

Pesticides



Pesticides are used in agriculture to protect crops from insects, fungi, weeds, and other pests. Federal government agencies in the United States share responsibility for the oversight of pesticide chemical residues in or on food. The Environmental Protection Agency (EPA) evaluates pesticides to ensure that they are safe for human health and the environment when used according to label directions. The EPA also establishes tolerances, which are the maximum residue level of a specific pesticide chemical that is permitted in or on a specific human or animal food in the United States. The Food and Drug Administration (FDA) is responsible for enforcing the EPA tolerances for domestic foods shipped in interstate commerce and foods offered for import into the U.S., except for meat, poultry, catfish (*Siluriformes*), and certain egg products that are regulated by the U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS).

The FDA enforces pesticide tolerances through multiple programs and strategies, including its pesticide residue monitoring program. We can take regulatory action when there is a no-tolerance violation (a pesticide chemical residue is detected in a commodity for which EPA has not established a tolerance or exemption from the need for a tolerance) or an over-tolerance violation (pesticide chemical residues are detected at a level above a tolerance).

Information for Consumers

Applying pesticides is one strategy that farmers use to protect plants from pests, such as insects, fungi, and weeds. To ensure a safe level of exposure to the residues of pesticides that may remain on food, the Environmental Protection Agency (EPA) sets tolerance levels. It is the responsibility of the FDA to monitor and regulate the U.S. food supply; for pesticide residues, this includes testing foods to ensure only those pesticides that are allowed by the EPA are present, and within the allowable tolerance.

When new data and information emerge that raise safety concerns about the specific uses of a pesticide, the EPA may lower or revoke the tolerance altogether.

From FDA

- [Questions and Answers on the Pesticide Residue Monitoring Program \(/food/pesticides/pesticide-residue-monitoring-program-questions-and-answers\)](/food/pesticides/pesticide-residue-monitoring-program-questions-and-answers)
- [Questions and Answers on Glyphosate \(/food/pesticides/questions-and-answers-glyphosate\)](/food/pesticides/questions-and-answers-glyphosate)

From Other Federal Government Agencies

- [U.S. Environmental Protection Agency \(EPA\): Pesticides \(http://www.epa.gov/pesticides/\)](http://www.epa.gov/pesticides/)
- [U.S. Department of Agriculture \(USDA\): Pesticide Data Program \(https://www.ams.usda.gov/datasets/pdp\)](https://www.ams.usda.gov/datasets/pdp)
- [USDA Office of Pest Management Policy Factsheet: Pesticide Residues on Fruits and Vegetables \(https://www.usda.gov/sites/default/files/documents/OPMP-Pesticide-Tolerances-Factsheet.pdf\)](https://www.usda.gov/sites/default/files/documents/OPMP-Pesticide-Tolerances-Factsheet.pdf)
- [USDA Food Safety and Inspection Service: Chemical Residues and Contaminants \(https://www.fsis.usda.gov/science-data/data-sets-visualizations/chemical-residues-and-contaminants\)](https://www.fsis.usda.gov/science-data/data-sets-visualizations/chemical-residues-and-contaminants)

FDA Monitoring and Testing

Pesticide Residue Monitoring Programs

In its regulatory pesticide residue monitoring program, the FDA selectively tests a broad range of imported and domestic commodities for approximately 800 pesticide residues.

Examples of commodities include raw fruits and vegetables. The FDA also conducts focused sampling surveys for specific commodities or selected pesticide chemical residues. The FDA is required by statute (the Pesticide Monitoring Improvements Act of 1988) to

prepare an annual summary of pesticide testing results. The FDA has prepared [annual reports \(/food/pesticides/pesticide-residue-monitoring-program-reports-and-data\)](/food/pesticides/pesticide-residue-monitoring-program-reports-and-data) since 1987 summarizing the results of our pesticide testing.

The FDA also monitors pesticide chemical residue levels in table ready foods representative of the U.S. diet by carrying out regional and national collections under the [Total Diet Study \(/food/reference-databases-and-monitoring-programs-food/fda-total-diet-study-tds\)](/food/reference-databases-and-monitoring-programs-food/fda-total-diet-study-tds) (TDS). TDS is distinct from FDA's regulatory pesticide residue monitoring program and is focused on information gathering rather than enforcement. TDS pesticide results through FY 2017 were included in the pesticide residue monitoring program reports. Results from FY2018 going forward will be posted on the FDA's TDS website.

- [Pesticide Residue Monitoring Program Reports and Data \(/food/pesticides/pesticide-residue-monitoring-program-reports-and-data\)](/food/pesticides/pesticide-residue-monitoring-program-reports-and-data)
- [Compliance Program: Pesticides and Industrial Chemicals in Domestic and Imported Foods \(CP 7304.004\) \(/media/129167/download?attachment\)](/media/129167/download?attachment)
- [Total Diet Study \(/food/reference-databases-and-monitoring-programs-food/fda-total-diet-study-tds\)](/food/reference-databases-and-monitoring-programs-food/fda-total-diet-study-tds)

Analytical Methods

FDA's multiresidue methods are capable of simultaneously determining many different pesticide chemical residues. Selective residue methods are sometimes needed to analyze pesticides that are not adequately detected using the FDA's multiresidue methods. FDA continues to conduct 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.

- [Pesticide Analytical Manual \(/food/laboratory-methods-food/pesticide-analytical-manual-pam\)](/food/laboratory-methods-food/pesticide-analytical-manual-pam)
- [Foods Program Compendium of Analytical Methods \(/food/laboratory-methods-food/foods-program-compendium-analytical-laboratory-methods\)](/food/laboratory-methods-food/foods-program-compendium-analytical-laboratory-methods)

Scientific Publications and Presentations

Monitoring Results, 2009-2017: FDA researchers published a journal article and poster that highlight trends in residue monitoring for human food samples collected from 2009 to 2017.

- *[US Food and Drug Administration Regulatory Pesticide Residue Monitoring of Human Foods 2009-2017. Food Additives & Contaminants: Part A. 2021, 38\(9\),](#)*

1520-1538 (<https://pubmed.ncbi.nlm.nih.gov/34187313/>).

- *Monitoring of Pesticide Chemical Residues in Domestic and Imported Human Foods FY 2009 to 2017* (FDA 2021 Science Forum) (</science-research/fda-science-forum/monitoring-pesticide-chemical-residues-domestic-and-imported-human-foods-fy-2009-2017>).

FDA Regulations, Guidance, and Other Standards for Industry

It is the legal responsibility of companies that produce and grow foods and manufacture products sold in the U.S. and intended for food use to comply with EPA and FDA regulations. If the FDA finds that the amount of pesticide residue on a food is over the tolerance, or when a pesticide is found and there is no tolerance that has been established, the FDA can take action. For domestic food, it may include working with the manufacturer or grower to resolve the issue and if necessary, take steps to prevent the product from entering, or remaining in, the U.S. market. In addition, FDA will notify EPA when FDA investigations or sample analyses reveal pesticide misuse. For shipments of import food commodities containing violative pesticides, they 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.

Pesticide Guidances and Compliance Policy Guide

- Guidance for Industry: Channels of Trade Policy for Commodities With Residues of Pesticide Chemicals, for Which Tolerances Have Been Revoked, Suspended, or Modified by the Environmental Protection Agency - Final Guidance (</regulatory-information/search-fda-guidance-documents/guidance-industry-channels-trade-policy-commodities-residues-pesticide-chemicals-which-tolerances>).
- Guidance for Industry: Channels of Trade Policy for Commodities with Methyl Parathion Residues - Final Guidance (</regulatory-information/search-fda-guidance-documents/guidance-industry-channels-trade-policy-commodities-methyl-parathion-residues>).
- Guidance for Industry: Channels of Trade Policy for Commodities with Vinclozolin Residues - Final Guidance (</regulatory-information/search-fda-guidance-documents/guidance-industry-channels-trade-policy-commodities-vinclozolin-residues>).
- Guidance for Industry: Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed (</regulatory-information/search-fda-guidance->

[documents/guidance-industry-action-levels-poisonous-or-deleterious-substances-human-food-and-animal-feed\)](#)

- [CPG Sec 575.100 Draft Revision - Pesticide Chemical Residues in Food - Enforcement Criteria \(/regulatory-information/search-fda-guidance-documents/cpg-sec-575100-draft-revision-pesticide-chemical-residues-food-enforcement-criteria\)](#)
- [All Chemical Contaminants, Metals, Natural Toxins, and Pesticides Guidance \(/food/guidance-documents-regulatory-information-topic-food-and-dietary-supplements/chemical-metals-natural-toxins-pesticides-guidance-documents-regulations\)](#)

Import Alerts

The FDA has issued several import alerts that provide information about certain imported products that may be detained without physical examination based on their history of pesticide violations.

- [Import Alert 99-05: "Detention Without Physical Examination Of Raw Agricultural Products for Pesticides"](#)
(https://www.accessdata.fda.gov/cms_ia/importalert_258.html)
- [Import Alert 99-08: "Detention without Physical Examination of Processed Human and Animal Foods for Pesticides"](#)
(https://www.accessdata.fda.gov/cms_ia/importalert_259.html)
- [Import Alert 99-14: "Countrywide Detention Without Physical Examination Of Raw Agricultural Products for Pesticides"](#)
(https://www.accessdata.fda.gov/cms_ia/importalert_261.html)
- [Import Alert 99-15: "Countrywide Detention Without Physical Examination of Processed Foods for Pesticides"](#)
(https://www.accessdata.fda.gov/cms_ia/importalert_262.html)