

Pesticide Residue Monitoring Program Fiscal Year 2024 Pesticide Report

U.S. Food and Drug Administration

<https://www.fda.gov/food/chemical-contaminants-pesticides/pesticides>

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FDA Pesticide Residue Monitoring Program Reports and Data

For more information about FDA pesticide residue monitoring program reports, see <https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-program-reports-and-data>. Since 1987, annual pesticide reports have been prepared to summarize results of the Food and Drug Administration's (FDA or the Agency) pesticide residue monitoring program. Reports from Fiscal Year (FY) 1987 to FY 1993 were published in the Journal of the Association of Official Analytical Chemists/Journal of AOAC International. FY 1993 and FY 1994 reports were published in the journal and also made available on the public FDA website (www.fda.gov). Subsequent reports are only available on the FDA website. Each report is available in the format(s) used at the time it was written.

In addition to the annual reports, specific pesticide monitoring data and statistical analyses of human and animal foods for each year are also available in text format on the FDA website as "database" files. The database files include statistical analysis of findings by multiple country/commodity/pesticide combinations, along with data for individual samples from which the summary information was compiled. Instructions and explanations of the data and statistical analyses are provided for each database file. The database files are available from FY 1996 on.

FY 2024 data are available to view on the FDA Pesticide Report Data Dashboard, a data visualization tool that enables users to interact with the tables and figures presented in the report and more directly view the data underlying the summaries. The dashboard can be accessed by visiting <https://www.fda.gov/food/pesticides/fda-pesticide-report-data-dashboard>.

Executive Summary

Growers often use pesticides to protect their products from insects, weeds, fungi, and other pests. U.S. regulators help ensure that food produced with the use of pesticides is safe to eat by setting allowable levels called tolerances for pesticide chemical residues and by monitoring foods in the market to determine if those levels are being exceeded.

The role of the Environmental Protection Agency (EPA) is to establish pesticide tolerances on the amount of pesticide chemical residue a food can contain. The Food and Drug Administration (FDA) is responsible for enforcing those tolerances for domestic foods shipped in interstate commerce and foods imported into the United States (U.S.).*

This report summarizes the results of the FDA's pesticide monitoring program for FY 2024. The findings show that the levels of pesticide chemical residues measured by the FDA in the U.S. food supply are generally in compliance with EPA pesticide tolerances.

The FDA employs a three-fold strategy to enforce EPA's pesticide tolerances in human and animal foods. In its regulatory pesticide residue monitoring program, the FDA selectively monitors a broad range of domestic and import commodities for residues of approximately 780 different pesticides and selected industrial compounds. The FDA may also carry out focused sampling surveys for specific commodities or selected pesticides of special interest. In addition, the FDA monitors the levels of pesticide chemical residues in foods in its [Total Diet Study \(TDS\)](#), an ongoing program that monitors contaminants and nutrients in the average U.S. diet.

In FY 2024 (October 1, 2023, through September 30, 2024), the FDA analyzed 3,528 human food samples (893 domestic and 2,635 import samples) in its regulatory monitoring program. The FDA collected domestic human food samples from 46 states and import human food samples from 76 countries/economies. The FDA found that 98.2% of domestic and 84.4% of import human foods were compliant with federal standards. No pesticide chemical residues were detected in 36.8% of the domestic and 36.5% of the import samples.

In FY 2024, the FDA also analyzed 306 animal food samples (153 domestic and 153 import samples) for pesticides. The Agency found that 93.5% of domestic and 91.5% of import animal food samples were compliant with federal standards. No pesticide chemical residues were detected in 47.1% of the domestic and 42.5% of the import animal food samples.

In some human food commodity groups, the violation rate was higher for import samples. The higher violation rate affirms the validity of the sampling design in targeting import commodities more likely to contain violative pesticide residues, and the countries more likely to export them. The factors that were considered in targeting import commodities include past problem areas, findings from state and federal monitoring, and foreign pesticide usage data.

In FY 2024, the FDA conducted pesticide analyses for 110 domestic milk, shell eggs, honey, and game meat samples for the "Domestically Produced Animal-Derived Foods" assignment. No violative pesticide residues were found in any of the animal-derived foods, and 93.6% of the samples contained no residues.

* With the exception of meat; poultry; *Siluriformes* fish, including catfish; and certain egg products regulated by the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA).

With the publication of the FY 2024 report, the FDA Pesticide Report Data Dashboard, a data visualization tool that enables users to interact with the tables and figures presented in the report and more directly view the data underlying the summaries, has been updated to include the FY 2024 dataset. The FDA developed the dashboard to support the Agency's commitment to transparency and enhancement of the food chemical safety program. The dashboard can be accessed by visiting <https://www.fda.gov/food/pesticides/fda-pesticide-report-data-dashboard>.

Glossary and Abbreviations

Term	Definition
Action level	Human or animal food may contain a pesticide chemical residue from sources of contamination that cannot be avoided by good agricultural or manufacturing practices, such as contamination by a pesticide that persists in the environment. In the absence of an EPA tolerance, or tolerance exemption, FDA may establish an “action level” for such unavoidable pesticide chemical residues. An action level is a recommended level of a contaminant not to exceed. An action level is not legally binding, and FDA may take enforcement action on a case-by-case basis whether a contaminant is below, at, or above an action level. (http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ucm077969.htm)
Agency	U.S. Food and Drug Administration
APEC	Asia-Pacific Economic Cooperation
CFR	U.S. Code of Federal Regulations
Codex	Codex Alimentarius Commission
CVM	FDA Center for Veterinary Medicine
Domestic sample	Sample of a commodity produced and held for sale in the United States.
DWPE	Detention Without Physical Examination
EPA	U.S. Environmental Protection Agency
FACTS	FDA Field Accomplishment and Compliance Tracking System database
FDA	U.S. Food and Drug Administration
FFDCA	Federal Food, Drug, and Cosmetic Act
FSCF	Food Safety Cooperation Forum
FSIS	USDA Food Safety and Inspection Service
FY	Fiscal Year
HFP	FDA Human Foods Program
Import sample	Sample of products, which originate from another country, collected while the goods are in import status.

Term	Definition
LOD	Limit of Detection – The minimum concentration of a pesticide chemical residue that can be reliably distinguished from zero. ¹
LOQ	Limit of Quantitation – The minimum concentration of a pesticide chemical residue that can be quantified with acceptable precision. ¹
MOU	Memorandum of Understanding
MRL	Maximum Residue Level
MRM	Multiresidue Method – FDA pesticide method designed to analyze multiple pesticide chemical residues during a single analysis.
No-tolerance violation	Pesticide chemical residue found at, or above, the LOQ for pesticides in a commodity in which EPA has not established a tolerance for that particular pesticide/commodity combination or a tolerance exemption.
OII	Office of Inspections and Investigations
Over-tolerance violation	Pesticide chemical residue found at a level above an EPA tolerance.
ORTS	HFP Office of Regulatory Testing and Surveillance
PDP	USDA Pesticide Data Program
PPB	Parts per billion – residue concentration equivalent to microgram/kilogram
PPM	Parts per million – residue concentration equivalent to milligram/kilogram
SPS	Sanitary and Phytosanitary
SRM	Selective Residue Method – FDA pesticide method designed to analyze selected pesticide chemicals or a single pesticide chemical.
TDS	Total Diet Study
Tolerance	The EPA-established maximum residue level of a specific pesticide chemical that is permitted in or on a human or animal food in the United States. The tolerances are listed in 40 CFR Part 180 – Tolerances and Exemptions for Pesticide Chemical Residues in Food.
Trace level	Residue level less than the LOQ but greater than, or equal to, the LOD
USDA	U.S. Department of Agriculture
WTO	World Trade Organization

FDA Pesticide Residue Monitoring Program

Three federal government agencies share responsibility for the regulation and oversight of pesticide chemical residues in or on food. The U.S. Environmental Protection Agency (EPA) registers (i.e., approves) the use of pesticides and establishes tolerances for pesticide chemical residues in or on food resulting from the use of the pesticides. Tolerances are the EPA-established maximum residue levels (MRLs) of a specific pesticide chemical that is permitted in or on a human or animal food in the United States.² EPA also provides a strong U.S. preventive controls program by licensing pesticide applicators, conducting pesticide use inspections, and establishing and enforcing pesticide labeling provisions. The U.S. Food and Drug Administration (FDA) enforces tolerances in both import and domestic foods shipped in interstate commerce, except for meat, poultry, *Siluriformes* fish, including catfish, and certain egg products for which the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) is responsible. The FDA also monitors pesticide chemical residue levels in foods and beverages through its [Total Diet Study](#) (TDS) program, which collects foods sold in the domestic market and prepares and analyzes them for select nutrients and contaminants.

Regulatory Monitoring and Enforcement

The FDA samples individual lots of domestically produced and imported foods and analyzes them to determine whether they contain pesticide chemical residues that are “unsafe” within the meaning of the Federal Food, Drug, and Cosmetic Act (FFDCA). This activity is carried out pursuant to the enforcement of tolerances established by EPA and includes the monitoring of food for residues of cancelled pesticides used in the past that persist in the environment, which may be addressed by the FDA action levels. Domestic samples of foods produced and held for sale in the U.S. are typically collected close to the point of production in the distribution system, e.g., at growers, packers, and distributors. Import samples are collected when products are offered for entry into U.S. commerce. Because the EPA tolerances are established primarily for raw agricultural commodities, the emphasis of the FDA’s regulatory sampling is on the unwashed, whole (unpeeled) raw commodity; however, some processed foods are also sampled.

The FDA may take regulatory action against food commodities containing pesticide chemical residues when they are found:

- at a level above an EPA tolerance for the pesticide/commodity combination, or
- in a commodity for which the EPA has not established a tolerance or a tolerance exemption for that particular pesticide/commodity combination (“no-tolerance” violations).

Foods may contain a pesticide chemical residue from sources of contamination that cannot be avoided by good agricultural or manufacturing practices, such as contamination by a pesticide that persists in the environment. The FDA may establish an “action level” for unavoidable residues that do not have a tolerance or tolerance exemption. The action level is not legally binding, but the FDA monitors unavoidable residues and may take enforcement action on a case-by-case basis, considering the action level and other factors.

For domestic foods, the FDA may issue Warning Letters to the responsible growers and seek other sanctions such as seizure to remove the food from commerce or injunction to correct the cause of the violation. Shipments of import food commodities may be refused entry into U.S. commerce. The responsible firm(s) and product(s) may be placed on an [import alert](#) under “Detention Without Physical Examination,” or DWPE, which may be invoked for future shipments of that firm’s commodity based on the finding of a single violative shipment. Section 801(a) of the FFDCA authorizes the FDA to refuse admission of regulated articles that appear to be adulterated or misbranded. Typically, the information to make this determination is obtained by physical examination of the entry, although it is not required. For example, entries of imported foods with a violative history would likely create the appearance of adulteration under the FFDCA for future shipments, based on the results obtained from previous examinations of the same foods that were found to contain violative pesticide residues. DWPE can be applied to a product or products from specific growers, manufacturers, or shippers, and may extend to a geographic area or country if the problem is demonstrated to be sufficiently broad-based.

The FDA’s import alerts describe firms and products currently subject to DWPE for pesticide chemical residues and other food-related violations. There are currently four import alerts that address food products that are subject to 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 Human and Animal 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 that have products subject to DWPE within an import alert may be asked to provide evidence of compliance for each shipment or lot of product exported to the United States. This procedure places the burden of demonstrating product compliance on the importer of record before the product can be released into domestic commerce. Firms can request removal of their product(s) from DWPE under an FDA import alert by petitioning the Agency and 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. Generally, a minimum of five consecutive non-violative commercial shipments, as demonstrated by providing the FDA with acceptable reports of private laboratory analyses, as well as an effective, detailed approach addressing the conditions that gave rise to the appearance of the violation is provided to support the corrective actions and removal of a grower’s, manufacturer’s, or shipper’s product from DWPE.

Regulatory Monitoring Program Sampling Design

The goal of the FDA's pesticide residue monitoring program is to carry out selective monitoring of human and animal foods for consumer protection. The FDA samples are primarily of the surveillance type, meaning there is no specific prior knowledge or evidence that a particular food shipment contains illegal residues. However, the FDA's monitoring is not random or statistically designed; rather, emphasis is given to the sampling of certain commodities. Commodity choice is based upon multiple factors, including:

- most frequently consumed or imported;
- commodities and places of origin with a history of violations;
- size of shipments;
- analysis of past problem areas;
- commodity/pesticide findings from state, USDA, and FDA monitoring;
- 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 import food offered for entry into the United States;
- origin of imported food; and
- chemical characteristics and toxicity of the pesticide(s) used.

One important consideration when designing the FDA pesticide residue monitoring program for human foods is the distinction between domestic and import commodities. Historically, the violation rate of import samples is 3-5 times higher than the rate for domestic samples, though it has been observed to be as much as 8 times higher. For example, between FY 2018-2023, the violation rate for domestic samples ranged from 1.3-3.8%, whereas the rate for import samples ranged from 10.5-13.5%. Because the violation rate of import samples is higher than for domestic samples, the FDA allocates more resources towards testing import samples compared with domestic samples. Typically, import commodities comprise about 70% of all samples analyzed each year. In FY 2024, 75% of samples analyzed were imports.

In addition to increased sampling of import commodities, the FDA targets specific commodities and countries that might warrant special attention based upon historically high violation rates and trends. The FDA also reviews available foreign pesticide usage data and data from the USDA's Pesticide Data Program (PDP), a statistically representative survey of pesticide residues in selected food commodities, to develop its sampling program (<https://www.ams.usda.gov/datasets/pdp>).

Other federal agencies and several states have their own monitoring programs for pesticides. Through collaboration and agreements, they provide information and data on violative samples found in domestic commerce to the FDA (see Cooperative Agreements and International Activities section). The FDA leverages these data to focus its resources where they are most efficiently and effectively used.

Sampling levels and bias for particular import or domestic commodities can vary significantly from year to year. Pesticide applications are modified in response to changing

weather patterns, new or re-emergent pests, or developed resistance to pesticides. Targeted commodities may not be the largest imports by volume from a particular country. A high violation rate for a targeted commodity does not mean that a country's overall violation rate for all commodities is high; rather, it affirms the FDA's sampling design to select commodities and production sources that are likely to be higher risk.

The FDA's current pesticide sampling program, coupled with broad-based enforcement strategies for imports, allows the FDA to achieve the program's main objective of consumer protection across a wide range of commodities. The FDA has conducted statistically-based and resource-intensive incidence and level monitoring studies of four significant foods.^{3,4} The FDA's TDS program and the USDA PDP program collect incidence and level monitoring data, which support the pesticide regulatory monitoring program.

Focused Sampling

In addition to samples collected for routine regulatory monitoring, the FDA may conduct special "focused sampling" assignments to target specific food commodities for analysis. Focused sampling is generally used to follow up on suspected problem areas or to acquire residue data on selected commodities and/or selected pesticides, not usually or previously covered during regulatory monitoring. Typically, samples collected for a focused sampling assignment are analyzed using routine pesticide procedures; however, in some cases the samples are analyzed for targeted residues of interest.

Animal Food

In addition to monitoring food for human consumption, the FDA samples and analyzes domestic and imported animal foods for pesticide chemical residues. The FDA's Center for Veterinary Medicine (CVM) directs this portion of the Agency's surveillance program via its Animal Food Contaminants Program. CVM's program focuses on commodities consumed by food-producing animals, although some pet food samples are also included.

Analytical Methods and Pesticide Coverage

To analyze large numbers of samples with unknown pesticide treatment history, the FDA uses multi-residue methods (MRMs) capable of simultaneously determining many different pesticide chemical residues. These MRMs are also able to detect many metabolites, impurities, and alteration products of pesticides, as well as selected industrial chemicals. In addition, the FDA uses selective residue methods (SRMs) that target specific pesticides. SRMs are sometimes needed to analyze pesticides that are not adequately extracted or detected using standard MRMs or to target specific pesticide/commodity combinations. The FDA pesticide SRMs are optimized to determine one or several specific pesticide chemical residues in foods. They are more resource intensive and therefore employed more judiciously. The complete list of pesticides analyzed in FY 2024 is provided in [Appendix A](#).

The FDA pesticide methods can detect approximately 78% of the pesticides with current or revoked EPA tolerances in Title 40 of the U.S. Code of Federal Regulations (CFR) part

180, as well as nearly 400 other pesticide chemical residues that have no EPA tolerance.[†] By testing for pesticides without EPA tolerances, the FDA provides protection against pesticides that do not have EPA approval. No new compounds were added to the analytical scope compared with FY 2023 (781 total compounds). The FDA's continual modernization process, which includes removal of obsolete or rarely detected pesticides and industrial chemicals from the scope, as well as review of new pesticides registered by EPA for possible addition to the scope, will continue in subsequent years. FDA acknowledges that some pesticides with EPA-established tolerances are not part of the current FDA testing scope, and the FDA does not know the extent to which exposure to these pesticides may occur in the foods that the FDA regulates.

The lower limit of residue measurement in the FDA's determination of a specific pesticide is well below typical tolerance levels, which range from 0.01 to over 100 parts per million (ppm). Most pesticides analyzed can be quantified at the FDA's default limit of quantitation (LOQ) of 0.01 ppm.⁵ Residue levels detected above the limit of detection (LOD) but below the LOQ are designated as "trace" values.

The FDA conducts ongoing research to update its pesticide residue 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. Newer extraction procedures and more sensitive detection techniques have increasingly replaced older methods, allowing for more efficiency in pesticide testing.

FDA Total Diet Study

An important complement to the FDA's regulatory pesticide residue monitoring program is TDS. Through TDS the FDA monitors levels of pesticide chemicals, toxic and nutritional elements, industrial chemicals, and radionuclides in foods representing the totality of the American diet. TDS is distinct from the FDA's regulatory pesticide residue monitoring program and is focused on information gathering rather than enforcement. Regulatory monitoring determines pesticide chemical residues primarily in raw commodities, whereas TDS monitors foods prepared table-ready for consumption. TDS uses a modified version of the regulatory program extraction method that is too time-intensive for rapid regulatory follow-up, but it allows detection of pesticides at levels 10-100 times lower than in the regulatory monitoring program, i.e., residue levels as low as 0.1 parts per billion (ppb). Data from TDS can be used to estimate exposures to pesticides, nutrients, and contaminants from the U.S. diet, and to suggest potential areas of focus for the FDA's food safety and nutrition programs. TDS pesticide results through FY 2017 were included in the pesticide residue monitoring program annual reports. TDS pesticide results from FY 2018 and onward can be found on the FDA's [Total Diet Study Interface](#) (TDSi).

[†] Additional information on EPA tolerances for pesticide ingredients can be found at: <https://www.epa.gov/pesticide-tolerances/how-search-tolerances-pesticide-ingredients-code-federal-regulations> (accessed June 3, 2026).

Cooperative Agreements and International Activities

The FDA collaborates with local, state, federal, and international authorities, leveraging their programs and capacities to maximize the effectiveness of its pesticide program. For example, the FDA and USDA have a Memorandum of Understanding (MOU) in which the USDA alerts the FDA monthly of presumptive tolerance violations they find in the PDP. The FDA uses this information when designing the annual pesticide residue monitoring program, and for directing immediate sample collection efforts, as appropriate.

FDA-State Cooperation

The FDA field offices interact with their counterparts in many states to enhance the effectiveness of the Agency's pesticide residue monitoring program. Partnership agreements and MOUs have been established between the 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 the 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 domestic and import products.

International Activities

As an agency of the U.S. government, the FDA is subject to the obligations placed on World Trade Organization (WTO) Members by the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), which covers sanitary measures necessary to protect human, animal or plant life or health. The FDA's enforcement of pesticide residue tolerances and monitoring activities falls under the definition of sanitary measures within the SPS Agreement. The FDA's obligations under this agreement include the requirement that measures are based on an assessment, as appropriate to the circumstances, of the risk to human and animal life or health, or based on international standards except when a more stringent standard can be scientifically supported. The measures must also be applied equally to domestic and imported products unless there is scientifically based justification for doing otherwise. Similarly, the FDA is subject to obligations arising from several bilateral and multilateral free trade agreements with U.S. trading partners that contain provisions on sanitary measures that are consistent with the provisions of the SPS Agreement.

The 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 the FDA makes with other countries with respect to food safety programs, and the activities that the FDA carries out internationally with respect to food safety, can also affect how the Agency's pesticide residue monitoring is conducted.

The FDA maintains a number of cooperative arrangements with counterpart agencies in foreign governments, including [MOUs and Confidentiality Commitments](#). These arrangements most often contain non-public information-sharing provisions that encompass the ability to share analytical findings about pesticide residues, while protecting any confidential information from external disclosure. Several of these MOUs have

specific provisions relating to pesticide residue information sharing or cooperative efforts relating to pesticide residues.

The 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. The 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. Multilateral fora in which the FDA participates include the Food Safety Cooperation Forum (FSCF) of the Asia-Pacific Economic Cooperation (APEC), which promotes regulatory cooperation in food safety including information sharing on pesticide MRLs.

The FDA also participates in the work of international standards-setting organizations, including that of the [Codex Alimentarius Commission \(Codex\)](#). Within Codex, the FDA is an active participant in the work of the Codex Committee on Pesticide Residues.

Results and Discussion

This report discusses results of the FY 2024 FDA pesticide residue monitoring program. Additionally, the report examines data to evaluate import products that may warrant special attention.

In FY 2024, the FDA analyzed 3,834 samples for pesticides under the regulatory monitoring program, of which 3,528 were human foods and 306 were animal foods. Results for the testing of human and animal foods are reviewed under separate headings, “Regulatory Monitoring of Human Foods” and “Regulatory Monitoring of Animal Foods.” Sampling and analytical data were obtained from the FDA Field Accomplishment and Compliance Tracking System (FACTS) database. Results in this report represent samples with a collection date occurring in FY 2024.

Regulatory Monitoring of Human Foods

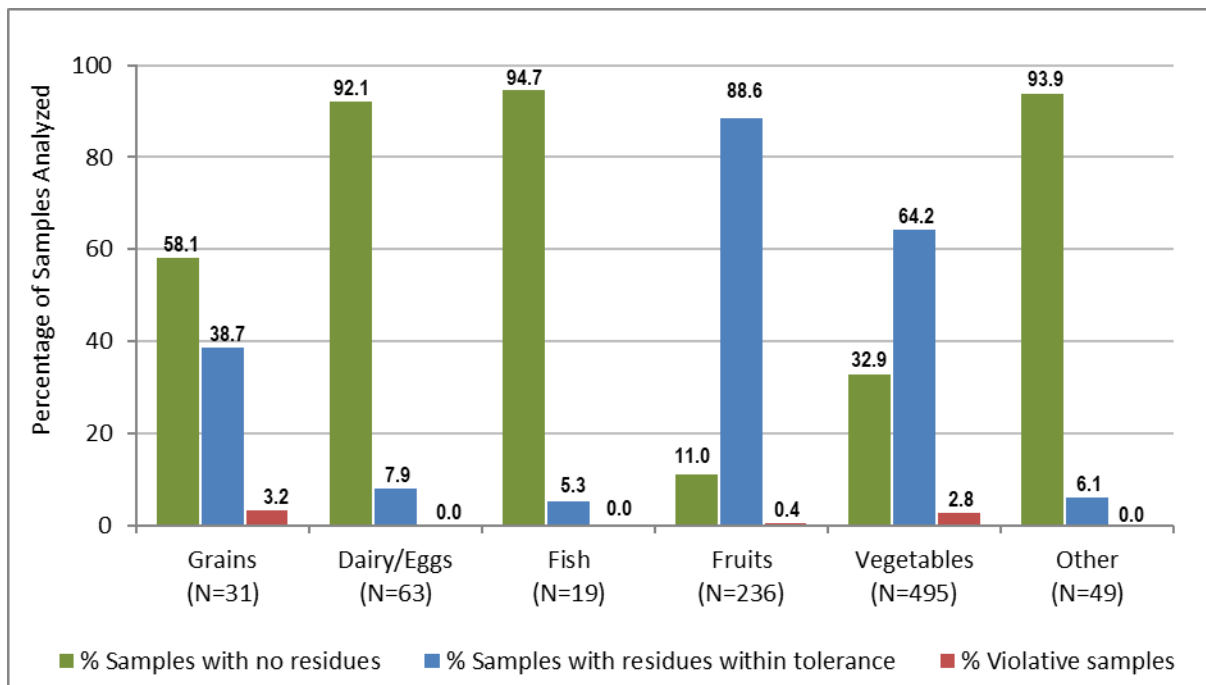
The 3,528 human foods analyzed in FY 2024 include 893 domestic samples and 2,635 import samples. Results for the domestic samples are tabulated in [Appendix B](#), “Analysis of Domestic Human Foods by Commodity Group in FY 2024,” and results for the import samples are tabulated in [Appendix C](#), “Analysis of Import Human Foods by Commodity Group in FY 2024.” Each appendix includes information on the total number of samples analyzed, the number and percentage of samples with no residues detected, and the number and percentage of violative samples including the nature of the violation (over-tolerance vs. no-tolerance). Results are summarized for all samples analyzed, by commodity groups and by subgroups.

Results

Of the 893 domestic samples analyzed in FY 2024, 98.2% were in compliance and 36.8% had no detectable residues ([Appendix B](#)). Samples collected under the domestic commodity groups “Fruits” and “Vegetables” accounted for the majority (81.9%) of domestic samples.

Figure 1 summarizes the number of samples analyzed and the residue findings in domestic samples by commodity groups. For the grains and grain products commodity group, no residues were detected in 58.1% of the 31 samples analyzed and one sample (3.2%) contained violative residues. For the milk/dairy products/eggs commodity group, no residues were detected in 92.1% of the 63 samples analyzed and no samples contained violative residues. For the fish/shellfish/other aquatic products commodity group, no residues were detected in 94.7% of the 19 samples analyzed and no samples contained violative residues. In the fruits commodity group, no residues were found in 11.0% of the 236 samples analyzed and one sample (0.4%) contained violative residues. For the vegetables commodity group, no residues were found in 32.9% of the 495 samples analyzed and 14 samples (2.8%) contained violative residues. In the commodity group of other food products, consisting of nuts, seeds, and animal-derived products, no residues were found in 93.9% of the 49 samples analyzed and no samples contained violative residues.

Figure 1. Results of Domestic Human Food Samples by Commodity Group

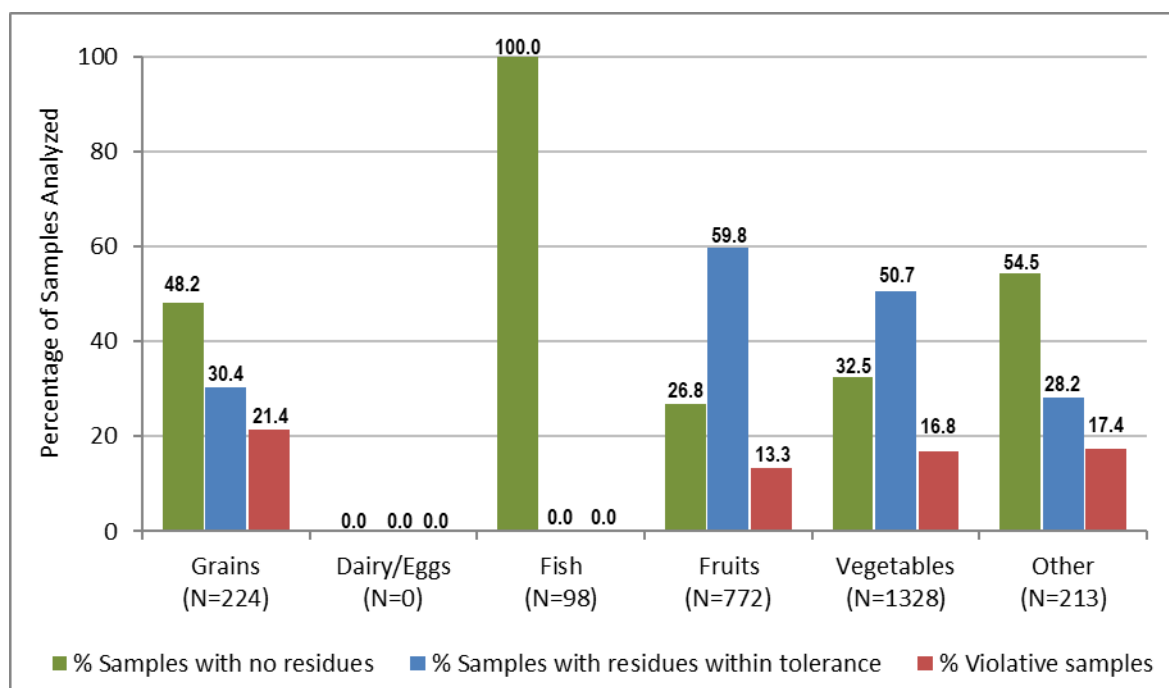


N = Number of samples analyzed for commodity group

Of the 2,635 import samples analyzed in FY 2024, 84.4% were in compliance and 36.5% had no detectable residues ([Appendix C](#)). Fruits and vegetables accounted for the majority (79.7%) of import samples.

Figure 2 summarizes the number of samples analyzed and the residue findings in import samples by commodity groups. In the import grains and grain products commodity group, no residues were detected in 48.2% of the 224 samples analyzed and 48 samples (21.4%) contained violative residues. No samples were collected for the import milk/dairy products/eggs commodity group. For the import fish/shellfish/other aquatic products commodity group, no residues were detected in any of the 98 samples analyzed. For the import fruit commodity group, no residues were detected in 26.8% of the 772 samples analyzed and 103 samples (13.3%) contained violative residues. For the import vegetables commodity group, no residues were detected in 32.5% of the 1328 samples and 223 samples (16.8%) had violative residues. In the commodity group of other import food products, consisting largely of seeds and nuts, no residues were detected in 54.5% of the 213 samples analyzed and 37 samples (17.4%) had violative residues.

Figure 2. Results of Import Human Food Samples by Commodity Group

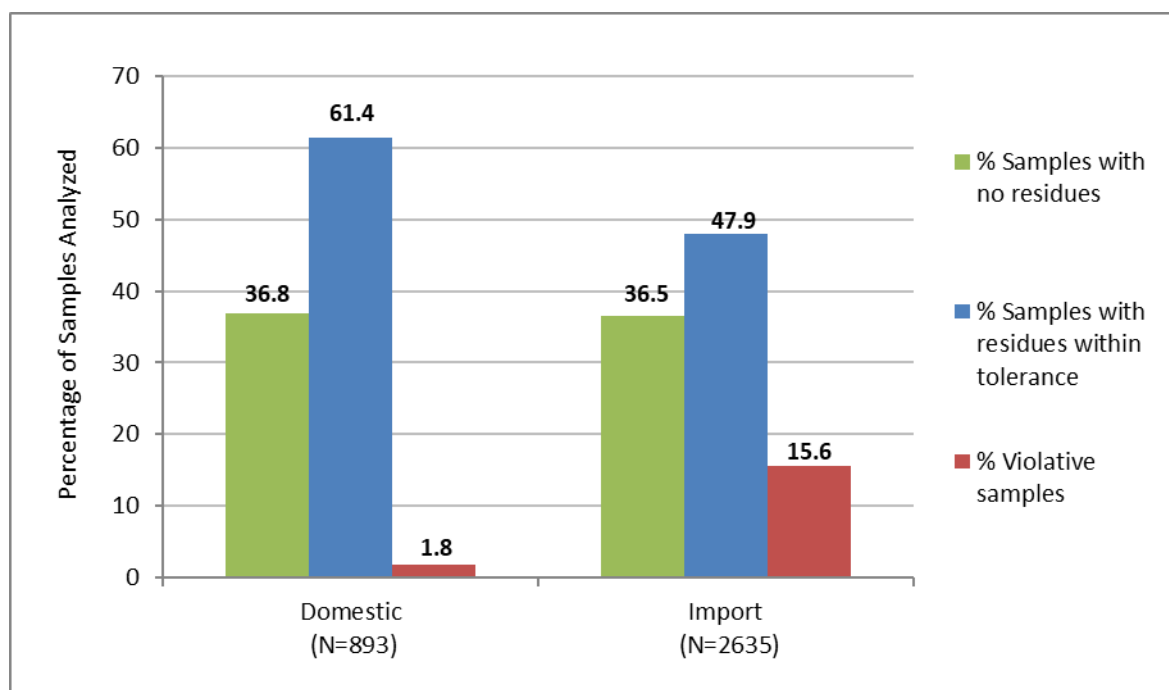


N = Number of samples analyzed for commodity group

Overall Results for Domestic and Import Human Food Samples

In total, 893 domestic and 2,635 import human food samples were collected and analyzed for the pesticides listed in [Appendix A](#). No residues were found in 36.8% of domestic samples and 36.5% of import samples (Figure 3). Violative residues were found in 1.8% of the domestic samples and 15.6% of the import samples. The violation rate for domestic samples in FY 2024 was consistent with recent years; between FY 2018-2023, the domestic violation rate ranged from 1.3-3.8%. The violation rate for import samples in FY 2024 was slightly higher than recent years; between FY 2018-2023, the import violation rate ranged from 10.5-13.5%.

Figure 3. Summary of Results of Domestic and Import Human Food Samples



N = Number of samples analyzed by import status

For all commodity groups, the violation rate was higher for import samples. For the category of grains, 21.4% of import samples were violative; however, only 3.2% of domestic grain samples were violative. Similarly, 13.3% of import fruit samples were violative compared with 0.4% of domestic fruit samples, and 16.8% of import vegetable samples were violative, whereas 2.8% of domestic vegetable samples were violative. In the commodity group of other food products, the violation rate was 17.4% for import samples while none of the domestic samples were violative.

Of the 16 domestic violative samples, 15 contained pesticide chemical residues that have no EPA tolerance, i.e., no-tolerance violations, and 3 contained pesticide chemical residues that exceeded an EPA tolerance, i.e., over-tolerance violations. Two samples had both no-tolerance and over-tolerance violations for different pesticides.

Of the 411 import violative samples, 373 had no-tolerance violations and 115 had over-tolerance violations; 77 samples had both no-tolerance and over-tolerance violations for different pesticides.

Geographic Coverage

Domestic: A total of 893 domestic samples were collected from 46 states/territories. Table 1 lists the number of domestic samples from each state and territory, in descending order. No domestic samples were collected from Alaska, Iowa, Mississippi, Montana, Oklahoma, or the District of Columbia.

Table 1. Domestic Samples Collected and Analyzed per State/Territory

State	Samples (N)
California	175
Kansas	80
Illinois	73
Texas	56
Minnesota	56
New York	38
Washington	34
Ohio	31
Florida	30
Pennsylvania	26
Massachusetts	24
New Jersey	19
Alabama	18
Colorado	18
South Carolina	17
Georgia	17
North Carolina	16
Arizona	15
North Dakota	12
Indiana	12
Wisconsin	11
Tennessee	10
Puerto Rico	9

State	Samples (N)
Missouri	9
Oregon	9
Virginia	9
Kentucky	8
Idaho	7
Louisiana	6
Maine	5
Michigan	5
New Mexico	5
Maryland	5
Connecticut	4
Arkansas	4
New Hampshire	3
Delaware	3
Utah	2
Hawaii	2
South Dakota	2
Nevada	2
Wyoming	2
Vermont	1
West Virginia	1
Nebraska	1
Rhode Island	1

Imports: A total of 2,635 import samples were collected representing food shipments from 76 countries/economies. Table 2 lists the number of samples and names of countries/economies from which ten or more samples were collected, in order of decreasing number of samples. Table 2a lists the countries/economies that had fewer than ten samples collected, in alphabetical order.

Table 2. Import Samples per Country/Economy of Origin for Which Ten or More Samples Were Collected and Analyzed

Country	Samples (N)
Mexico	1061
India	296
Canada	187
China	132
Vietnam	93
Chile	82
Peru	69
Pakistan	48
United States*	48
Guatemala	42
Turkey	36
Argentina	34
Thailand	33
Afghanistan	30
Colombia	27
Egypt	24

Country	Samples (N)
Costa Rica	23
Ecuador	23
Honduras	20
Spain	19
Bangladesh	18
Nicaragua	18
Dominican Republic	16
Morocco	16
Brazil	14
Indonesia	12
South Africa	11
Sri Lanka	11
El Salvador	10
Greece	10
Tunisia	10

*Indicates import samples collected while in interstate commerce.

Table 2a. Countries/Economies of Origin from Which Fewer Than Ten Samples Were Collected and Analyzed

Albania	Ivory Coast	Paraguay
Algeria	Japan	Philippines
Armenia	Jordan	Poland
Australia	Kenya	Portugal
Belgium	Korea, Republic Of (South)	Russia
Bolivia	Latvia	Saudi Arabia
Bulgaria	Lebanon	Senegal
Burkina Faso	Libya	Serbia
Cambodia	Madagascar	Taiwan
France	Moldova	Togo
Ghana	Myanmar	Ukraine
Guinea	Nepal	United Arab Emirates
Ireland	Netherlands	United Kingdom
Israel	New Zealand	Uruguay
Italy	Nigeria	Uzbekistan

Pesticides Detected

In FY 2024, FDA pesticide methods could detect the 781 pesticides and industrial chemicals listed in [Appendix A](#). Residues of 215 different pesticides were detected in the samples analyzed. They are listed in Table 3 in order of frequency of detection along with the number of samples in which they were found. No new pesticides were detected in FY 2024 that had not been detected previously by the FDA regulatory pesticide monitoring program.

Table 3. Pesticides Found in Human Foods in FY 2024 Listed in Order of Frequency

Pesticide	Samples (N)	Pesticide	Samples (N)
Azoxystrobin	427	Dimethomorph	91
Imidacloprid	416	Propiconazole	88
Thiamethoxam	304	Trifloxystrobin	87
Fludioxonil	283	Cyfluthrin	78
Cypermethrin	268	Methomyl	77
Acetamiprid	261	Fluxapyroxad	76
Boscalid	256	Myclobutanil	75
Pyraclostrobin	245	Sulfoxaflor	75
Tebuconazole	229	Thiophanate methyl	74
Fluopyram	212	Linuron	70
Chlorantraniliprole	206	Glyphosate	68
Lambda-cyhalothrin	189	Penthiopyrad	68
Bifenthrin	170	Spinetoram	67
Thiabendazole	163	Novaluron	65
Difenoconazole	157	Cyantraniliprole	63
Pyrimethanil	153	Indoxacarb	63
Clothianidin	150	Chlorfenapyr	61
Carbendazim [†]	146	Mandipropamid	59
Chlorpyrifos	142	Ametoctradin	58
Cyprodinil	131	Dinotefuran	58
Flupyradifurone	121	Fluopicolide	58
Metalaxyl	119	Bifenazate	57
Imazalil	113	Fenpropathrin	53
Permethrin	109	Dimethoate	51
Malathion	107	Fenhexamid	50
Propamocarb	107	Pyriproxyfen	49
Flonicamid	104	Buprofezin	48
Chlorothalonil	96	Flutriafol	47
Methoxyfenozide	92	Pyridalyl	45
Captan	91	Tolfenpyrad	45

Pesticide	Samples (N)
Piperonyl butoxide	43
Fenpyroximate, e-	41
Iprodione	41
Methamidophos	41
Spirotetramat	41
Spirodiclofen	40
Tricyclazole	40
Cyromazine	39
Spinosad	36
Oxathiapiprolin	35
Spiromesifen	33
Acephate	32
Etoxazole	32
Flubendiamide	32
Oxamyl	32
Diflubenzuron	31
Isoprothiolane	31
Metrafenone	31
Fenamidone	30
Hexythiazox	30
Thiacloprid	29
Chlorpropham	28
Diazinon	27
Fenazaquin	25
Profenofos	25
2,4-D	24
Deltamethrin	23
Monocrotophos	23
Cyazofamid	22
Phenylphenol, o-	22
Famoxadone	21
Atrazine	20
Cyflumetofen	20
Quinoxifen	20
Fipronil	19
DDT	18
Abamectin	17
Carbaryl	17
DCPA	17
Fenbutatin oxide	17

Pesticide	Samples (N)
Hexaconazole	17
Fenbuconazole	15
Phosmet	15
Diphenylamine	14
Propargite	14
Pyridaben	14
Tetraconazole	14
Triazophos	13
Dichlorvos	12
Esfenvalerate	12
Pirimiphos methyl	12
Fenvalerate	11
Isofetamid	11
MGK 264	11
Pendimethalin	11
Cyflufenamid	10
Imazamox	10
Pymetrozine	10
Triflumizole	10
Lufenuron	9
Quinclorac	9
Emamectin benzoate	8
Etofenprox	8
Kresoxim-methyl	8
Procymidone	8
Pyriofenone	8
Dicloran	7
Haloxypop	7
Penconazole	7
Trifluralin	7
Carbofuran	6
Dieldrin	6
Metconazole	6
Prochloraz	6
Resmethrin	6
Dodine	5
Formetanate HCl	5
Methoprene	5
Quintozone	5
2,6-DIPN	4

Pesticide	Samples (N)
Acequinocyl	4
Benzovindiflupyr	4
Diafenthiuron	4
Diuron	4
Ethion	4
Ethoxyquin	4
Glufosinate	4
Paclobutrazol	4
Pydiflumetofen	4
Rotenone	4
Ametryn	3
BPMC (Fenobucarb)	3
Clofentezine	3
Cyproconazole	3
Ethaboxam	3
Fenpropidin	3
Fluoxastrobin	3
Isoprocab	3
Metolachlor	3
Phorate	3
Prometryn	3
Quizalofop	3
Trichlorfon	3
Bromopropylate	2
Clopyralid	2
Fenpropimorph	2
Fenthion	2
Flumioxazin	2
Forchlorfenuron	2
MCPA	2
Metsulfuron methyl	2
Naled	2
Oxyfluorfen	2
Picoxystrobin	2
Pronamide	2
Propoxur	2
Prothioconazole	2
Quinalphos	2

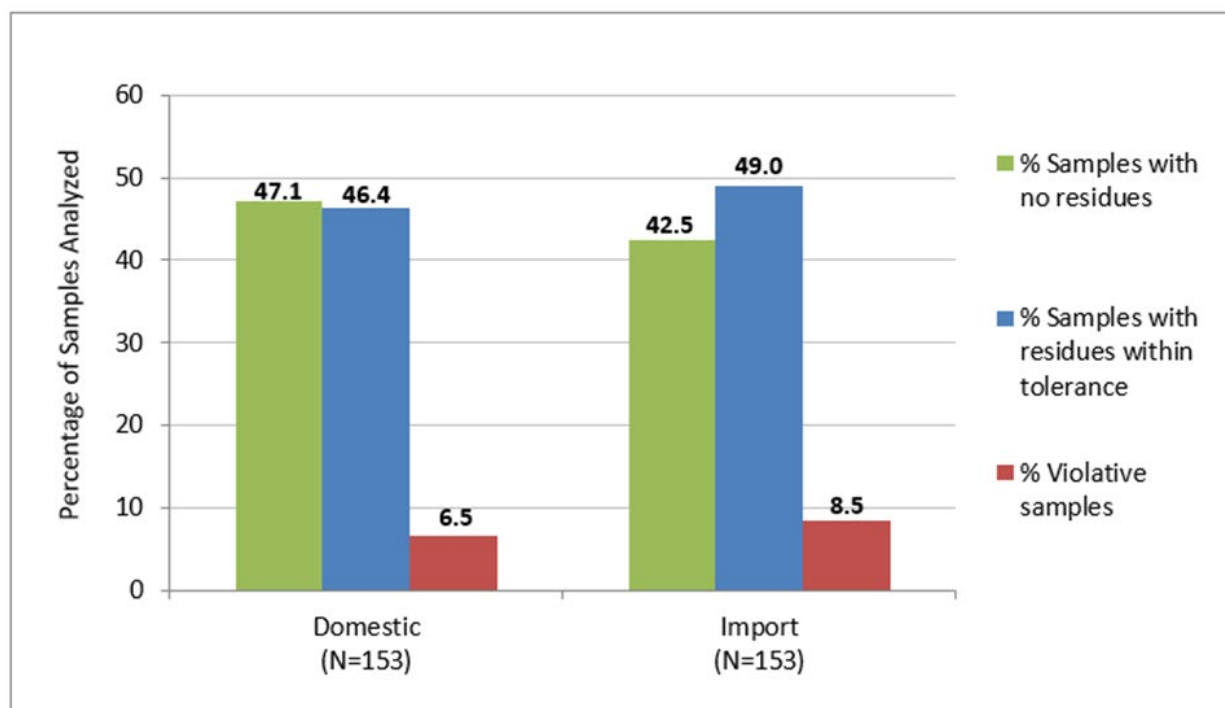
Pesticide	Samples (N)
Saflufenacil	2
Sedaxane	2
Tebufenozide	2
Tebufenpyrad	2
Terbutylazine	2
Tetradifon	2
Thiifluzamide	2
Triclopyr	2
Bupirimate	1
Cycloate	1
Diethofencarb	1
Diniconazole	1
Dioxacarb	1
Endosulfan	1
Epoxiconazole	1
Ethirimol	1
Fenitrothion	1
Flusilazole	1
Hexazinone	1
Isopyrazam	1
Ivermectin	1
Metribuzin	1
Napropamide	1
Nitrapyrin	1
Nuarimol	1
Phenthoate	1
Phosalone	1
Pirimicarb	1
Propoxycarbazon	1
Simazine	1
Spiroxamine	1
Teflubenzuron	1
Thiobencarb	1
Tolylfluanid	1
Triadimefon	1
Triadimenol	1
Zoxamide	1

[†]Carbendazim is both a fungicide and a degradant of thiophanate methyl; it was reported under the category of thiophanate methyl in the 2015 and 2016 pesticide residue monitoring reports.

Regulatory Monitoring of Animal Foods

In FY 2024, FDA analyzed 306 animal food samples for pesticides. The Agency found that 93.5% of domestic and 91.5% of import animal food samples were in compliance with federal standards. Figure 4 summarizes the number of samples analyzed and residue findings in domestic and import samples.

Figure 4. Summary of Results of Domestic and Import Animal Food Samples



N = Number of samples analyzed by import status

Of the 306 animal food samples, 153 samples were domestic and 153 samples were imports. No residues were found in 72 (47.1%) of the domestic samples, and 10 (6.5%) samples were violative. Of the import samples, 65 (42.5%) contained no residues and 13 (8.5%) samples were violative.

The violation rate of 6.5% for domestic animal food samples in FY 2024 is slightly higher than the violation rates for recent years; between FY 2018-2023, the domestic violation rate ranged from 0-4.4%. The violation rate of 8.5% for import animal food samples in FY 2024 is also higher than the violation rates for FY 2018-2023; i.e., 0-4.6%.

Table 4 summarizes residue findings for seven different animal food commodity types.

Table 4. Summary of Animal Foods by Commodity Type

Commodity Type	Samples Analyzed N	Without Residues N (%)[†]	Violative Samples N (%)[†]
Totals – All Samples	306	137 (44.8)	23 (7.5)
Whole and Ground Grains/Seeds	234	115 (49.1)	12 (5.1)
Mixed Livestock Food Rations	6	0 (0)	0 (0)
Medicated Livestock Food Rations	3	0 (0)	0 (0)
Plant Products/Byproducts	54	19 (35.2)	11 (20.4)
Hay and Silage	3	1 (33.3)	0 (0)
Animal Byproducts	1	0 (0)	0 (0)
Pet Food/Treats	3	2 (66.7)	0 (0)
Other Animal Food Ingredients	2	0 (0)	0 (0)

[†]Percentage of the number of samples analyzed per commodity type.

Commodities commonly used to feed livestock that produce food for human consumption, i.e., Whole and Ground Grains/Seeds, Mixed Livestock Food Rations, Medicated Livestock Food Rations, Plant Products/Byproducts, and Hay and Silage, comprised the majority (98.0%) of the samples analyzed. Of these 300 samples, 23 (7.7%) were violative.

Geographic Coverage

Domestic: A total of 153 domestic animal food samples were collected from 24 states. Table 5 lists the number of domestic samples from each state in descending order. No domestic samples were collected from Alaska, Arizona, Arkansas, Connecticut, Delaware, Hawaii, Idaho, Illinois, Indiana, Maine, Maryland, Michigan, Missouri, Nevada, New Hampshire, New Mexico, Oklahoma, Oregon, Rhode Island, South Carolina, Texas, Utah, Virginia, Washington, West Virginia, Wyoming, or the District of Columbia.

Table 5. Domestic Animal Food Samples Collected and Analyzed per State/Territory

State/Territory	Samples (N)
Kansas	32
California	28
Pennsylvania	15
Ohio	14
Florida	12
Wisconsin	8
Minnesota	7
New York	7
Georgia	5
Kentucky	4
Montana	3
North Carolina	3

State/Territory	Samples (N)
North Dakota	2
Massachusetts	2
Vermont	2
Alabama	1
Louisiana	1
Nebraska	1
New Jersey	1
Iowa	1
South Dakota	1
Tennessee	1
Colorado	1
Mississippi	1

Imports: A total of 153 import samples were collected representing animal food samples from 13 countries. Table 6 lists the number of samples and names of the countries of origin in order of decreasing number of samples.

Table 6. Import Animal Food Samples Collected and Analyzed per Country of Origin

Country	Samples (N)
Canada	127
China	8
Bulgaria	3
Belgium	2
India	2
Netherlands	2
Poland	2
Togo	2
Chile	1
Ethiopia	1
Peru	1
Thailand	1
United Kingdom	1

Pesticides Detected

In FY 2024, 71 different pesticide residues were found in 169 of the 306 animal food samples analyzed. They are listed in Table 7 in decreasing order of detection along with the number of samples in which they were found.

Animal foods were analyzed for 781 different pesticides and industrial chemicals using the FDA pesticide MRM and SRM methods ([Appendix A](#)). The glyphosate SRM was used to test 136 animal food samples (73 domestic and 63 import) for glyphosate and glufosinate. Glyphosate was detected in 63 samples (38 domestic and 25 import), and one sample was violative. The acid herbicides SRM was used to test 154 of the samples (68 domestic and 86 import) for the presence of acid herbicides. Most of the samples (88.3%) had no acid herbicide residues and one sample contained a violative residue (4-CPA in ground peanuts).

Table 7. Pesticides Found in Animal Foods in FY 2024 Listed in Order of Frequency

Pesticide	Samples (N)	Pesticide	Samples (N)
Glyphosate	63	Cyfluthrin	3
Malathion	41	Fludioxonil	3
Piperonyl butoxide	18	Fluopicolide	3
Ethoxyquin	12	Imazamox	3
Pyraclostrobin	12	Iprodione	3
Tebuconazole	11	Metalaxyl	3
Boscalid	10	Pendimethalin	3
Clopyralid	10	Pirimiphos methyl	3
Difenoconazole	10	Saflufenacil	3
Azoxystrobin	8	Spinosad	3
Chlorantraniliprole	8	Tetraconazole	3
Propiconazole	8	Trifluralin	3
Diiflubenzuron	7	Ametoctradin	2
Fluopyram	7	Bifenthrin	2
Chlorpropham	6	Chlorpyrifos	2
Thiamethoxam	6	Deltamethrin	2
Imidacloprid	5	Dimethomorph	2
Clothianidin	4	Flumioxazin	2
Fluxapyroxad	4	Lambda-cyhalothrin	2
Glufosinate	4	Methoxyfenozide	2
Linuron	4	Paclobutrazol	2
Methoprene	4	Thiophanate-methyl	2
Permethrin	4	Tricyclazole	2
2,4-D	3	4-CPA	1
Acetamiprid	3	Benzovindiflupyr	1

Pesticide	Samples (N)
Buprofezin	1
Carbendazim	1
Chlorfenapyr	1
Cyazofamid	1
Cypermethrin	1
Cyprodinil	1
DDT	1
Fenbutatin oxide	1
Fenobucarb (BPMC)	1
Fenpropidin	1
Fenuron	1

Pesticide	Samples (N)
Fipronil	1
Flusilazole	1
Isoprothiolane	1
Mandipropamid	1
Metribuzin	1
MGK 264	1
Penthiopyrad	1
Procymidone	1
Quinclorac	1
Thiabendazole	1

Focused Sampling

In FY 2024, FDA conducted pesticide analyses for field assignments for which selected animal-derived domestic human foods were analyzed for pesticides and other chemical contaminants. FDA collected and analyzed 110 samples, consisting of 29 milk, 34 shell egg, 19 honey, and 28 game meat samples. Results are listed in Table 8.

Table 8. Pesticides Found in Samples Analyzed for the Animal-Derived Foods Assignment

Commodity	Samples Analyzed N	Without Residues N (%)[†]	Violative Samples N (%)[†]
Total	110	103 (93.6)	0 (0)
Milk	29	28 (96.6)	0
Eggs	34	30 (88.2)	0
Honey	19	18 (94.7)	0
Bison	6	5 (83.3)	0
Elk	7	7 (100)	0
Rabbit	8	8 (100)	0
Venison	7	7 (100)	0

[†]Percentage of the number of samples analyzed per commodity type.

No violative pesticide residues were found in any of the animal-derived food commodities, and 93.6% of the samples contained no residues.

Imported Human Food Products That May Warrant Special Attention

The design of the FDA pesticide program focuses on products that have a history of violations or are suspected of violations, based on information such as reports from other agencies and pesticide usage data. Historically, the violation rate for import foods is higher than for domestic foods; results from the regulatory monitoring of human foods in FY 2024 continue that trend.⁶ The violation rate for import human foods (15.6%) was nearly 9 times higher than the rate for domestic foods in FY 2024 (1.8%). The majority of the violations for import commodities are no-tolerance violations, with approximately 80% of violative residues < 0.1 ppm in FY 2024.

The following criteria were applied to the FY 2024 data to select import human food commodities that may warrant special attention, such as increased sampling in the future:

- commodities with at least 20 samples analyzed OR with a minimum of 3 violations, and
- a violation rate of 10% or higher.

Table 9 lists the import human food commodities analyzed in FY 2024 that meet the above criteria. The commodities are listed alphabetically and include the total number of samples analyzed and violation rate per commodity.

Table 9. Import Human Food Commodities That May Warrant Special Attention

Commodity†	Samples Analyzed (N)	Violation Rate (%)
Beets, red	12	25.0
Blackberries*	24	16.7
Bok choy*	33	36.4
Cactus leaves	6	50.0
Carrots*	41	12.2
Cashews*	29	13.8
Cassava leaves	6	50.0
Celery*	26	19.2
Cilantro*	32	43.8
Dates*	25	36.0
Figs*	15	40.0
Garbanzo beans	30	13.3
Kale*	7	42.9
Lemons	29	17.2
Lettuce, head	26	15.4
Limes*	51	21.6
Loroco flower	5	80.0
Mung beans*	55	29.1
Mushrooms and fungi	50	16.0
Olive oil*	27	25.9
Onions, leeks, scallions, shallots*	74	36.5
Oranges	36	11.1
Peas*	56	28.6
Peppers, hot*	86	14.0
Prickly pear*	22	86.4
Pumpkin seeds	7	42.9
Radishes*	33	33.3
Rice*	165	27.9
Sesame seeds*	43	18.6
Sour sour leaves	3	100.0
Spinach*	31	41.9
Squash*	54	11.1
Strawberries*	92	12.0
String beans*	39	20.5
Taro, Dasheen*	28	14.3

†Data listed for the commodities in this table are based upon specific product definitions and may not be directly comparable to product summary subcategories listed in Appendix C.

*Commodity was on the FY 2023 table of import commodities warranting special attention.

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Appendices

Appendix A lists the 781 pesticides and industrial chemicals analyzed using FDA methods in FY 2024. The MRM method is used to analyze the majority of pesticides (754), and two SRMs were used to analyze (1) glyphosate, glufosinate, and their degradation products (glyphosate SRM) and (2) 27 selected acid herbicides (acid herbicides SRM). In addition to these chemicals, FDA analytical procedures detect other metabolites and isomers associated with the pesticides listed in Appendix A.

All residue findings for human foods are summarized in Appendices B (domestic) and C (import). In FY 2024, 122 different domestic human food commodities and 349 different import human food commodities were tested. In both appendices, all commodities have been assigned to the same six commodity groups; however, no import milk, dairy products, or eggs were analyzed in FY 2024:

- Grains/Grain Products
- Milk/Dairy Products/Eggs
- Fish/Shellfish/Other Aquatic Products
- Fruits
- Vegetables
- Other Food Products

Commodities are further categorized within each commodity group. For example, the subcategories for domestic commodities listed under the “Grains and Grain Products” commodity group in Appendix B include:

- Corn and corn products
- Oats and oat products
- Rice and rice products
- Soybeans and soybean products
- Wheat and wheat products
- Other grains and grain products

Each of these subcategories includes commodities derived from a single agricultural commodity. For example, the subcategory “Wheat and wheat products” includes commodities composed exclusively, or almost exclusively, from wheat, such as whole wheat grain, milled wheat, wheat flour, enriched wheat flour, wheat germ, wheat malt, wheat bran, and wheat gluten.

The subcategories within each commodity group may differ between the appendices for domestic and import commodities. This is because the numbers and kinds of individual commodities available are different for domestic and import commodities. For example, under the “Fruit” commodity group, 41 subcategories are listed for the import samples in Appendix C, but only 20 subcategories are listed for the domestic samples in Appendix B. The additional import “Fruit” subcategories are mostly for fruits not produced domestically.

Appendix A. Pesticides and Industrial Chemicals Analyzed by FDA Pesticide Methods in FY 2024

2,4-D ¹	Benfluralin	Carbofuran
2,4-D methyl ester	Benfuracarb	Carbophenothion
2,4-DB ¹	Benfuresate	Carbosulfan
2,4,5-T methyl ester	Benodanil	Carboxin
2,6-DIPN	Benoxacor	Carfentrazone ethyl ester
3,4-Dichloroaniline ³	Bentazon	Carpropamid
4-CPA ¹	Benthiavalicarb-isopropyl	Chlorantraniliprole
Abamectin	Bentranil	Chlorbenside
Acephate	Benzovindiflupyr	Chlorbicyclen
Acequinocyl	Benzoximate	Chlorbromuron
Acetamiprid	Benzoylprop ethyl	Chlorbufam
Acetochlor	Benzpyrimoxan	Chlordane
Acibenzolar-S-methyl	Berberine	Chlordecone
Acifluorfen ¹	BHC	Chlordimeform
Acifluorfen methyl ester	Bicyclopyrone	Chlorethoxyfos
Aclonifen	Bifenazate	Chlorfenapyr
Acrinathrin	Bifenox	Chlorfenethol
Akton	Bifenthrin	Chlorfenvinphos
Alachlor	Binapacryl	Chlorfenvinphos methyl
Aldicarb	Biphenyl	Chlorfluazuron
Aldrin	Bistrifluron	Chlorimuron ethyl
Allethrin	Bitertanol	Chlormephos
Allidochlor	Bixafen	Chlornitrofen
Ametoctradin	Boscalid	Chlorobenzilate
Ametryn	Broflanilide	Chloroneb
Amicarbazone	Bromacil	Chloropropylate
Amidithion	Bromfenvinphos ethyl	Chlorothalonil
Amidoflumet	Bromfenvinphos methyl	Chlorotoluron
Aminocarb	Bromobutide	Chloroxuron
Aminopyralid ¹	Bromocyclen	Chlorpropham
Aminopyrifin	Bromophos	Chlorpyrifos
Amisulbrom	Bromophos ethyl	Chlorpyrifos methyl
Amitraz	Bromopropylate	Chlorthiamid
Ancymidol	Bromoxynil ¹	Chlorthiophos
Anilazine	Bromuconazole	Chlozolate
Anilofos	Bufencarb	Chromafenozide
Aramite	Bupirimate	Cinidon ethyl
Aspon	Buprofezin	Clethodim
Atraton	Butachlor	Clodinafop propargyl
Atrazine	Butafenacil	Clofentezine
Azaconazole	Butamifos	Clomazone
Azamethiphos	Butralin	Clopyralid ¹
Azinphos ethyl	Butylate	Cloquintocet mexyl
Azinphos methyl	Cadusafos	Clothianidin
Aziprotryne	Cafenstrole	Coumaphos
Azoxystrobin	Captafol	Coumoxystrobin
BAM ⁴	Captan	Crimidine
Beflubutamid	Carbaryl	Crotoxyphos
Benalaxyl	Carbendazim ⁵	Crufomate
Bendiocarb	Carbetamide	Cumyluron

Cyanazine	Diclocymet	Dodine
Cyanofenphos	Diclofop ¹	Drazoxolon
Cyanophos	Diclofop methyl	Edifenphos
Cyantraniliprole	Diclomezine	Emamectin benzoate
Cyazofamid	Dicloran	Empenthrin
Cybutryne (Irgarol)	Dicloromezotiaz	Endosulfan
Cyclafuramid	Dicofol	Endrin
Cycloate	Dicrotophos	Enoxastrobin
Cycloxydime	Dicryl	EPN
Cycluron	Dicyclanil	Epoxiconazole
Cyenopyrafen	Dieldrin	EPTC
Cyetypyrafen	Diethatyl ethyl	Erbon
Cyflufenamid	Diethofencarb	Esfenvalerate
Cyflumetofen	Difenoconazole	Esprocarb
Cyfluthrin	Difenoxuron	Etaconazole
Cyhalodiamide	Diflovidazin	Ethaboxam
Cyhalofop butyl ester	Diffubenzuron	Ethalfuralin
Cymiazole	Diffufenican	Ethiofencarb
Cymoxanil	Diffufenzopyr ¹	Ethiolate
Cypermethrin	Diffumetorim	Ethion
Cyphenothrin	Dimefluthrin	Ethiprole
Cyprazine	Dimefox	Ethirimol
Cyproconazole	Dimepiperate	Ethofumesate
Cyprodinil	Dimethachlone	Ethoprop
Cyprofuram	Dimethachlor	Ethoxyquin
Cyromazine	Dimethametryn	Ethychlozate
Cythioate	Dimethenamid	Etobenzanid
Dazomet	Dimethipin	Etofenprox
DCPA	Dimethirimol	Etoxazole
DDT	Dimethoate	Etridiazole
DEET	Dimethomorph	Etrimfos
Deltamethrin	Dimetilan	Famoxadone
Demephion	Dimoxystrobin	Famphur
Demeton	Dimpropyridaz	Fenamidone
Desmedipham	Diniconazole	Fenaminostrobin
Desmetryn	Dinitramine	Fenamiphos
Diafenthiuron	Dinobuton	Fenarimol
Dialifor	Dinocap	Fenazaflor
Diallate	Dinoseb	Fenazaquin
Diamidafos	Dinotefuran	Fenbuconazole
Diazinon	Dinoterb	Fenbutatin oxide
Dicamba ¹	Diofenolan	Fenclorim
Dicapthon	Diothyl	Fenfuram
Dichlobenil	Dioxacarb	Fenhexamid
Dichlobentiazox	Dioxathion	Fenitrothion
Dichlofenthion	Diphenamid	Fenobucarb (BPMC)
Dichlofluanid	Diphenylamine	Fenothiocarb
Dichlormate	Dipropetryn	Fenoxanil
Dichlormid	Disulfoton	Fenoxaprop ethyl
Dichlorophen	Ditalimfos	Fenoxycarb
Dichlorprop ¹	Dithiopyr	Fenpiclonil
Dichlorvos	Diuron	Fenpropathrin
Diclobutrazol	Dodemorph	Fenpropidin

Fenpropimorph	Fluroxypyr ¹	Imibenconazole
Fenpyrazamine	Flurprimidol	Imidacloprid
Fenpyroximate, e-	Flurtamone	Imiprothrin
Fenson	Flusilazole	Indanofan
Fensulfothion	Fluthiacet methyl	Indaziflam
Fenthion	Flutolanil	Indoxacarb
Fenuron	Flutolanil	Inpyrfluxam
Fenvalerate	Flutriafol	Ioxynil
Ferimzone	Fluvalinate	Ipconazole
Fipronil	Fluxametamide	Ipfencarbazone
Flamprop isopropyl	Fluxapyroxad	Ipflufenquin
Flamprop methyl	Folpet	Iprodione
Flometoquin	Fomesafen	Iprovalicarb
Flonicamid	Fonofos	Isazofos
Fluacrypyrim	Forchlorfenuron	Isobenzan
Fluazifop-p-butyl	Formetanate	Isocarbamid
Fluazinam	Formothion	Isocarbophos
Fluazolate	Fosthiazate	Isodrin
Fluazuron	Fosthietan	Isofenphos
Flubendiamide	Fuberidazole	Isofetamid
Flubenzimine	Furalaxyl	Isoflucypram
Fluchloralin	Furametpyr	Isomethiozin
Flucycloxuron	Furathiocarb	Isoprocab
Flucythrinate	Furilazole	Isopropalin
Fludioxonil	Furmecyclox	Isoprothiolane
Fluensulfone	Gardona	Isoproturon
Flufenacet	Glufosinate ²	Isopyrazam
Flufenoxuron	Glyphosate ²	Isotianil
Flufenoxystrobin	Griseofulvin	Isoxadifen ethyl
Flufenpyr ethyl	Halauxifen methyl	Isoxaflutole
Flufiprole	Halfenprox	Isoxathion
Fluindapyr	Halofenozide	Ivermectin
Flumetralin	Haloxyp ¹	Jodfenphos
Flumetsulam	Haloxyp methyl	Kadethrin
Flumiclorac pentyl	Heptachlor	Karbutilate
Flumioxazin	Heptenophos	Kinoprene
Flumorph	Hexachlorobutadiene	Kresoxim methyl
Fluometuron	Hexachlorophene	Lactofen
Fluopicolide	Hexaconazole	Lambda cyhalothrin
Fluopimomide	Hexaflumuron	Lenacil
Fluopyram	Hexazinone	Leptophos
Fluoranthene	Hexythiazox	Lindane
Fluorene	Hydramethylnon	Linuron
Fluorochloridone	Hydroprene	Lufenuron
Fluorodifen	IBP	Malathion
Fluoroglycofen ethyl	Imazalil	Mandestrobin
Fluoroimide	Imazamethabenz methyl ester	Mandipropamid
Fluotrimazole	Imazamethabenz ¹	MCPA ¹
Fluoxastrobin	Imazamox ¹	MCPA methyl ester
Flupyradifurone	Imazapic ¹	MCPB ¹
Flupyrimin	Imazapyr ¹	Mecarbam
Fluquinconazole	Imazaquin ¹	Mecoprop ¹
Fluridone	Imazethapyr ¹	Mefenacet

Mefenpyr-diethyl
 Mefluidide
 Mepanipyrim
 Meperfluthrin
 Mephosfolan
 Mepronil
 Meptyldinocap
 Metaflumizone
 Metalaxyl
 Metaldehyde
 Metamifop
 Metamitron
 Metazachlor
 Metconazole
 Methabenzthiazuron (MBTZ)
 Methacrifos
 Methamidophos
 Methfuroxam
 Methidathion
 Methiocarb
 Methomyl
 Methoprene
 Methoprotrotryne
 Methoxychlor
 Methoxyfenozide
 Methyl trithion
 Metobromuron
 Metofluthrin
 Metolachlor
 Metolcarb
 Metominostrobin
 Metoxuron
 Metrafenone
 Metribuzin
 Metsulfuron methyl
 Metyltetraprole
 Mevinphos
 Mexacarbate
 MGK-11
 MGK-264
 MGK-326
 Mirex
 Molinate
 Momfluorothrin
 Monalide
 Monocrotophos
 Moxidectin
 MPPA²
 Myclobutanil
 N-acetylglufosinate²
 Naled
 Naphthalene
 Naphthaleneacetamide

Naproanilide
 Napropamide
 Naptalam
 Nicotine
 Nitenpyram
 Nitralin
 Nitrapyrin
 Nitrofen
 Nitrothal isopropyl
 Norea
 Norflurazon
 Novaluron
 Noviflumuron
 Nuarimol
 Octhilineone
 Ofurace
 Orbencarb
 Orysaastrobin
 Oryzalin
 Oxadiazon
 Oxadixyl
 Oxamyl
 Oxathiapiprolin
 Oxpocconazole
 Oxydemeton methyl
 Oxyfluorfen
 Oxythioquinox
 Paclobutrazol
 Parathion
 Parathion methyl
 PCBs
 Pebulate
 Penconazole
 Pencycuron
 Pendimethalin
 Penflufen
 Pentachlorophenol¹
 Pentanochlor
 Penthiopyrad
 Pentoxazone
 Permethrin
 Perthane
 Pethoxamid
 Phenkapton
 Phenmedipham
 Phenothiazine
 Phenothrin
 Phenthoate
 Phenylphenol, o-
 Phorate
 Phosalone
 Phosfolan
 Phosmet

Phosphamidon
 Phoxim
 Phthalide
 Picarbutrazox
 Picloram¹
 Picolinafen
 Picoxystrobin
 Pindone
 Pinoxaden
 Piperalin
 Piperonyl butoxide
 Piperophos
 Pirimicarb
 Pirimiphos ethyl
 Pirimiphos methyl
 Plifenate
 Prallethrin
 Pretilachlor
 Probenazole
 Prochloraz
 Procymidone
 Prodiamine
 Profenofos
 Profluralin
 Profoxydim
 Prohydrojasmon
 Promecarb
 Prometon
 Prometryn
 Pronamide
 Propachlor
 Propamocarb
 Propanil
 Propaphos
 Propaquizafop
 Propargite
 Propazine
 Propetamphos
 Propham
 Propiconazole
 Propisochlor
 Propoxur
 Propoxycarbazone
 Proquinazid
 Prosulfocarb
 Prothioconazole
 Prothiofos
 Prothoate
 Prynachlor
 Pydiflumetofen
 Pymetrozine
 Pyracarbolid
 Pyraclofos

Pyraclonil	Simeconazole	Thioquinox
Pyraclostrobin	Simetryne	Tiadinil
Pyraflufen ethyl	Spinetoram	Tiafenacil
Pyrapropoyne	Spinosad	Tioxazafen
Pyraziflumid	Spirodiclofen	Tolclofos methyl
Pyrazon	Spiromesifen	Tolfenpyrad
Pyrazophos	Spirotetramat	Tolnifanide
Pyrazoxyfen	Spiroxamine	Tolprocarb
Pyrene	Sulfentrazone	Tolpyralate
Pyrethrins	Sulfluramid	Tolyfluanid
Pyribencarb	Sulfotepp	Tralkoxydim
Pyributicarb	Sulfoxaflo	Transfluthrin
Pyridaben	Sulprofos	Triadimefon
Pyridachlometyl	Swep	Triadimenol
Pyridalyl	TCMTB	Tri-allate
Pyridaphenthion	Tebuconazole	Triamiphos
Pyridate	Tebufenozide	Triapenthenol
Pyridinitril	Tebufenpyrad	Triazamate
Pyrifenox	Tebufloquin	Triazophos
Pyrifluquinazon	Tebupirimfos	Triazoxide
Pyrifthalid	Tebutam	Tribufos
Pyrimethanil	Tebuthiuron	Tributoxy PO ₄
Pyrimidifen	Tecnazene	Trichlamide
Pyriminobac methyl	Teflubenzuron	Trichlorfon
Pyriminostrobin	Tefluthrin	Trichloronat
Pyrio fenone	Temephos	Triclopyr ¹
Pyriproxyfen	TEPP	Triclosan
Pyrisoxazole	Tepraloxymid	Tricyclazole
Pyroquilon	Terbacil	Tridemorph
Pyroxasulfone	Terbufos	Tridiphane
Quinalphos	Terbumeton	Trietazine
Quinclorac ¹	Terbuthylazine	Trifenmorph
Quinoclamine	Terbutryn	Trifloxystrobin
Quinofumelin	Tetrachlorantranilprole	Triflumizole
Quinoxifen	Tetraconazole	Triflumuron
Quintozene	Tetradifon	Trifluralin
Quizalofop ethyl ester	Tetramethrin	Triforine
Quizalofop ¹	Tetrasul	Trimethacarb
Rabenzazole	Thenylchor	Triphenyl PO ₄
Resmethrin	Thiabendazole	Tris(1,3-dichloro-2propyl) PO ₄
Ronnel	Thiacloprid	Tris(beta-chloroethyl) PO ₄
Rotenone	Thiamethoxam	Tris(chloropropyl) PO ₄
Saflufenacil	Thiazopyr	Triticonazole
Salithion	Thidiazuron	Uniconazole
Schradan	Thifluzamide	Valifenalate
Sebuthylazine	Thiobencarb	Vamidothion
Secbumeton	Thiocyclam	Vernolate
Sedaxane	Thiodicarb	Vinclozolin
Sethoxydim	Thiofanox	Zoxamide
Silafluofen	Thiometon	Zytron (DMPA)
Silthiofam	Thionazin	
Simazine	Thiophanate methyl	

¹Acid herbicide included within the scope of the acid herbicides SRM.

²Glyphosate, glufosinate, and their degradants MPPA (3-(hydroxymethylphosphinyl) propanoic acid) and N-acetylglufosinate are within the scope of the glyphosate SRM.

³3,4-Dichloroaniline is a metabolite of multiple pesticides.

⁴BAM is a degradant of both fluopicolide and dichlobenil.

⁵Carbendazim is both a fungicide and a degradant of thiophanate methyl; it was reported under the category of thiophanate methyl in the 2015 and 2016 pesticide residue monitoring reports.

Appendix B. Analysis of Domestic Human Foods by Commodity Group in FY 2024

Commodity Group	Samples Analyzed (N)	Without Residues N (%) [†]	Violative Samples* N (%) [†]	Over Tolerance Violations (N)	No Tolerance Violations (N)
Totals - All Domestic Samples	893	329 (36.8)	16 (1.8)	3	15
<u>Grains/Grain Products - Totals</u>	31	18 (58.1)	1 (3.2)	1	1
Corn and corn products	8	8 (100)	0	0	0
Oats and oat products	1	1 (100)	0	0	0
Rice and rice products	10	1 (10.0)	0	0	0
Soybeans and soybean products	8	6 (75.0)	0	0	0
Wheat and wheat products	1	1 (100)	0	0	0
Other grains and grain products	3	1 (33.3)	1 (33.3)	1	1
<u>Milk/Dairy Products/Eggs - Totals</u>	63	58 (92.1)	0	0	0
Eggs	34	30 (88.2)	0	0	0
Milk, cream and cheese products	29	28 (96.6)	0	0	0
<u>Fish/Shellfish/Other Aquatic Products - Totals</u>	19	18 (94.7)	0	0	0
Fish and fish products	15	14 (93.3)	0	0	0
Shellfish and Crustaceans	4	4 (100)	0	0	0
<u>Fruits - group subtotal</u>	236	26 (11.0)	1 (0.4)	0	1
Apple fruit/juice	17	0	0	0	0
Apricot fruit/juice	2	0	0	0	0
Avocados	10	9 (90.0)	0	0	0
Blackberry fruit/juice	9	1 (11.1)	0	0	0
Blueberry fruit/juice	15	0	0	0	0
Cherry fruit/juice	16	0	0	0	0
Grapefruit fruit/juice	15	0	1 (6.7)	0	1
Grape fruit/juice, raisins	22	1 (4.5)	0	0	0
Lemon fruit/juice	6	0	0	0	0
Nectarine fruit/juice	13	0	0	0	0
Orange fruit/juice	17	0	0	0	0
Papaya fruit/juice	7	0	0	0	0
Peach fruit/juice	15	0	0	0	0
Pear fruit/juice	13	1 (7.7)	0	0	0
Plum fruit/juice, prunes	13	2 (15.4)	0	0	0
Raspberry fruit/juice	10	1 (10.0)	0	0	0
Strawberry fruit/juice	16	0	0	0	0
Watermelon fruit/juice	9	4 (44.4)	0	0	0
Other citrus fruit/juice	1	0	0	0	0
Other fruits/juices	10	7 (70.0)	0	0	0
<u>Vegetables - Totals</u>	495	163 (32.9)	14 (2.8)	2	13
Asparagus	9	8 (88.9)	0	0	0
Bok choy and Chinese cabbage	17	4 (23.5)	0	0	0

Commodity Group	Samples Analyzed (N)	Without Residues N (%) [†]	Violative Samples* N (%) [†]	Over Tolerance Violations (N)	No Tolerance Violations (N)
Broccoli	14	4 (28.6)	0	0	0
Brussels sprouts	9	2 (22.2)	0	0	0
Cabbage	16	10 (62.5)	1 (6.3)	0	1
Carrots	15	2 (13.3)	0	0	0
Cauliflower	16	12 (75.0)	0	0	0
Celery	14	0	1 (7.1)	0	1
Cilantro	9	0	0	0	0
Collards	13	2 (15.4)	1 (7.7)	0	1
Corn	8	5 (62.5)	0	0	0
Cucumbers	10	2 (20.0)	0	0	0
Eggplant	12	5 (41.7)	0	0	0
Garlic, bulb	5	5 (100)	0	0	0
Kale	14	3 (21.4)	2 (14.3)	0	2
Lettuce, head	20	8 (40.0)	0	0	0
Lettuce, leaf	17	3 (17.6)	1 (5.9)	0	1
Mushrooms and truffles	10	3 (30.0)	1 (10.0)	0	1
Mustard greens	12	0	2 (16.7)	1	1
Okra	9	4 (44.4)	0	0	0
Onions/leeks/scallions/shallots	14	9 (64.3)	1 (7.1)	0	1
Peas (green/snow/sugar/sweet)	26	8 (30.8)	0	0	0
Peppers, hot	7	2 (28.6)	0	0	0
Peppers, sweet	12	0	1 (8.3)	0	1
Potatoes	17	2 (11.8)	0	0	0
Radishes	10	7 (70.0)	0	0	0
Red beets	10	6 (60.0)	2 (20.0)	1	2
Spinach	14	1 (7.1)	0	0	0
Squash	17	9 (52.9)	0	0	0
String beans (green/snap/pole/long)	14	4 (28.6)	0	0	0
Sweet potatoes	13	2 (15.4)	0	0	0
Swiss chard	7	1 (14.3)	0	0	0
Tomatoes	20	10 (50.0)	0	0	0
Other bean and pea products	51	19 (37.3)	1 (2.0)	0	1
Other leaf and stem vegetables	9	0	0	0	0
Other root and tuber vegetables	5	1 (20.0)	0	0	0
<u>Other Food Products - Totals</u>	49	46 (93.9)	0	0	0
Edible seeds and seed products	2	1 (50.0)	0	0	0
Animal products/byproducts	28	27 (96.4)	0	0	0
Honey	19	18 (94.7)	0	0	0

[†]Percentage of the number of samples analyzed per commodity group.

*Total number of violative samples may not equal sum of samples with over-tolerance and no-tolerance violations because one sample can contain pesticide chemical residues of both violation types.

Appendix C. Analysis of Import Human Foods by Commodity Group in FY 2024

Commodity Group	Samples Analyzed (N)	Without Residues N (%)†	Violative Samples* N (%)†	Over Tolerance Violations (N)	No Tolerance Violations (N)
Totals - All Import Samples	2635	961 (36.5)	411 (15.6)	114	373
<u>Grains/Grain Products - Totals</u>	224	108 (48.2)	48 (21.4)	8	48
Barley and barley products	2	1 (50.0)	0	0	0
Breakfast cereals	1	0	0	0	0
Corn and corn products	4	4 (100)	0	0	0
Macaroni and noodles	3	3 (100)	0	0	0
Oats and oat products	5	2 (40.0)	0	0	0
Quinoa and quinoa products	6	2 (33.3)	0	0	0
Rice and rice products	172	78 (45.3)	48 (27.9)	8	48
Soybeans and soybean products	2	2 (100)	0	0	0
Wheat and wheat products	20	10 (50.0)	0	0	0
Other grains and grain products	9	6 (66.7)	0	0	0
<u>Fish/Shellfish/Other Aquatic Products - Totals</u>	98	98 (100)	0	0	0
Aquaculture seafood	78	78 (100)	0	0	0
Fish and fish products	10	10 (100)	0	0	0
Shellfish and crustaceans	8	8 (100)	0	0	0
Other aquatic animals and products	2	2 (100)	0	0	0
<u>Fruits - Totals</u>	772	207 (26.8)	103 (13.3)	25	94
Acees, lychees, longans	1	1 (100)	0	0	0
Apple fruit/juice	9	2 (22.2)	0	0	0
Apricot fruit/juice	18	7 (38.9)	0	0	0
Avocado fruit/juice	26	5 (19.2)	0	0	0
Bananas, plantains	22	8 (36.4)	1 (4.5)	1	0
Blackberry fruit/juice	24	4 (16.7)	4 (16.7)	2	4
Blueberry fruit/juice	44	6 (13.6)	3 (6.8)	1	3
Breadfruit, jackfruit	11	9 (81.8)	0	0	0
Cantaloupe	6	1 (16.7)	0	0	0
Cherry fruit/juice	13	4 (30.8)	0	0	0
Cranberry fruit/juice	4	0	0	0	0
Date fruit/juice	25	12 (48.0)	9 (36.0)	4	8
Fig fruit/juice	15	7 (46.7)	6 (40.0)	1	6
Grapefruit fruit/juice	8	0	0	0	0
Grapes fruit/juice, raisins	58	10 (17.2)	5 (8.6)	2	5
Honeydew melon	1	0	0	0	0
Kiwi fruit/juice	18	8 (44.4)	1 (5.6)	0	1
Lemon fruit/juice	29	2 (6.9)	5 (17.2)	2	4
Lime fruit/juice	51	6 (11.8)	11 (21.6)	5	9
Mango fruit/juice	44	32 (72.7)	4 (9.1)	2	3
Nectarine fruit/juice	11	0	1 (9.1)	0	1

Commodity Group	Samples Analyzed (N)	Without Residues N (%)†	Violative Samples* N (%)†	Over Tolerance Violations (N)	No Tolerance Violations (N)
Olives	16	9 (56.3)	2 (12.5)	0	2
Orange fruit/juice	36	2 (5.6)	4 (11.1)	1	3
Papaya fruit/juice	48	5 (10.4)	3 (6.3)	0	3
Peach fruit/juice	10	1 (10.0)	0	0	0
Pear fruit/juice	7	1 (14.3)	0	0	0
Pineapple fruit/juice	13	10 (76.9)	1 (7.7)	0	1
Plum fruit/juice, prunes	11	3 (27.3)	1 (9.1)	0	1
Pomegranate fruit/juice	2	2 (100)	0	0	0
Prickly pear fruit/juice	22	1 (4.5)	19 (86.4)	0	19
Raspberry fruit/juice	34	11 (32.4)	2 (5.9)	1	1
Strawberry fruit/juice	92	24 (26.1)	11 (12.0)	2	10
Watermelon fruit/juice	9	1 (11.1)	1 (11.1)	0	1
Other berry fruit/juice	9	6 (66.7)	2 (22.2)	1	2
Other citrus fruit/juice	1	0	1 (100)	0	1
Other melons/vine fruit/juice	1	0	0	0	0
Other pome/core fruit/juice	1	0	1 (100)	0	1
Other stone fruit/juice	3	0	1 (33.3)	0	1
Other sub-tropical fruit/juice	8	6 (75.0)	1 (12.5)	0	1
Other fruits/juices	9	1 (11.1)	3 (33.3)	0	3
Fruit jams, jellies, preserves, syrups, toppings	2	0	0	0	0
<u>Vegetables - Totals</u>	1329	432 (32.5)	224 (16.9)	72	198
Asparagus	32	24 (75.0)	0	0	0
Bok choy and Chinese cabbage	33	0	12 (36.4)	4	12
Broccoli	28	9 (32.1)	2 (7.1)	0	2
Brussels sprouts	17	2 (11.8)	0	0	0
Cabbage, head	31	14 (45.2)	1 (3.2)	0	1
Carrots	41	16 (39.0)	5 (12.2)	0	5
Cassava	17	10 (58.8)	3 (17.6)	1	3
Cauliflower	10	3 (30.0)	1 (10.0)	0	1
Celery	26	5 (19.2)	5 (19.2)	1	5
Choyote	3	0	0	0	0
Cilantro	32	3 (9.4)	14 (43.8)	5	12
Corn	17	14 (82.4)	0	0	0
Cucumbers	23	0	2 (8.7)	1	1
Eggplant	20	4 (20.0)	0	0	0
Garbanzo beans	30	14 (46.7)	4 (13.3)	2	3
Garlic	18	12 (66.7)	0	0	0
Ginger	15	7 (46.7)	2 (13.3)	0	2
Kale	7	0	3 (42.9)	2	2
Kidney beans	14	7 (50.0)	1 (7.1)	1	0
Lettuce, head	26	9 (34.6)	4 (15.4)	0	4
Lettuce, leaf	13	1 (7.7)	1 (7.7)	0	1
Mung beans	55	14 (25.5)	16 (29.1)	12	9
Mushrooms/truffles/fungi	50	34 (68.0)	8 (16.0)	0	8

Commodity Group	Samples Analyzed (N)	Without Residues N (%) [†]	Violative Samples* N (%) [†]	Over Tolerance Violations (N)	No Tolerance Violations (N)
Okra	23	11 (47.8)	2 (8.7)	1	2
Onions/leeks/scallions/shallots	75	17 (22.7)	27 (36.0)	9	25
Peas (green/snow/sugar/sweet)	56	19 (33.9)	16 (28.6)	2	16
Peppers, hot	86	9 (10.5)	12 (14.0)	0	12
Peppers, sweet	44	2 (4.5)	4 (9.1)	0	4
Potatoes	12	7 (58.3)	0	0	0
Pumpkins	1	1 (100)	0	0	0
Radishes	33	11 (33.3)	11 (33.3)	2	11
Red beets	12	4 (33.3)	3 (25.0)	1	3
Soybeans	16	7 (43.8)	2 (12.5)	2	0
Spinach	31	0	13 (41.9)	3	13
Squash	54	10 (18.5)	6 (11.1)	6	2
String beans (green/snap/pole/long)	39	12 (30.8)	8 (20.5)	6	7
Sweet potatoes	10	9 (90.0)	1 (10.0)	0	1
Taro/dasheen	28	13 (46.4)	4 (14.3)	0	4
Tomatoes/tomatillos	51	16 (31.4)	3 (5.9)	0	3
Vegetables, other, or mixed	2	1 (50.0)	1 (50.0)	1	0
Other bean/pea vegetables/products	111	43 (38.7)	7 (6.3)	3	4
Other cucurbit vegetables	13	9 (69.2)	0	0	0
Other leaf and stem vegetables	64	23 (35.9)	20 (31.3)	7	20
Other root and tuber vegetables	10	6 (60.0)	0	0	0
Other Food Products - Totals	212	116 (54.7)	36 (17.0)	9	33
Animal products and byproducts	1	1 (100)	0	0	0
Beverages and beverage bases	1	1 (100)	0	0	0
Coconut and coconut products	8	8 (100)	0	0	0
Condiments and dressings	1	1 (100)	0	0	0
Dietary supplement, botanical/herbal	6	2 (33.3)	0	0	0
Dietary supplement, other	4	3 (75.0)	0	0	0
Food sweeteners, not honey	1	1 (100)	0	0	0
Multi-ingredient foods (dinners, sauces, specialties)	1	1 (100)	0	0	0
Nuts, almonds	6	1 (16.7)	0	0	0
Nuts, cashews	29	22 (75.9)	4 (13.8)	0	4
Nuts, other	14	11 (78.6)	0	0	0
Nuts, peanuts and peanut products	3	1 (33.3)	0	0	0
Nuts, pecans	7	7 (100)	0	0	0
Nuts, pistachios	4	1 (25.0)	1 (25.0)	1	1
Oil, olive	27	14 (51.9)	7 (25.9)	1	7
Oil, vegetable	12	6 (50.0)	2 (16.7)	1	2
Seeds, edible and seed products	73	31 (42.5)	15 (20.5)	3	13
Spices	11	2 (18.2)	6 (54.5)	2	6
Other food products	3	2 (66.7)	1 (33.3)	1	0

[†]Percentage of the number of samples analyzed per commodity group.

*Total number of violative samples may not equal sum of samples with over-tolerance and no-tolerance violations because one sample can contain pesticide chemical residues of both violation types.