	EPN*
Epoxiconazole	Eprinomectin	EPTC
Esfenvalerate*	Esprocarb	Etaconazole

Ethaboxam	Ethalfluralin	Ethephon
Ethidimuron	Ethiofencarb	Ethiolate
Ethion*	Ethiprole	Ethirimol
Ethofumesate	Ethoprop	Ethoxyquin*
Etobenzanid	Etofenprox*	Etoxazole*
Etridiazole	Etrimfos	Famoxadone*
Famphur	Fenamidone*	Fenamiphos
Fenarimol*	Fenazaquin*	Fenbuconazole*
Fenfuram	Fenhexamid*	Fenitrothion*
Fenobucarb(BPMC)*	Fenoxaprop-ethyl	Fenoxycarb
Fenpropathrin*	Fenpropimorph	Fenpyroximate, e-*
Fensulfothion	Fenthion	Fenuron*
Fenvalerate*	Fipronil*	Flamprop-methyl
Flamprop-m-isopropyl	Flonicamid*	Fluazifop butyl ester
Fluazinam	Flubendiamide*	Fluchloralin
Flucythrinate*	Fludioxonil*	Flufenacet
Flufenoxuron*	Fluometuron	Fluopicolide
Fluoxastrobin*	Fluquinconazole	Fluridone
Flusilazole*	Fluthiacet-methyl	Flutolanil*
Flutriafol*	Fluvalinate*	Folpet
Fonofos	Forchlorfenuron	Formetanate*
Formothion	Fosthiazate	Fuberidazole
Furalaxyl	Furathiocarb	Furilazole
Gardona	Halofenozide	Heptachlor
Heptenophos	Hexachlorobenzene*	Hexaconazole*
Hexaflumuron	Hexazinone	Hexythiazox*
Hydramethylnon	IBP*	Imazalil*
Imazamethabenz methyl	Imibenconazole	Imidacloprid*
Indoxacarb*	Ipconazole*	Iprodione*
Iprovalicarb*	Isazofos	Isocarbamid
Isocarbophos*	Isofenphos	Isoprocarb*
Isopropalin	Isoprothiolane*	Isoproturon
Isoxaflutole	Ivermectin	Kresoxim-methyl*
Lactofen	Lambda-cyhalothrin*	Lenacil
Leptophos	Lindane	Linuron*
Lufenuron*	Malathion*	Mandipropamid*
Mecarbam	Mefenacet	Mepanipyrim
Mephosfolan	Mepronil	Mesotrione
Metaflumizone*	Metalaxyl*	Metaldehyde*
Metazachlor	Metconazole*	Methabenzthiazuron
Methamidophos*	Methidathion*	Methiocarb
Methomyl*	Methoprene*	Methoprotryne
Methoxychlor	Methoxyfenozide*	Metobromuron

Metolachlor*	Metolcarb	Metrafenone
Metribuzin*	Mevinphos	Mexacarbate
MGK 264*	Mirex	Molinate
Monocrotophos*	Moxidectin	Myclobutanil*
Naled	Napropamide	Neburon
Nicotine	Nitenpyram	Nitralin
Nitrapyrin	Nitrofen	Nitrofluorfen
Nitrothal-isopropyl	Norea	Norflurazon
Novaluron*	Nuarimol*	Octhilinone
Octyldiphenyl PO_4	Ofurace	Omethoate*
Ovex	Oxadiazon	Oxadixyl*
Oxamyl*	Oxydemeton-methyl	Oxyfluorfen
Paclobutrazol*	Parathion	Parathion methyl
PCBs	Pebulate	Penconazole*
Pencycuron*	Pendimethalin*	Permethrin*
Perthane	Pesticide	Phenmedipham*
Phenothrin	Phenthoate	Phenylphenol, o-*
Phorate*	Phosalone*	Phosmet*
Phosphamidon	Phoxim*	Picoxystrobin*
Piperonyl butoxide*	Piperophos	Pirimicarb*
Pirimiphos ethyl	Pirimiphos methyl*	Prallethrin
Pretilachlor	Prochloraz*	Procyazine
Procymidone*	Profenofos*	Profluralin
Prolan	Promecarb	Prometon
Prometryn*	Pronamide	Propachlor
Propamocarb*	Propanil	Propargite*
Propazine	Propetamphos	Propham
Propiconazole*	Propoxur*	Prothiofos
Prothoate	Pymetrozine	Pyracarbolid
Pyraclostrobin*	Pyrazon	Pyrazophos
Pyrethrins*	Pyridaben*	Pyridaphenthion
Pyrifenox	Pyrimethanil*	Pyriproxyfen*
Quinalphos	Quinoxyfen*	Quintozene*
Resmethrin*	Ronnel	Rotenone*
Salithion	Schradan	Sebuthylazine
Secbumeton	Sethoxydim	Siduron
Simazine	Simetryne	Spinetoram*
Spinosad*	Spirodiclofen*	Spiromesifen*
Spirotetramat*	Spiroxamine*	Sulfallate
Sulfentrazone*	Sulfotepp	Sulfur*
Sulphenone	Sulprofos	Tebuconazole*
Tebufenozide*	Tebufenpyrad*	Tebupirimfos
Tebutam	Tebuthiuron	Tecnazene*

Teflubenzuron*	Tefluthrin	Temephos
TEPP	Terbacil	Terbufos
Terbumeton	Terbuthylazine	Terbutryn
Tetraconazole	Tetradifon*	Tetramethrin
Tetrasul	Thiabendazole*	Thiacloprid*
Thiamethoxam*	Thidiazuron	Thiobencarb
Thiofanox	Thiometon	Thionazin
Thiophanate-methyl*	Tolclofos methyl*	Tolylfluanid
Toxaphene	Tralkoxydim	Tranid
Triadimefon*	Triadimenol*	Tri-allate
Triazophos*	Tributoxy PO_4*	Trichlorfon*
Triclosan	Tricyclazole*	Tridiphane
Trietazine	Trifloxystrobin*	Triflumizole*
Triflumuron	Trifluralin*	Triflusulfuron methyl ester
Trimethacarb	Triphenyl PO_4*	Tris(1,3-dichloro-2-propyl) PO_4
Tris(beta-chloroethyl) PO_4	Tris(chloropropyl) PO_4	Triticonazole
Uniconazole	Vamidothion	Vernolate
Vinclozolin	Zoxamide*	

Animal Feeds

In FY 2012, a total of 328 animal feed samples (173 domestic and 155 imports) were analyzed for pesticides by the FDA (Table 4). Of the 173 domestic surveillance samples, 110 (63.6%) contained no detectable residues, 59 (34.1%) contained one or more detectable, but not violative, residues, and 4 (2.3%) contained a violative residue (a violative residue is defined in this report as a residue which exceeded an EPA tolerance or FDA Action Level, or a residue at a level of regulatory significance for which no tolerance has been established in the sampled feed). Of the 155 import samples, 110 (71.0%) contained no detectable residues, 42 (27.1%) contained one or more detectable, but not violative, residues, and 3 (1.9%) contained one or more violative residues.

During FY 2012, the following samples were found to contain one or more violative residues. A domestic surveillance sample of chicken feed from Georgia contained no tolerance, violative residue of *o*-phenylphenol at a level of 0.214 ppm. A shipment of soybean meal from Wisconsin contained no tolerance, violative residue of piperonyl butoxide at a level of 0.019 ppm. A sample of vitamin E from Georgia contained 0.043 ppm acephate, exceeding EPA's 0.02 ppm food handling establishment tolerance. A raisin pomace shipment from California had 24 different detectable pesticide residues. Of the 24, one pesticide, *o*-phenylphenol, was violative as there is no tolerance established on this commodity in 40 CFR 180.129.

A shipment of soluble wheat protein for animal feed imported from France, and another from Belgium, contained a no tolerance, violative residue of pirimiphos-methyl at levels

of 0.520 and 0.391 ppm, respectively. A sample of granular canola meal imported from Canada contained a no tolerance, violative residue of diphenylamine at a level of 0.059 ppm.

Table 4. Summary of Animal Feed Analyzed for Pesticides

Type of Feed	Samples Analyzed #	Samples with No Pesticide Residues #	Samples with No Pesticide Residues %	Violative Samples #	Violative Samples %
Whole/Ground Seeds	131	113	86.3	0	-
Mixed Feed Rations	84	22	26.2	1	1.2
Plant By-products	81	63	77.8	5	6.2
Supplements/Misc.	19	12	63.2	1	5.3
Hay/Hay Products	5	4	80.0	0	-
Animal By-products	8	6	75.0	0	-
TOTAL	328	220	67.1	7	2.1

Of the 63 domestic surveillance samples with positive results, a total of 124 residues were detected (106 quantifiable, 18 trace); whereas among the imports, 45 samples contained 55 residues (44 quantifiable, 11 trace). Ethoxyquin and malathion were the most frequently found pesticides and together accounted for 49.2 % of all residues detected (Table 2). Piperonyl butoxide was the third most commonly detected residue contributing 5.0 % to the total.

Table 5. Pesticides Most Commonly Reported in Samples of Animal Feeds

Pesticide	Total # of Samples	Quantifiable Samples	Range* (ppm)	Median* (ppm)
ethoxyquin	59	56	0.024 – 1350.0	0.849
malathion	29	26	0.010 – 0.925	0.065
piperonyl butoxide	9	8	0.017 – 0.348	0.052
azoxystrobin	6	5	0.015 – 0.034	0.02
chlorpyrifos-methyl	4	3	0.012 – 0.70	0.27
pirimiphos-methyl	4	4	0.090 – 0.85	0.46
triphenyl phosphate	4	0	n/a	n/a
chlorpropham	3	3	0.026 – 2.40	0.45
methoprene	3	3	0.012 – 0.315	0.176
propiconazole	3	3	0.017 – 0.024	0.02
acephate	2	2	0.022 – 0.043	0.033
bifenthrin	2	1	0.501	0.501
biphenyl	2	0	n/a	n/a
carbendazim	2	2	0.010 – 0.140	0.075
chlorantraniliprole	2	1	0.18	0.18
chlorpyrifos	2	1	0.015	0.015
diphenylamine	2	1	0.059	0.059
lambda-cyhalothrin	2	2	0.043 – 0.076	0.06
o-phenylphenol	2	2	0.080 – 0.214	0.147
thiabendazole	2	2	0.014 – 0.374	0.194

* in samples containing quantifiable levels of pesticides
Note: 35 additional pesticides were identified in a single sample only and were not presented in this table.

Focused Sampling

As previously described, FDA conducts "focused sampling" by means of short-term, regulatory-based field assignments. In FY 2012, FDA issued two pesticide-related field assignments "Sample Collection and Analysis of Orange Juice and Juice Concentrate Imported from Brazil for Pesticide Residues" and "Follow-up on USDA Findings of Pesticide Residues in Baby Food."

In the first assignment FDA identified illegal use of carbendazim in concentrated orange juice from Brazil. FDA Districts were directed to visit eight different orange juice manufacturers who receive most of their orange juice concentrate from Brazil. Samples of finished (reconstituted) orange juice were collected for pesticide analysis.

The second assignment instructed FDA staff to visit the manufacturing plants where baby foods with violative pesticide residues, as determined by USDA, were produced. Instructions included collection of samples from these plants for both the raw ingredients as well as the finished baby food products.

Results of the assignment are listed in Table 6 A, B, and C.

Table 6A. Orange Juice Analyzed for Pesticides

Country	No. of Samples
Argentina	2
Armenia	1
Belize	5
Brazil	29
Bulgaria	1
Canada	37
Columbia	1
Costa Rica	6
Dominican Republic	10
Egypt	1
Honduras	5
Italy	7
Korea	2
Lebanon	1
Malaysia	1
Mexico	56
Morocco	2
Poland	5
Russia	2
Thailand	2
Trinidad	3
Turkey	2
United Arab Emirates	2
United Kingdom	1

One hundred and eighty four (184) orange juice samples were tested in FY 2012. No pesticides were detected in 116 samples however pesticides were detected in 70 samples. There were 30 samples with no tolerance violations (no over tolerance violations or action level violations) That contained carbendazim (which has no US tolerances) and 1 sample contained methidathion.

Table 6 B. Pesticide Residues found in Orange Juice

Compound	Samples tested	Samples with detections	Min	Max
CARBARYL	184	6	0	0.734
CARBENDAZIM	184	60	0	0.386
CYPERMETHRIN	184	1	0.084	0.084
DIMETHOATE	184	2	0.011	0.015
IMAZALIL	184	5	0.021	0.414
IMIDACLOPRID	184	1	0.013	0.013
METHIDATHION	184	4	0.007	0.121
OMETHOATE	184	1	0.01	0.01
PROPARGITE	184	1	0.007	0.007
THIABENDAZOLE	184	4	0	0.074

Table 6 C. Baby Foods Collected and Tested

Commodity	No. of samples	No. of detections	Commodity	No. of samples	No. of detections
Pears	11	6	Rice Cereal	2	0
Carrots	4	0	Sweet Potato	1	0
Green Beans	3	1	Mixed Grain Cereal	1	1
Oat Meal	3	0			
Sweet Peas	2	0			

No violative pesticides were found in any of the 27 baby food samples collected and tested. Diflubenzuron in pears, bifenthrin in green beans, diphenylamine in oat meal, and malathion in mixed grain cereal were detected at levels below established tolerances for these commodities.

Total Diet Study

More than 350 chemicals that can be detected by the analytical methods used in FDA's TDS, residues of 172 individual compounds were found in the foods analyzed in the four market baskets reported for FY 2012 (Market Baskets 11-4, 12-1, 12-2, and 12-3). The compounds found consisted of parent pesticides and related compounds (e.g., isomers, metabolites, degradation products) that are included with the results for the parent pesticide for reporting and enforcement purposes.

Table 7 lists the most frequently found residues (at least 2 % of the samples) in the TDS foods other than infant and toddler foods, the total number of findings, and the percent occurrence in the four market baskets analyzed in FY 2012 (912 total samples). Historically, the five most frequently observed chemicals are DDT, malathion, chlorpyrifos-methyl, endosulfan, and dieldrin. In FY 2012, these pesticides are still found in comparatively high frequency, but are now joined by new pesticide residues, including piperonyl butoxide, boscalid, azoxystrobin, and bifenthrin, that were added to the analytical scope in FY's 2010 and 2011.

Table 7. Frequency of Occurrence of Pesticide Residues in the Total Diet Study for Foods Other Than Infant and Toddler Foods[1]

Pesticide[2]	Findings #	Occurrence %	Range ppm
Piperonyl butoxide	250	27	0.0001-0.022
DDT	245	27	0.0001-0.0192
Boscalid	223	24	0.0001-1.715
Chlorpyrifos	189	21	0.0001-0.313
Malathion	181	20	0.0001-0.038
Azoxystrobin	138	15	0.0001-0.023
Bifenthrin	125	14	0.0001-0.128
Chlorpropham	124	14	0.0001-2.970
Chlorpyrifos methyl	117	13	0.0001-0.050
Phenylphenol, o-	113	12	0.0001-0.307
Thiabendazole	101	11	0.0001-0.241
Myclobutanil	96	11	0.0001-0.176
Methoxyfenozide	90	10	0.0001-0.276
Imidacloprid	81	9	0.0004-0.142
Pyraclostrobin	80	9	0.0001-0.210
Tebuconazole	78	9	0.0001-0.028
Pyrimethanil	71	8	0.0001-0.470
MGK 264	66	7	0.0001-0.037
Carbaryl	61	7	0.0001-0.162
Thiamethoxam	58	6	0.0001-0.008
Lambda-cyhalothrin	57	6	0.0001-0.104
Acetamiprid	56	6	0.0001-0.092
Cyfluthrin	54	6	0.0001-0.124
Metalaxyl	52	6	0.0001-0.031
Quintozene	52	6	0.0001-0.0101
Endosulfan	52	6	0.0001-0.0197
Imazalil	51	6	0.0002-0.242
Permethrin	50	5	0.0002-0.276
Difenoconazole	47	5	0.0001-0.006

Pesticide[2]	Findings #	Occurrence %	Range ppm
Propiconazole	43	5	0.0001-0.274
Hexachlorobenzene	42	5	0.0001-0.0007
Pendimethalin	42	5	0.0001-0.002
Chlorantraniliprole	39	4	0.0001-0.147
Carbendazim	37	4	0.0002-0.043
Iprodione	35	4	0.0001-1.875
Dieldrin	35	4	0.0001-0.053
Pirimiphos methyl	34	4	0.0001-1.640
Buprofezin	34	4	0.0001-0.028
Propamocarb	33	4	0.0001-0.248
Biphenyl	32	4	0.0007-0.031
Cyprodinil	32	4	0.0001-0.229
Trifluralin	31	3	0.0001-0.004
Captan	28	3	0.0001-0.882
Dimethoate	28	3	0.0001-0.119
Quinoxyfen	27	3	0.0001-0.022
DCPA	25	3	0.0001-0.014
Bifenazate	24	3	0.0001-0.556
Trifloxystrobin	24	3	0.0001-0.016
Acephate	24	3	0.0002-0.106
Metribuzin	23	3	0.0001-41.000
Methamidophos	23	3	0.0002-0.065
Phosmet	23	3	0.0001-2.000
Propargite	23	3	0.0001-0.016
Dicofol	22	2	0.0001-0.0008
Diphenylamine	22	2	0.0001-0.507
Clothianidin	21	2	0.0003-0.008
Fluopicolide	21	2	0.0001-0.636
Mandipropamid	20	2	0.0001-0.453
Ethion	20	2	0.0001-0.003
Fludioxonil	19	2	0.0001-0.856
Omethoate	19	2	0.0001-0.008
Linuron	19	2	0.0002-0.044
Indoxacarb	18	2	0.0003-0.112
Methidathion	17	2	0.0001-0.0013
Cypermethrin	17	2	0.002-0.152
Chlordane	17	2	0.0002-0.015
Fenvalerate	16	2	0.0002-0.008
Metolachlor	16	2	0.0001-0.0008
Flonicamid	15	2	0.0002-0.215

Pesticide[2]	Findings #	Occurrence %	Range ppm
Fenhexamid	14	2	0.0004-0.076
Kresoxim-methyl	14	2	0.0001-0.004
Fenpyroximate, e-	14	2	0.0002-0.027
Fenbuconazole	14	2	0.0001-0.046
Pyriproxyfen	14	2	0.0001-0.004

[1] Based upon 4 market baskets consisting of 912 total items.
[2] Isomers, metabolites, and related compounds are included with the 'parent' pesticide

The TDS program also collects and analyzes infant and toddler foods. Table 8 provides the frequency of occurrence of the pesticide residues that were found in 2 percent or more of these samples in the four collections of infant and toddler foods (159 samples total) in FY 2012 and the range of levels found. As noted for Table 7, the pesticide residues found most frequently in FY 2012 have changed slightly to reflect the expanded analytical scope of the pesticide program.

Table 8. Frequency of Occurrence of Pesticide Residues in Total Diet Study Infant and Toddler Foods[1]

Pesticide[2]	Findings #	Occurrence %	Range ppm
Boscalid	71	45	0.0001-0.028
Piperonyl butoxide	60	38	0.0001-0.004
Acetamiprid	50	31	0.0001-0.013
Chlorpyrifos	44	28	0.0001-0.018
Thiabendazole	43	27	0.0002-0.090
Methoxyfenozide	42	26	0.0001-0.009
Pyrimethanil	39	25	0.0001-0.052
Chlorantraniliprole	38	24	0.0001-0.018
Azoxystrobin	37	23	0.0001-0.003
Thiacloprid	34	21	0.0001-0.011
MGK 264	32	20	0.0002-0.008
Captan	31	19	0.0004-0.080
Myclobutanil	30	19	0.0001-0.003
Diphenylamine	29	18	0.0001-0.034
Carbendazim	29	18	0.0003-0.040
DDT	27	17	0.0001-0.003
Bifenthrin	26	16	0.0001-0.027
Lambda-cyhalothrin	24	15	0.0002-0.020

Pesticide[2]	Findings #	Occurrence %	Range ppm
Malathion	24	15	0.0001-0.073
Cyprodinil	23	14	0.0001-0.009
Carbaryl	21	13	0.0001-0.001
Difenoconazole	20	13	0.0001-0.0009
Fludioxonil	18	11	0.0002-0.012
Propiconazole	16	10	0.0001-0.002
Tebuconazole	12	8	0.0001-0.001
Thiamethoxam	12	8	0.0001-0.002
Imidacloprid	12	8	0.0008-0.007
Chlorpyrifos methyl	11	7	0.0001-0.045
Fenvalerate	11	7	0.0002-0.008
Bifenazate	11	7	0.0001-0.003
Fenpropimorph	10	6	0.0001-0.001
Pyraclostrobin	10	6	0.0002-0.002
Endosulfan	10	6	0.0002-0.002
Pendimethalin	10	6	0.0001-0.0002
Indoxacarb	10	6	0.0002-0.002
Kresoxim-methyl	10	6	0.0001-0.0007
Clothianidin	10	6	0.0003-0.002
Imazalil	10	6	0.0002-0.005
Fenbuconazole	10	6	0.0001-0.007
Permethrin	9	6	0.0003-0.006
Biphenyl	9	6	0.001-0.018
Trifloxystrobin	9	6	0.0001-0.0009
Iprodione	9	6	0.0005-0.016
Hexythiazox	9	6	0.0002-0.015
Novaluron	9	6	0.0003-0.002
Pyridaben	8	5	0.0001-0.0007
Chlorpropham	8	5	0.0001-0.071
Diflubenzuron	7	4	0.001-0.010
Quintozene	6	4	0.0001-0.0011
Methamidophos	6	4	0.0006-0.003
Dioxacarb	6	4	0.0005-0.002
Propamocarb	5	3	0.0001-0.002
Phenylphenol, o-	5	3	0.002-0.007
Fenpyroximate, e-	5	3	0.0002-0.0006
Thiophanate-methyl	5	3	0.0002-0.010
Deltamethrin	5	3	0.004-0.028
Metribuzin	5	3	0.0002-0.002

Pesticide[2]	Findings #	Occurrence %	Range ppm
Hexachlorobenzene	5	3	0.0001-0.0002
Spinetoram	5	3	0.0004-0.002
Ethylenethiourea[3]	4	3	0.005-0.024
Phosmet	4	3	0.0001-0.002
Fenhexamid	4	3	0.0003-0.004
Dieldrin	4	3	0.0004-0.002
Flubendiamide	4	3	0.001-0.003
Spinosad	3	2	0.0003-0.017
Cyfluthrin	3	2	0.0002-0.0007
Acephate	3	2	0.0003-0.001
Metalaxyl	3	2	0.0001-0.0007
Flusilazole	3	2	0.0001-0.0002
Epoxiconazole	3	2	0.0001-0.0002

[1] Based upon 4 market baskets consisting of 159 total items.
[2] Isomers, metabolites, and related compounds are included with the 'parent' pesticide.
[3] Reflects overall incidence; however, only 23 selected foods per market basket (i.e. 92 items total) were analyzed for Ethylenethiourea.

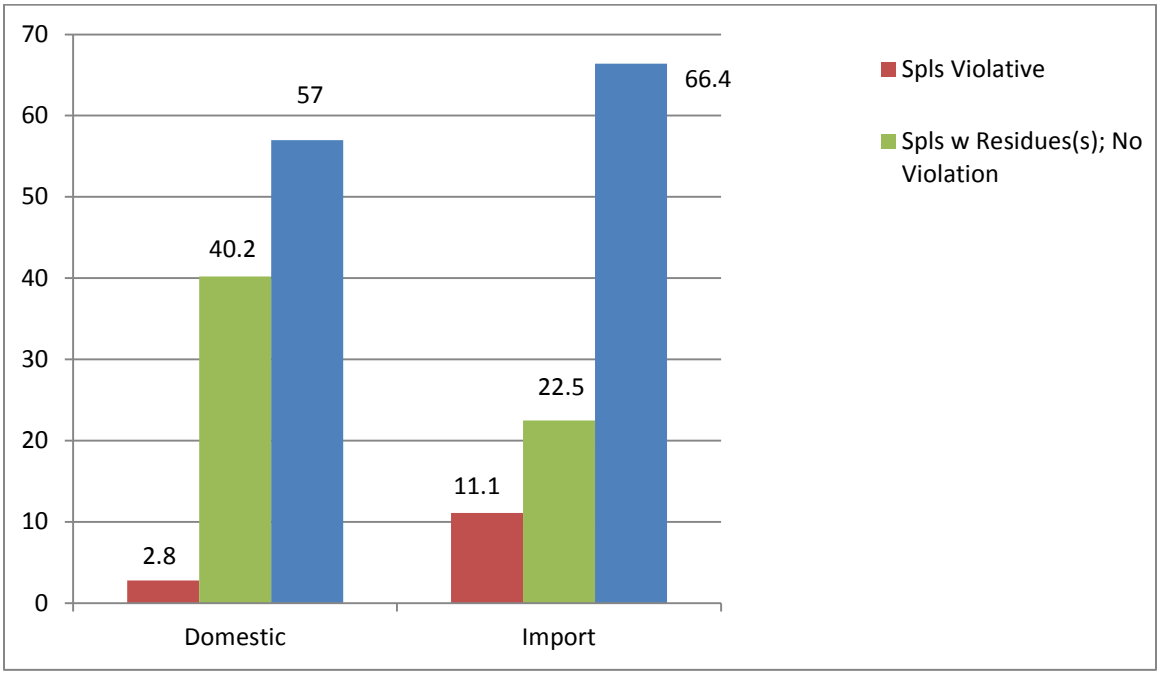
Summary

Regulatory Monitoring

A total of 5,523 samples of both domestically produced and imported food from 104 countries were analyzed for pesticide residues in FY 2012. No residues were found in 57.0 percent of domestic and 66.4 percent of import samples (Figure 3) analyzed under FDA's regulatory monitoring approach in FY 2012. Only 2.8 percent of domestic and 11.1 percent of import samples had residue levels that were violative. The findings for FY 2012 demonstrate that pesticide residue levels in foods are generally well below EPA tolerances; the increased import sample violation rate reflects the expansion of the analytical scope of pesticide residues from the implementation of new technologies implemented in FY's 2010 and 2011.

FDA also collected and analyzed 173 domestic and 155 imported animal feed samples for pesticides. No residues were found in 64 percent of the domestic feed samples and in 71 percent of the import feed samples. Four domestic feed samples and 3 imported feed samples had residue findings for which no EPA or FDA acceptable levels have been established.

Figure 3. Summary of Results of Domestic vs. Import Samples-



Total Diet Study

In FY 2012, the types of pesticide residues found and their frequency of occurrence in TDS increased due the expansion of the analytical scope of pesticide residues from the implementation of new technologies in FY's2010 and 2011. The pesticide residue levels found were well below regulatory standards. Results of baby foods tested in FY 2012 (and earlier years) also provide evidence of only low levels of pesticide residues in these foods.

Appendices

A. Analysis of Domestic Samples by Commodity Group in FY 2012

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Grains and Grain Products					
Barley & barley products	11	91	0.0	0	0
Corn & corn products	16	88	0.0	0	0
Oats & oat products	3	100	0.0	0	0
Rice & rice products	16	69	0.0	0	0
Wheat & wheat products	46	65	0.0	0	0
Soybeans and soybean grain products	3	100	0.0	0	0
Other grains & grain products	4	75	0.0	0	0
Macaroni & noodles	0	0	0.0	0	0
Breakfast cereals	1	100	0.0	0	0
Bakery products, crackers, etc.	0	0	0.0	0	0
Subtotal	**100**	**75.0**	**0.0**	**0**	**0**
Milk/Dairy Products/Eggs					
Cheese & cheese products	2	100	0.0	0	0
Eggs	70	88	0.0	0	0
Milk/cream & milk products	9	100	0.0	0	0
Subtotal	**81**	**90.1**	**0.0**	**0**	**0**
Fish/Shellfish/Other Aquatic Products					
Fish and Fish Products	10	70	0.0	0	0
Shellfish & Crustaceans	2	100	0.0	0	0
Aquaculture seafood	7	71	0.0	0	0
Other Aquatic Animals & Products	0	0	0.0	0	0
Subtotal	**19**	**73.7**	**0.0**	**0**	**0**
Fruits					
Blackberries	0	0	0	0	0
Blueberries	10	60	0.0	0	0
Cranberries	6	33	0.0	0	0
Grapes, raisins	13	15	0.0	0	0
Raspberries	13	15	0.0	0	0
Strawberries	22	23	0.0	0	0

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Grapefruit	5	20	0.0	0	0
Lemons	5	0.0	0.0	0	0
Oranges	9	0.0	0.0	0	0
Other citrus fruit	6	0.0	0.0	0	0
Apples	109	15	0.9	0	1
Pears	18	61	5.6	0	1
Other pome fruit	0	0.0	0.0	0	0
Apricots	0	0.0	0.0	0	0
Avocadoes	2	100	0.0	0	0
Cherries	0	0.0	0.0	0	0
Nectarines	8	0.0	0	0	0
Peaches	24	8.3	4.2	0	1
Plums/prunes	5	0.0	20.0	0	1
Papaya	1	0.0	0.0	0	0
Pineapple	0	0.0	0.0	0	0
Other sub-tropical fruit	5	60	20.0	0	1
Cantaloupe	16	81	0.0	0	0
Watermelon	35	57	0.0	0	0
Other melons	2	100	0.0	0	0
Other fruits/fruit products	2	50	0.0	0	0
Apple juice	4	75	0.0	0	0
Citrus juice	2	0.0	0.0	0	0
Other fruit juices	0	0.0	0.0	0	0
Processed fruit (jellies, toppings, fillings)	3	0.0	0.0	0	0
Subtotal	**325**	**28.0**	**1.5**	**0**	**5**
<u>Vegetables</u>					
Corn	44	100	0.0	0	0
Bean sprouts	0	0.0	0.0	0	0
Peas (green/snow/sugar/sweet)	5	80	0.0	0	0
String beans (green/snap/pole/long)	20	70	5.0	0	1
Other beans & peas & products	25	68	0.0	0	0
Cucumbers	19	58	5.3	0	1
Eggplant	5	60	20	1	0
Okra	3	67	0.0	0	0
Peppers, hot	6	83	0.0	0	0
Peppers, sweet	12	42	0.0	0	0
Pumpkins	2	50	0.0	0	0

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Squash	36	56	0.0	0	0
Tomatoes	34	62	0.0	0	0
Asparagus	13	77	0.0	0	0
Bok choy	0	0.0	0.0	0	0
Broccoli	8	75	0.0	0	0
Cabbage	25	76	0.0	0	0
Cauliflower	3	100	0.0	0	0
Celery	5	20	0.0	0	0
Collards	6	67	0.0	0	0
Endive	2	0.0	100	0	2
Kale	10	40	0.0	0	0
Lettuce, head	7	43	0.0	0	0
Lettuce, leaf	3	33	0.0	0	0
Mustard greens	5	40	0.0	0	0
Spinach	10	50	0.0	0	0
Swiss chard	10	80	10.0	0	1
Watercress	0	0.0	0.0	0	0
Other leaf & stem vegetables	39	12.8	31	0	12
Mushrooms and Truffles	13	92	0.0	0	0
Carrots	24	33	0.0	0	0
Onions/leeks/scallions/shallots	8	100	0.0	0	0
Parsnips	1	100	0.0	0	0
Potatoes	56	45	0.0	0	0
Radishes	8	25	12.3	0	1
Red beets	11	73	18	0	2
Sweet potatoes	14	57	0.0	0	0
Turnips	1	0.0	0.0	0	0
Other root & tuber vegetables	1	100	0.0	0	0
Other vegetables/vegetable products	49	86	4.1	0	2
Subtotal	**543**	**61.3**	**4.2**	**1**	**22**
Other					
Peanuts & peanut products	0	0.0	0.0	0	0
Almonds	1	100	0.0	0	0
Coconut	0	0.0	0.0	0	0
Other nuts	1	100	0.0	0	0
Refined oil	4	100	0.0	0	0

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Edible seeds & seed products	1	100	0.0	0	0
Basil	0	0.0	0.0	0	0
Other spices	0	0.0	0.0	0	0
Water & ice	0	0.0	0.0	0	0
Beverages & beverage base	1	0.0	0.0	0	0
Honey	53	89	3.8	0	2
Confections	1	0.0	0.0	0	0
Miscellaneous foods	28	71	0.0	0	0
Animal Byproducts	0	0.0	0.0	0	0
Other products	0	0.0	0.0	0	0
Subtotal	**90**	**82.2**	**2.2**	**0**	**2**
Totals - All Domestic Samples	**1158**	**57.0**	**2.8**	**1**	**29**

B. Analysis of Import Samples by Commodity Group in FY 2012

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Grains and Grain Products					
Barley & barley products	5	80.0	0.0	0	0
Corn & corn products	14	78.6	0.0	0	0
Oats & oat products	6	100.0	0.0	0	0
Rice & rice products	328	55.2	32.0	4	105
Wheat & wheat products	43	76.7	7.0	0	3
Soybeans & soybean products	8	87.5	0.00	0	0
Other grains & grain products	33	90.9	3.0	0	1
Macaroni & noodles	16	67.9	0.0	0	0
Bakery products, doughs, crackers	39	50.0	5.0	0	1
Breakfast cereals	10	50.0	0.0	0	0
Snack foods	2	80.0	0.0	0	0
Subtotal	**504**	**61.5**	**21.8**	**4**	**110**
Milk/Dairy Products/Eggs					
Cheese & cheese products	4	100.0	0.0	0	0
Eggs (includes duck & quail)	12	75.0	0.0	0	0
Milk/cream & milk products	4	100.0	0.0	0	0
Subtotal	**20**	**85.0**	**0.0**	**0**	**0**
Fish/Shellfish/Other Aquatic Products					
Fish and fish products	48	91.7	0.0	0	0
Shellfish & crustaceans	29	93.1	0.0	0	0
Aquaculture seafood	45	84.4	0.0	0	0
Other aquatic animals & products	2	100.0	0.0	0	0
Subtotal	**124**	**89.5**	**0.0**	**0**	**0**
Fruits					
Blackberries	46	41	19.6	0	9
Blueberries	76	47	1.3	0	1
Cranberries	13	62	0.0	0	0
Currants	7	43	14.3	0	1
Grapes, raisins	54	26	13.0	0	7
Raspberries	31	42	16.1	0	5
Strawberries	32	34	12.5	0	4
Other berries	19	63	15.8	1	3

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Clementines	3	0.0	0.0	0	0
Grapefruit	1	0.0	0.0	0	0
Lemons	4	50	25.0	0	1
Limes	9	33	33.3	0	3
Oranges	20	60	5.0	0	1
Other citrus fruit	6	67	0.0	0	0
Apples	40	15	2.5	0	1
Pears	20	45	5.0	1	1
Prickle pear	19	53	21.1	1	4
Other pome/core fruit	2	50	0.0	0	0
Apricots	17	59	5.9	0	1
Avocadoes	3	100	0.0	0	0
Cherries	37	46	8.1	0	3
Dates	22	82	9.1	0	1
Nectarines	3	0.0	0.0	0	0
Olives	65	90	0.0	0	0
Peaches	25	52	4.0	0	1
Plums/Prunes	19	90	0.0	0	0
Other pit fruit	5	100	0.0	0	0
Ackees, lychees, longans	12	67	33.3	0	4
Bananas, plantains	35	46	0.0	0	0
Breadfruit, jackfruit	6	100	0.0	0	0
Figs	14	79	7.1	0	1
Guavas	10	60	10.0	0	1
Kiwi fruit	15	67	0.0	0	0
Mangoes	49	84	2.0	0	1
Papaya	47	36	27.7	0	13
Pineapple	46	46	4.3	0	2
Pepinos	1	0.0	0.0	0	0
Other sub-tropical fruit	41	54	22.0	0	9
Bitter melon	0	0.0	0.0	0	0
Cantaloupe	6	67	0.0	0	0
Honeydew	0	0.0	0.0	0	0
Watermelon	11	46	9.1	0	1
Other melons/vine fruit	1	0.0	0.0	0	0
Pomegranate	0	0.0	0.0	0	0
Mixed fruits	9	89	0.0	0	0

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Berry juice	32	71	3.1	0	1
Citrus juice	192	62	16.1	0	31
Apple juice	45	71	0.0	0	0
Pear juice	14	71	0.0	0	0
Stone fruit juice	11	64	0.0	0	0
Subtropical juice/milk/nectar	44	91	2.3	1	1
Mixed fruit juice	8	88	0.0	0	0
Pomegranate juice	13	92	0.0	0	0
Other fruit juices	11	91	0.0	0	0
Berry fruit jams, jellies, preserves, syrups, toppings	48	63	4.2	1	2
Citrus fruit jams, jellies, preserves, syrups, toppings	7	10	0.0	0	0
Core fruit jams, jellies, preserves, syrups, toppings	2	100	0.0	0	0
Pit fruit jams, jellies, preserves, syrups, toppings	21	62	0.0	0	0
Subtropical/tropical fruit jams, jellies, preserves, syrups, toppings	7	86	0.0	0	0
Other fruit jams, jellies, preserves, syrups, toppings	8	100.	0.0	0	0
Other fruits and fruit products	36	58	16.7	0	6
Subtotal	**1400**	**59**	**8.6**	**5**	**117**
Vegetables					
Corn	23	91	0.0	0	0
Peas (green/snow/sweet)	51	55	13.7	0	7
Sugar snap peas	10	30	20.0	0	2
String beans (green/snap/pole)	44	48	6.8	0	3
Garbanzo beans	19	95	5.3	0	1
Kidney beans	29	86	0.0	0	0
Mung beans	28	89	0.0	0	0
Soybeans	29	72	3.5	0	1
Bean sprouts and seeds	2	50	0.0	0	0
Other beans & pea products	130	79	3.9	0	5
Peppers, hot	172	52	12.2	0	21
Peppers, pimiento	6	67	0.0	0	0
Peppers, sweet	43	54	2.3	0	1

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Tomatoes/tomatillos	58	69	10.3	0	6
Eggplant	20	75	5.0	0	1
Okra	23	78	4.4	0	1
Other fruiting vegetables	0	0.0	0.0	0	0
Cucumbers	66	39	6.1	2	4
Pumpkins	11	100	0.0	0	0
Squash	15	67	0.0	0	0
Choyote	7	43	14.3	0	1
Other cucurbit vegetables	0	0.0	0.0	0	0
Artichokes	16	94	6.3	0	1
Asparagus	43	88	2.3	1	1
Bamboo shoots	5	100	0.0	0	0
Bok choy & Chinese cabbage	4	100	0.0	0	0
Broccoli	30	80	0.0	0	0
Brussels sprouts	8	38	0.0	0	0
Cabbage	4	75	0.0	0	0
Cauliflower	10	100	0.0	0	0
Celery	3	67	0.0	0	0
Cilantro	13	23	69.2	0	9
Collards	2	100	0.0	0	0
Kale	0	0.0	0.0	0	0
Lettuce, head	2	100	0.0	0	0
Lettuce, leaf	2	50	0.0	0	0
Mustard greens	14	71	7.1	0	1
Spinach	42	69	19.1	2	8
Endive	0	0.0	0.0	0	0
Swiss Chard	0	0.0	0.0	0	0
Watercress	0	0.0	0.0	0	0
Other leaf & stem vegetables	70	61	21.4	0	15
Carrots	19	68	10.5	0	2
Cassava	11	91	9.1	0	1
Garlic	22	96	4.5	0	1
Ginger	30	80	10.0	0	3
Leeks	7	43	14.3	0	1
Onions	8	88	12.5	1	1
Potatoes	26	39	7.7	0	2
Radishes	7	57	0.0	0	0

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Red beets	7	57	14.3	0	1
Scallions & shallots	23	57	21.7	0	5
Sweet potatoes	42	67	52.4	3	14
Taro/dasheen	27	52	40.7	1	11
Turnips	11	82	0.0	0	0
Water chestnuts	8	100	0.0	0	0
Parsnips	0	0.0	0.0	0	0
Other root & tuber vegetables	38	87	5.3	0	2
Mushrooms/truffles/fungi	60	73	15.3	0	11
Vegetables, other, mixed	109	84	5.5	1	6
Vegetable juice/drinks	14	93	0.0	0	0
Vegetables with sauce	23	74	8.7	1	2
Vegetables, breaded	2	50	0.0	0	0
Subtotal	**1548**	**68.5**	**9.8**	**12**	**146**
Other					
Cashews	31	100	0.0	0	0
Coconut & coconut products	6	100	0.0	0	0
Peanuts & peanut product	8	75	0.0	0	0
Pecans	6	100	0.0	0	0
Pistachios	2	100	0.0	0	0
Almonds	0	0.0	0.0	0	0
Other nuts & nut products	11	100	0.0	0	0
Pumpkin seeds	6	100	0.0	0	0
Sesame seeds	8	75	25	0	2
Sesame paste (tahina)	3	100	0.0	0	0
Soybeans, edible	16	94	0.0	0	0
Sunflower seeds	2	50	0.0	0	0
Other edible seeds & seed products	30	87	3.3	0	1
Vegetable oil, crude	36	94	2.8	0	1
Vegetable oil, refined	38	76	10.5	1	4
Oil seed stock	3	67	0.0	0	0
Other vegetable oil products	5	80	0.0	0	0
Basil	23	35	39	2	9
Capsicums	41	32	51	1	21
Paprika	13	15	69	2	9
Spices, other	79	71	12.7	1	10

Commodity Group	Samples Analyzed (#)	Without Residues (%)	Violative Samples And Types		
			Samples (%)	Over Tolerance (#)	No Tolerance (#)
Pepper sauce	5	100	0.0	0	0
Water & ice	4	100	0.0	0	0
Beverage and beverage bases	36	78	2.8	0	1
Beer	0	0.0	0.0	0	0
Coffee	13	77	0.0	0	0
Tea	14	36	50	2	7
Coffee/tea substitutes	3	67	33	1	1
Astragalus, dietary supplement	0	0.0	0.0	0	0
Echinacea, dietary supplement	0	0.0	0.0	0	0
Ginseng, dietary supplement/tea	1	0.0	100	0	1
Kava, dietary supplement/tea	0	0.0	0.0	0	0
Senna, dietary supplement/tea	0	0.0	0.0	0	0
Other botanical/herbal teas	8	75	25	0	2
Other botanical/herbal dietary supplements, not teas	119	64	24	2	28
Other dietary supplements, not botanicals/herbals or teas	34	82	8.8	0	3
Honey & honey products	58	90	0.0	1	0
Food sweeteners, not honey	28	96	0.0	0	0
Candy, confections, chocolate, cocoa products	13	100	0.0	0	0
Condiments & dressings	16	63	12.5	1	2
Flavorings and extracts	6		0.0	0	0
Multi-ingredient foods (dinners, sauces, specialties)	29	76	0.0	0	0
Baby foods/formula	2	50	0.0	0	0
Food additives/colors	0	0.0	0.0	0	0
Other food products	8	88	9.1	0	0
Animal byproducts	3	100	0.0	0	0
Other nonfood items	2	100	0.0	0	0
Subtotal	**769**	**74.4**	**13.3**	**13**	**99**
Totals - All Import Samples	**4365**	**66.4**	**11.1**	**34**	**472**

[a] Whole food commodities include dried, paste, pulp, and puree forms, as well as foods similarly classified by EPA for residue tolerance enforcement, e.g., eggplant includes Chinese/Thai eggplant; radishes include daikon or Chinese/Oriental radishes.

Note: "Over-tolerance" violations include residue findings that exceeded tolerances for pesticides approved for use in establishments where food products are held, processed, or prepared.