United States Department of Agriculture
Agricultural Marketing Service
Science & Technology

Pesticide Data Program

Annual Summary Calendar Year 1997

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Preface

In 1991 the United States Department of Agriculture (USDA) was charged with implementing a program to collect data on pesticide residues in food. USDA's Agricultural Marketing Service (AMS) was appointed to undertake the creation and implementation of such a program, currently known as the Pesticide Data Program (PDP). PDP has been in operation since May 1991 and has published its findings for calendar years 1991 through 1996. This is the summary for calendar year 1997.

PDP's data on pesticides in selected commodities strengthens the Government's ability to respond to food safety and marketing concerns, to protect public health, and to provide the Environmental Protection Agency (EPA) with data needed to assess the actual dietary risk posed by pesticides.

EPA registers pesticides under a statutory standard that requires any food tolerance to be based on a reasonable certainty of no harm. In making risk estimates, EPA generally uses a step-wise approach to minimize resource expenditures. As an initial worst case assessment, EPA assumes that all acres of all crops are treated with all pesticides for which they have a registered use. EPA also assumes that residues in treated crops are present at the maximum allowable level. A theoretical assessment of risk based on these worst case assumptions may significantly exceed the actual risk of pesticide residues in the food supply and jeopardize the registration of pesticides important to American agriculture. Further refinements to the risk assessment are done if needed. These refinements include the percent of crop treated with a pesticide; statistical analyses of field data; considerations of the effects of washing, cooking, processing, and storage; and use of monitoring data, if available and reliable. This is where PDP data are pivotal. PDP's sampling procedures were designed to capture actual residues in the food supply as close as possible to the time of consumption, thereby significantly upgrading the statistical reliability and extent of information available for risk assessment.

PDP continues to focus on the National Academy of Sciences' conclusions as shown in the 1993 report "*Pesticides in the Diets of Infants and Children.*" In this report, the Academy recommends that pesticide residue monitoring programs target foods most consumed by children, and that analytical testing methods used be standardized, validated, and subject to strict quality control and quality assurance programs. The Food Quality Protection Act of 1996, Title III Sec. 301 (c) states: *"The Secretary of Agriculture shall ensure that the residue data collection activities conducted by the Department of Agriculture in cooperation with the Environmental Protection Agency and the Department of Health and Human Services, provide for the improved data collection of pesticide residues, including guidelines for the use of comparable analytical and standardized reporting methods, and increased sampling of foods most likely consumed by infants and children."*

The States participating in PDP deserve special recognition for their contributions to the program. Sample collectors' vigilance and dedication allow AMS to adjust sampling protocols to respond to changing trends in commodity distribution. Laboratory staffs were helpful in formulating recommendations to increase productivity and improve methodologies. PDP also thanks the EPA; the Food and Drug Administration (FDA); AMS' Eastern Laboratory; and USDA's National Agricultural Statistics Service (NASS), Animal and Plant Health Inspection Service (APHIS), and the Grain Inspection, Packers and Stockyards Administration (GIPSA) for providing their support to the program. PDP also acknowledges the support of Ed Zager and Martha Lamont, EPA, Health Effects Division, Office of Pesticide Programs, for financial oversight of the State contracts and collaboration in refining the 1997 Program Plan.

We welcome any comments on the Summary's presentation. A form for submitting comments is provided at the end of the Summary.

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Executive Summary

The Pesticide Data Program (PDP) was implemented by the United States Department of Agriculture (USDA) in May 1991 to collect data on pesticide residues in foods. The data are used by the Environmental Protection Agency (EPA), Food and Drug Administration (FDA), Economic Research Service (ERS), Foreign Agricultural Service (FAS), and various groups within the private sector. EPA uses PDP data for its dietary risk assessment and pesticide registration processes. FDA uses PDP data to refine sampling in order to more effectively enforce tolerances. ERS evaluates pesticide alternatives utilizing PDP data. PDP data are also used by the government and agricultural community to examine residue issues which may affect good agricultural practices relating to integrated pest management objectives. FAS references PDP data in support of U.S. export commodities in a competitive global market. Multiple private sector groups use PDP data in addressing food safety issues.

PDP planning and policy are coordinated through an Executive Steering Committee consisting of representatives from USDA, EPA, and FDA. The USDA representatives to the committee include: Agricultural Marketing Service (AMS), National Agricultural Statistics Service (NASS), ERS, and the Agricultural Research Service (ARS).

Pesticides monitored by PDP in 1997 included insecticides, herbicides, fungicides, and growth regulators in fresh and processed fruit and vegetables, whole milk, and grains. Pesticides and commodities were chosen for inclusion in the program based on the EPA's data needs and USDA's food consumption surveys. PDP sampling and analysis operations in 1997 were supported through EPA contracts and AMS-issued cooperative agreements. PDP's day-to-day administrative, sampling, technical, and database activities are the responsibility of the AMS Science and Technology program. During 1997, EPA monitored contract performance by the participating States through review of technical and financial reports.

In 1997, the ten States participating in PDP represented about 50 percent of the Nation’s population and all regions of the country. Seven States (California, Florida, Michigan, New York, Ohio, Texas, and Washington) both collected and analyzed samples. Colorado, Maryland, and Wisconsin dedicated their activities to collecting and shipping samples to other State and Federal participating laboratories for analysis. Maryland, replacing North Carolina, commenced their sampling program in March 1997.

PDP was designed to provide information on pesticide residues in food in order to improve the quality of data that EPA uses to determine the residue levels in foods and estimate exposure to consumers. Without actual residue data, initial risk assessments are based on tolerance levels which do not accurately reflect actual residues likely to be found in fresh and processed foods. A theoretical risk based on worst-case assumptions may exceed the actual risk of pesticide residues in the food supply and jeopardize the registration of pesticides important to American agriculture. Where needed, EPA conducts further refinements to the risk assessment by using additional information that includes residue monitoring data, if available and reliable. This is where PDP data are pivotal. The data are collected as close to the point of consumption as possible while retaining identity of product origin. Sampling is based on statistically reliable sampling protocols, thereby upgrading their usefulness for risk assessment.

The number of samples to be collected for fruit and vegetable and milk testing for pesticide residues is apportioned according to State population and the samples are randomly chosen without regard for commodity origin or variety. Samples reflect what is typically available to the consumer throughout the year. PDP's sampling protocol takes into account the different volumes of produce distributed annually from each sampling site, thus removing a potential source of bias in estimating residue exposure from PDP-selected commodities. Grain samples are chosen from GIPSA’s file samples based on crop years and individual State production figures.

In 1997, PDP collected samples from 15 commodities. Two commodities--canned peaches and potatoes (special survey)--were collected for 13 months, from December 1996 to December 1997. Among the six fresh fruit and vegetable commodities collected were pears, potatoes, spinach, sweet potatoes, tomatoes, and winter squash.

PDP also collected samples of six processed fruit and vegetables, including apple juice (ready-to-serve and concentrate), canned/frozen green beans, orange juice (ready-to-serve and concentrate), canned peaches, canned spinach, and frozen winter squash. In addition, samples were collected for whole milk, soybeans, and wheat.

PDP collected and analyzed a total of 8,177 samples in 1997. Samples collected originated from 43 States (includes States contributing grain samples) and 23 foreign countries. Of the 6,321 fruit and vegetable samples collected and analyzed, 13 percent were imported and 2 percent were mixed national origin (mainly orange juice). Apple juice, orange juice, pears, tomatoes, and winter squash accounted for most of the imports. In addition, 732 whole milk, 159 soybean (1996 crop year), 623 wheat (1997 crop year), and 342 potato samples were collected and analyzed.

PDP's test of residues show that farmers are using significantly fewer pesticides than would be suggested by the worst case assessment. This may be due to a combination of factors, such as percent of crop treated (as indicated by NASS pesticide usage surveys), dissipation of residues after harvest, and reductions that occur in processing of commodities to prepare them for retail sales. Overall, 57 percent of the 6,321 fruit and vegetable samples analyzed by the PDP participating laboratories contained at least one pesticide residue. In breaking down fruit and vegetable samples analyzed into fresh and processed, 70 percent of the fresh produce and 45 percent of the processed products contained at least one pesticide residue. Also, 15 percent of the 732 whole milk samples, 80 percent of the 623 wheat samples, and 87 percent of the 159 soybean samples had at least one pesticide residue. In total, 7,835 samples were collected and tested, excluding the 342 samples in the acute dietary survey in potatoes. More than one residue was detected in about 30 percent of the fruit and vegetables, half of the wheat, 30 percent of the soybeans, and only 0.2 percent of milk samples tested. About 24 percent of the fruit and vegetable residue detections were due to defined postharvest uses.

In 1997, PDP found 455 presumptive violations in 412 (5%) samples. By commodity type, there were presumptive violations in 383 (6%) fruit and vegetable, 23 (4%) wheat, and 6 (0.8%) milk samples. A tolerance is defined under Section 408 of the Federal Food, Drug, and Cosmetic Act as the maximum quantity of a pesticide residue allowable on a raw agricultural commodity. A violation occurs when a residue is found which exceeds the tolerance level or when a residue is found for which there is no tolerance for that particular crop. Many presumptive violations, where there is no EPA tolerance, may be due to spray drift or crop rotations. Only four presumptive violations (about 1 in 100) were for pesticide residues where the EPA tolerance was exceeded, and 451 were violations with no established tolerance for the pesticide/commodity pair.

The limits of detection for each pesticide/commodity pair in the testing system for PDP are analytically defined at levels low enough to conduct realistic dietary risk assessments. This enables scientists using PDP data to take into account non-detected findings for each pesticide/commodity combination when performing assessments.

PDP continually strives to improve methodologies for the collection, testing, and reporting of data. PDP data are available to EPA and other Federal and State agencies charged with regulating and setting policies on the use of pesticides.

Pesticide Data Program (PDP) Annual Summary, Calendar Year 1997

This summary consists of the following sections: (I.) Introduction, (II.) Sampling Protocol, (III.) Laboratory Operations, and (IV.) Sample Results and Discussion.

I. Introduction

The Pesticide Data Program (PDP) of the United States Department of Agriculture (USDA) utilizes the expertise available in the Agricultural Marketing Service (AMS), the National Agricultural Statistics Service (NASS), the Economic Research Service (ERS), and the Agricultural Research Service (ARS). NASS provides statistically reliable data on chemical usage at the State level and collects economic input data that link chemical usage with economic characteristics. ERS analyzes AMS and NASS data to understand producer behavior and to determine the impact various production practices and policies might have on the Nation's agricultural production, food supply, and consumers. ARS conducts nationwide surveys of individual food intake and household use and is developing a Food Grouping System to translate data on foods as consumed into forms that can be linked with pesticide residue data. AMS selected its Science and Technology program to oversee PDP's policy planning and program direction with the participating State and Federal facilities.

Figure 1, Overview of PDP Management and Operations, describes the program's three major components -- sample collection, laboratory analysis, and database management. In 1997, PDP sampling and/or analytical operations were performed by ten States (California, Colorado, Florida, Maryland, Michigan, New York, Ohio, Texas, Washington, and Wisconsin) through EPA issued contracts and AMS cooperative agreements with the respective State agencies.

Figure 2 shows the States participating in the program for collection of fresh and processed fruit and vegetable and milk samples, which together represent about 50 percent of the Nation's population. Also shown are 11 other States (Alaska, Connecticut, Delaware, Hawaii, Massachusetts, Nevada, New Jersey, New Mexico, Vermont, Virginia, and Wyoming) where a significant amount of produce is directly marketed from the participating States. Figure 3 shows the distribution of commodities by origin--domestic versus imported and/or mixed national origin. Figure 4 provides maps showing the distribution by State of wheat samples for crop year 1997 and soybean samples collected in crop year 1996.

AMS works closely with EPA to select the commodities and pesticides to be placed in PDP. Commodities chosen for inclusion are those most often consumed by the American public, with emphasis on those consumed by infants and children. Fifteen commodities (apple juice, canned/frozen green beans, whole milk, orange juice, canned peaches, pears, potatoes, soybeans, fresh spinach, canned spinach, sweet potatoes, tomatoes, wheat, fresh winter squash, and frozen winter squash) were sampled and analyzed during 1997. The pesticides EPA suggests for monitoring consist mainly of those whose toxicities and estimated dietary exposures indicate the need for more refined exposure estimates. The list is revised periodically to address EPA's data needs. Table 1 is a list of pesticides in the 1997 PDP testing profile for fruit and vegetables, milk, and grains.

PDP is now a critical component of the Food Quality Protection Act (FQPA) of 1996, which directs the Secretary of Agriculture to collect pesticide residue data in a uniform manner on commodities highly consumed by infants and children. EPA continues to be an important recipient of PDP data to implement the provisions of FQPA. Other government agencies (including the Foreign Agricultural Service (FAS)) and industry have used PDP data to promote the export of American commodities in international markets. Customized queries of USDA's PDP database were requested from various sources to support their risk assessment and pesticide information priorities.

Figure 1. Overview of PDP Management and Operations

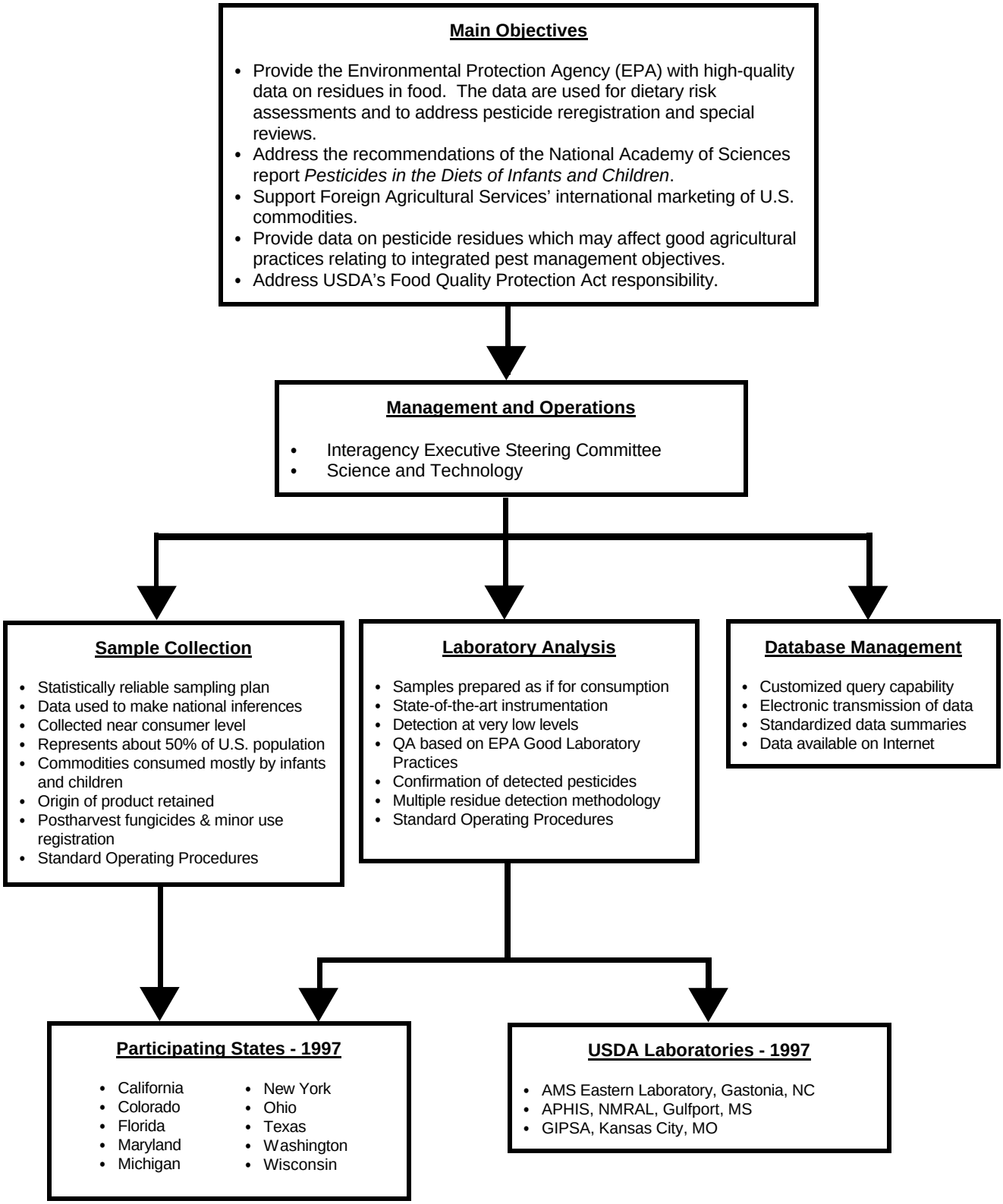
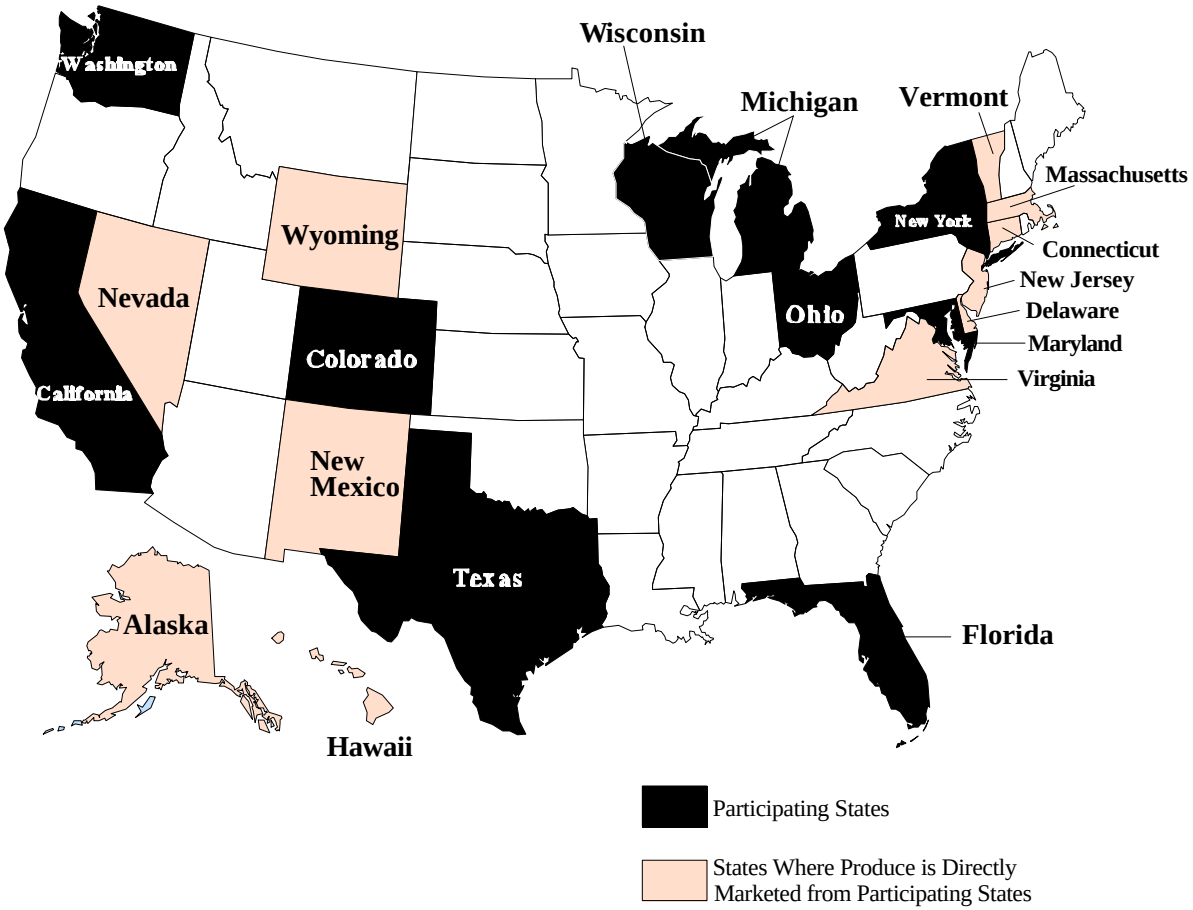


Figure 2. Participating States and Their Geographical Distribution Areas



PDP has also provided information to the Codex Alimentarius Commission and the World Health Organization, both of which operate under the auspices of the United Nations. The information provided was on extraneous residues in foods (environmental contaminants such as DDT and metabolites) and PDP's Proficiency Check Sample Program.

To obtain pesticide residue data on fruit and vegetable commodities as close to the point of consumption as possible, samples are collected at distribution points just before release to supermarkets and grocery stores. Sampling at these locations allows for residue measurements that include fungicides and growth regulators, and takes into account degradation of pesticides while in storage. Participation as a PDP sampling site is voluntary, which sets it apart from State and Federal enforcement programs. There are about 900 sampling sites granting access and providing information to sample collectors. Their cooperation makes it possible to adjust sampling protocols in response to fluctuations in food distribution.

PDP differs markedly from regulatory monitoring programs (tolerance enforcement), which require quick turn-around time for analysis of enforcement samples. Under tolerance enforcement, the sampled commodity may be detained at the distribution facility while awaiting sample results. PDP places emphasis on searching for residues at the lowest detectable levels rather than on quick sample turnaround; therefore, analysis of PDP samples may take more than a month, and does not affect commodity distribution. Appendix A is a chronological history of the 33 commodities in PDP from program inception through mid-1998.

Table 1. Pesticides in Pesticide Data Program, 1997

PART IA. Fresh and Processed Fruits and Vegetables (F&V) (Subject to PDP quality assurance criteria)

46 Pesticides + 20 Metabolites/Degradates/Isomers

Acephate
Aldicarb sulfoxide
Aldicarb sulfone
Atrazine
Azinphos methyl
Benomyl (analyzed as carbendazim)
Captan
Carbaryl
Carbofuran
  3-Hydroxycarbofuran
Chlorothalonil
Chlorpropham
Chlorpyrifos
DCPA
DDE
Diazinon
Dichlorvos (DDVP)
Dicloran
Dicofol
Dimethoate
  Omethoate
Disulfoton
  Disulfoton sulfone
Endosulfans
  Endosulfan I
  Endosulfan II
  Endosulfan sulfate
Ethion
Fenamiphos
  Fenamiphos sulfoxide
  Fenamiphos sulfone
Fenvalerate/Esfenvalerate
Formetanate
Imazalil
Iprodione
Lindane (BHC gamma)
Malathion
Methamidophos
Methidathion
Methomyl
Methoxychlor
Mevinphos E/Z
Naled (analyzed as dichlorvos)
Oxamyl
Parathion methyl
Permethrins
Phorate
  Phorate sulfoxide
  Phorate sulfone
Phosphamidon
Propargite
Quintozene (PCNB)
  Hexachlorobenzene (HCB)
  Pentachlorobenzene (PCB)
Terbufos
  Terbufos sulfone
Tetrachlorvinphos
Thiabendazole
Thiodicarb (analyzed as methomyl)
Trifluralin
Vinclozolin

PART IB. Other Pesticides/Metabolites Analyzed in F&V (Capability from 1991-1997)

50 Pesticides + 24 Metabolites/Degradates/IIsomers

Aldicarb
Aldrin (analyzed as dieldrin)
Allethrin
Anilazine
Azinphos
Benfluralin
BHCs
  BHC alpha
  BHC beta
  BHC delta
Bifenthrin
Carbophenothion
Chlordanes
  Oxychlordane
Chlorfenvinphos alpha/beta
Chlorpyrifos methyl
Coumaphos
  Coumaphos oxygen analog
Cyfluthrin
Cypermethrin
DDT
  DDD (TDE)
DEF
Demeton
Demeton-S
  Demeton-S sulfone
Diazinon oxygen analog metabolite
Dieldrin
Diphenylamine
    4-Hydroxydiphenylamine
Diuron
Doramectin
Ethalfluralin
Ethoprop
Fenitrothion
  Fenitrothion oxygen analog
Fenpropathrin
Fenthion
Fonofos
Heptachlor
  Heptachlor epoxide
Lambda cyhalothrin+ isomer
Linuron
MCPA (m-chlorophenoxyacetic acid)
Metalaxyl
Methiocarb (analyzed as sulfoxide)
Myclobutanil
1-Napthol (carbaryl metabolite)
Ovex
Oxydemeton methyl sulfone
    metabolite
Oxyfluorfen
Parathion
  Parathion oxygen analog
o-Phenylphenol
Phorate oxygen analog
Phorate oxygen analog sulfone
Phosalone
Phosmet
Piperonyl butoxide
Pirimiphos methyl
Profenofos
Quintozene impurities or metabolites
  Pentachloroaniline (PCA)
  Pentachlorophenol
Simazine
Sulprofos
Tecnazene
Terbufos oxygen analog sulfone
Tetrahydrophthalimide (THPI)
        (captan metabolite)
Toxaphene
Triadimefon

PART IIA. Wheat - 1997 Crop Year (Subject to PDP quality assurance criteria)

Analyzed by Multiresidue Methods (MRMs)

31 Pesticides + 8 Metabolites/Degradates/Isomers

Aldicarb
  Aldicarb sulfone
Atrazine
Azinphos methyl
Carbaryl
Carbofuran
  3-Hydroxycarbofuran
Chlorpyrifos
Chlorpyrifos methyl
Demeton-S
Diazinon
Dichlorvos (DDVP)
Diclofop methyl
Dimethoate
  Omethoate
Disulfoton
  Disulfoton sulfone
Endosulfans
  Endosulfan I
  Endosulfan II
  Endosulfan sulfate
Fenitrothion
  Fenitrothion oxygen-analog
Imazalil
Linuron
Malathion
Methiocarb (analyzed as sulfoxide)
Methomyl
Methoxychlor
Naled (analyzed as dichlorvos)
Oxamyl
Parathion
Parathion methyl
Phorate
  Phorate sulfone
Pirimiphos methyl
Thiabendazole
Thiodicarb (analyzed as methomyl)
Triallate
Trifluralin

PART IIB. Soybeans - 1996 Crop Year (Subject to PDP quality assurance criteria)

Analyzed by Multiresidue Methods (MRMs)

30 Pesticides + 9 Metabolites/Degradates/Isomers

Alachlor
Aldicarb
  Aldicarb sulfone
Azinphos methyl
BHCs
  BHC alpha
  BHC beta
  BHC delta
Carbaryl
Carbofuran
  3-Hydroxycarbofuran
Chlorpyrifos
DDT
  DDD (TDE)
Diazinon
Diclofop methyl
Dieldrin
Dimethoate
Disulfoton
Endrin
Fenamiphos
Fenvalerate/Esfenvalerate
Fluazifop-butyl
Linuron
Malathion
Methiocarb (analyzed as sulfoxide)
Methomyl
Metolachlor
Metribuzin
Oxamyl
Parathion
Parathion methyl
Pendimethalin
Permethrins
Phorate
Thiabendazole

PART IIIA. Milk
(Subject to PDP quality assurance criteria)

49 Compounds of Primary Concern + 26 Metabolites/Degradates/Isomers

2,4-D
Abamectin (avermectin b1a and delta 8,9 isomer)
Acephate
Aldicarb
  Aldicarb sulfoxide
  Aldicarb sulfone
Atrazine
Azinphos methyl
BHCs
  BHC alpha
  BHC beta
  BHC delta
Benomyl (analyzed as carbendazim)
Carbaryl
Carbofuran
  3-Hydroxycarbofuran
Carbophenothion
Chlordanes cis/trans (metabolize to oxychlordane)
  Oxychlordane
Chlorfenvinphos (alpha/beta)
Chlorpropham
Chlorpyrifos
Chlorpyrifos methyl
Coumaphos
DDT
  DDD (TDE)
  DDE
DEF
Dichlorvos
Dieldrin (also a metabolite of aldrin)
Dimethoate
  Omethoate
Diphenylamine
Doramectin
Disulfoton
  Disulfoton sulfone
Endosulfans
  Endosulfan I
  Endosulfan II
  Endosulfan sulfate
Ethalfluralin
Fenamiphos
  Fenamiphos sulfoxide
  Fenamiphos sulfone
Fenitrothion
  Fenitrothion oxygen-analog
Fenthion
Fenvalerate/Esfenvalerate
Heptachlor
  Heptachlor epoxide
Iprodione
Ivermectin
Lindane (BHC gamma)
Malathion
Methidathion
Naled (analyzed as dichlorvos)
Oxyfluorfen
Permethrins
Phorate
  Phorate sulfone
Pirimiphos methyl
Profenofos
Propargite
Quintozene (PCNB)
Simazine
Sulprofos
Tetrachlorvinphos
Thiabendazole
  5-Hydroxythiabendazole sulfate

PART IIIB. Milk
Other Pesticides/Metabolites Analyzed in Milk

39 Pesticides + 18 Metabolites/Degradates/Isomers

2,4-DB
Captan
Chlorothalonil
Coumaphos O-analog metabolite
Cyfluthrin
Cypermethrin
DCPA
Dalapon
Demeton-S sulfone metabolite
Diazinon
Dicamba
Dicloran
Dicofol
Diuron
Ethion
4-Hydroxydiphenylamine metabolite
Imazalil
Linuron
MCPA (m-chlorophenoxyacetic acid)
Malathion oxygen-analog metabolite
Metalaxyl
Methamidophos
Methiocarb (analyzed as sulfoxide)
Methomyl
Methoxychlor
Mevinphos E/Z
Myclobutanil
Oxamyl
Oxydemeton methyl sulfone metabolite
Parathion
Parathion methyl
Pentachlorophenol
o-Phenylphenol
Phorate sulfoxide metabolite
Phorate oxygen analog metabolite
Phorate oxygen analog sulfone metabolite
Phosalone
Phosmet
Phosphamidon
Picloram
Piperonyl butoxide
Pirimiphos methyl metabolite
Quintozene impurities or metabolites
  Hexachlorobenzene (HCB)
  Pentachloroaniline (PCA)
  Pentachlorobenzene (PCB)
  Pentachlorophenol
Tecnazene
Terbufos
  Terbufos sulfone
Thiodicarb (analyzed as methomyl)
Triclopyr
Trifluralin
Vinclozolin

II. Sampling Protocol

Fruit and Vegetables Sampling Plan

PDP's statistically reliable sampling protocol for fresh and processed fruit and vegetables allows for making nearly unbiased estimates of pesticide residues for commodities collected in the participating States and makes it possible to quantify the accuracy of the estimates for the Nation as a whole. Comparisons of PDP sample data with independent estimates of commodity production figures by State as well as import data have shown close correlations. This sampling approach has yielded a good representation of actual pesticide residues in U.S. commodities and has played an important role in marketing U.S. products.

Sampling Procedures

Participating States are responsible for compiling and maintaining lists of sites used for sample collection. Since PDP strives to collect samples as close to the consumer as possible, while maintaining sample origin, most of the sites for fresh fruit and vegetables are either terminal markets or large chain store distribution centers. Both of these locations serve as the last stopover before produce reaches retailers and, ultimately, consumers. This provides a better picture of actual dietary exposure to pesticide residues by taking into account pesticide degradation that occurs during transit and storage. Sampling at these locations also provides information on postharvest application of fungicides and growth regulators.

Processed commodity samples are collected at distribution centers or large warehouses. To provide PDP with data on various types of commodities, differing sampling collection rotations were established. For apple and orange juice, samples were collected on a 2 to 1 ratio for each quarter--2 months ready-to-serve and 1 month concentrate. For winter squash, sampling was alternated on a quarterly basis between fresh and frozen. For green beans, samples were collected on an alternate basis--1 month canned and 1 month frozen. For spinach, fresh product was collected during the first three quarters of 1997 and canned during the fourth and subsequent quarters in 1998.

After establishing their site lists, States are required to provide AMS and NASS with annual volume information for each site (quantity of commodity distributed in 1 year). This information is used to "weight" the site to determine the probability for selection. For example, a site that distributes 100,000 pounds of produce annually might be given a weight of "10," and a site that distributes 10,000 pounds might be weighted "1." The probability-proportionate-to-size method of site selection would then result in the larger site (distributing 100,000 pounds) being 10 times more likely to be selected for sampling than the smaller site (distributing 10,000 pounds). Participating States are required to work with NASS to develop their statistical procedures for site weighting and selection. States are also given the option of having NASS perform their quarterly site selection for them. The number of sampling sites and the volume of produce distributed by the sites vary greatly from State to State. Sample size was approximately 5 pounds for fresh product, 3 pounds for canned and frozen product, and 1 quart for liquid product for each applicable testing facility.

State population figures are used to assign the number of fruit and vegetable samples scheduled for collection per commodity each month. For 1997, these numbers were: California-14, Colorado-2, Florida-7, Maryland-4, Michigan-6, New York-9, Ohio-6, Texas-8, Washington-4, and Wisconsin-2, for an annual total of 744 samples per commodity.

Sampling plans, which were prepared by the States on a quarterly basis, included sampling dates, sites, and fruit and vegetable commodities for collection during each month of the quarter. Although sites could only be sampled once per month for the same commodity, States were allowed to collect two different commodities at the same site on the same date. This "pairing" of commodities reduced the number of sampling dates and cost of sample collection. States were also instructed to collect all samples of the same commodity on one sampling date, or, if needed, within two consecutive dates. Collection of commodities was randomly assigned to various weeks of the month, prior to selecting specific sampling dates within the week. Since sampling sites were selected for the entire quarter, States were allowed to assign the sites to particular months based on geographic location.

In 1997, all PDP States participated in transshipment pools whereby samples of fruit and vegetable commodities collected by "paired" (two or more) States were combined into one set for analytical testing in one State laboratory. This arrangement created larger sample sets, increased proficiency and productivity, and substantially reduced costs for multiresidue testing and mandatory quality assurance. The set of pooled States comprised: Colorado, Michigan, and Washington; New York, Ohio, and Wisconsin; California and Maryland; and Florida and Texas.

Chain-of-custody for PDP samples is documented through the use of "Sample Information Forms." These forms are used by the sample collectors to record all available sample information, such as: (1) the State where the sample was collected; (2) the date of collection; (3) the four-digit code for the sampling site; and (4) the commodity code. These four pieces of information are combined to form a unique "sample identification number" for recording in the PDP database. Additional information includes: (1) whether the sample is domestic or imported and, if imported, the country of origin; (2) the name of the sampling site, grower, packer, or distributor; and (3) a list of potential or known postharvest applications. The Sample Information Forms are also used to keep track of any missing samples that are not collected, lost in transit, or damaged and unable to be analyzed when received at the laboratory.

The participating States have been given Standard Operating Procedures (SOPs) to provide uniform guidance for commodity sampling among the States. These SOPs are updated as needed and serve as a reference in conducting program sampling reviews.

Synopsis of Sample Collection (Fruit and Vegetables)

A total of 6,321 samples of fresh and processed fruit and vegetables were collected during 1997. As shown in Table 2, the number of samples collected per State was: California-1,321, Colorado-207, Florida-752, Maryland-312, Michigan-640, New York-979, Ohio-633, Texas-849, Washington-420, and Wisconsin-208. The total number of samples collected is less than the assigned number to be sampled due to the unavailability of product at either the original or alternate sampling site. This is often due to the commodity growing season.

Figure 3 shows the total number of samples per commodity and the percentage of each that were either domestic, imported, mixed national, or of unknown origin.

Appendix B provides a more detailed breakdown of sample origin by state or country. As indicated, fruit and vegetable and milk samples collected during 1997 originated from 37 states and 23 foreign countries.

Table 2. Samples Collected and Analyzed per Commodity by Each Participating State

	Fresh F&V					Processed F&V							
State	PE	SP	SW	TO	WS	AJ	GB	OJ	PC	SC	WZ	Total F&V	MK
California	148	106	142	162	121	142	154	152	164	30	0*	1321	168
Colorado	23	17	23	23	14	23	23	23	24	6	8	207	24
Florida	84	62	81	83	68	82	84	83	89	21	15	752	61
Maryland	36	23	38	39	35	33	33	32	32	9	2	312	20
Michigan	72	51	71	72	35	69	72	69	78	18	33	640	72
New York	108	81	108	108	55	108	108	108	115	27	53	979	119
Ohio	70	51	71	71	35	71	71	70	78	18	27	633	58
Texas	96	68	92	96	47	93	93	94	104	24	42	849	71
Washington	47	36	46	46	24	46	45	45	50	11	24	420	44
Wisconsin	24	17	24	24	6	22	24	22	24	4	17	208	95
TOTAL	708	512	696	724	440	689	707	698	758	168	221	6321**	732

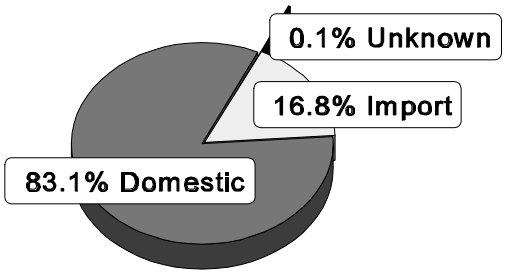
Commodities:

AJ - Apple Juice, Ready-to-Serve/Concentrate	PC - Peaches, Canned	SW - Sweet Potatoes
GB - Green Beans, Canned/Frozen	PE - Pears	TO - Tomatoes
MK - Milk	SC - Spinach, Canned	WS - Winter Squash, Fresh
OJ - Orange Juice, Ready-to-Serve/Concentrate	SP - Spinach, Fresh	WZ - Winter Squash, Frozen

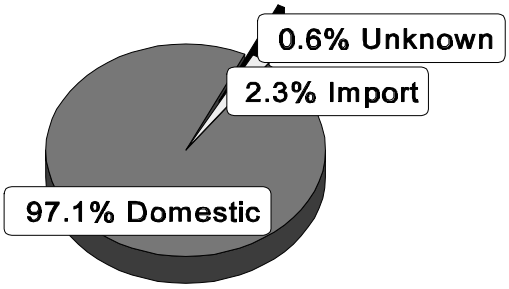
** California samplers were unable to locate any frozen winter squash after repeated attempts.*
*** Total samples do not include special surveys conducted for grains and potatoes.*

Figure 3. Commodity Origin (Percentage Domestic vs. Imported)

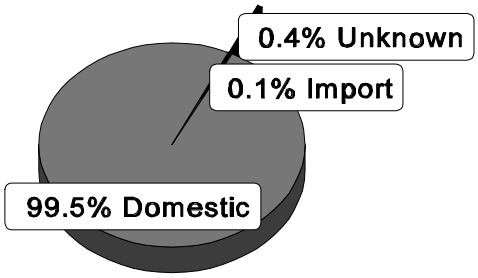
A. Fresh Commodities



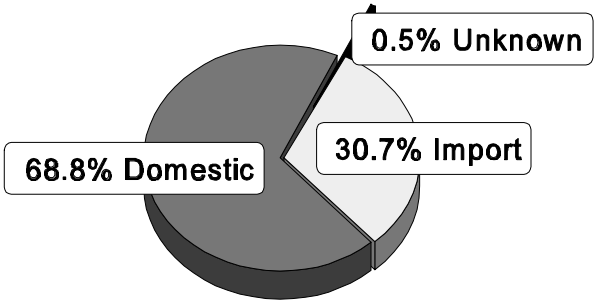
Pears
(708 Samples)



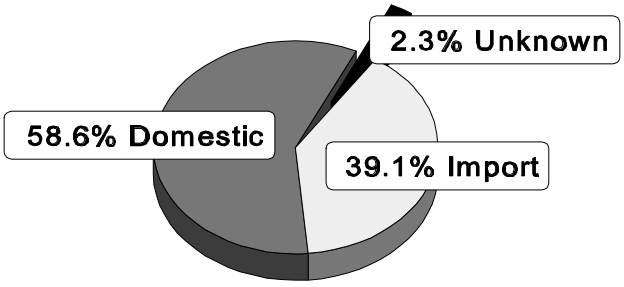
Spinach, Fresh
(512 Samples)



Sweet Potatoes
(696 Samples)

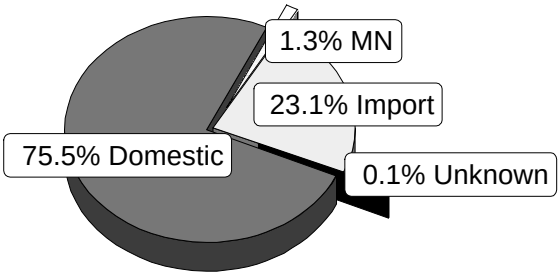


Tomatoes
(724 Samples)

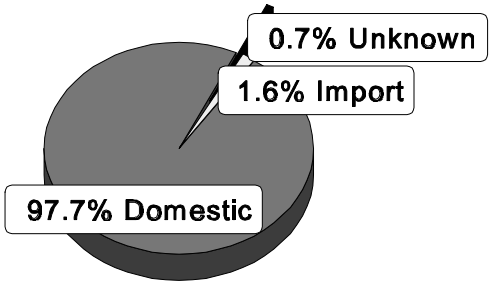


Winter Squash, Fresh
(440 Samples)

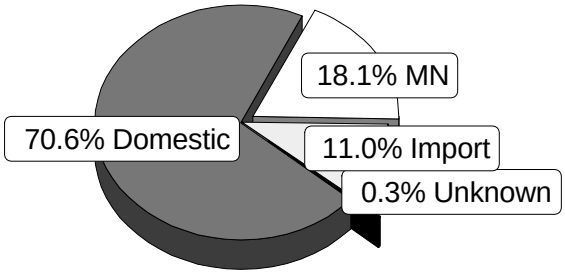
B. Processed Commodities*



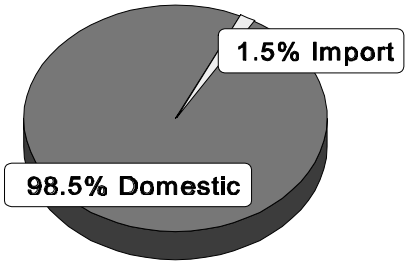
Apple Juice
(689 Samples)



Green Beans
(707 Samples)

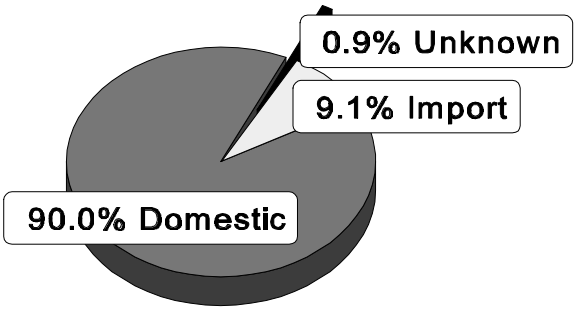


Orange Juice
(698 Samples)



Peaches
(758 Samples)

Spinach, Canned
(168 Samples)



Winter Squash, Frozen
(221 Samples)

MN = Mixed National

* For processed commodities, percentages were mainly derived from packer and/or distributor information.

Grain Sampling Program

Wheat Sampling

The Grain Inspection, Packers and Stockyards Administration (GIPSA) collected 623 wheat samples for the 1997 crop year. The sample collection period for wheat was divided into two phases - May 1, 1997, to September 30, 1997, and October 1, 1997, to February 28, 1998. Figure 4 (Map 1) provides a map of the United States showing the distribution of wheat samples by State of origin.

The number of samples collected by each of GIPSA's 13 regional offices was determined based on average State crop production data and further divided into two collection phases according to harvest and sales data. Sample selection in GIPSA's 13 regional offices was done randomly based on an individual State determined algorithm. Sample collection was based on official sample-lot inspections from domestic lots representing trucks, hopper cars, and barges (excluding grain samples segregated for export). Grain samples required a minimum of 500 grams for testing. These samples were secured in polyethylene bags and forwarded to GIPSA's Technical Services Division laboratory (Kansas City, MO) for analysis. Chain-of-custody procedures were the same as for fruit and vegetable samples.

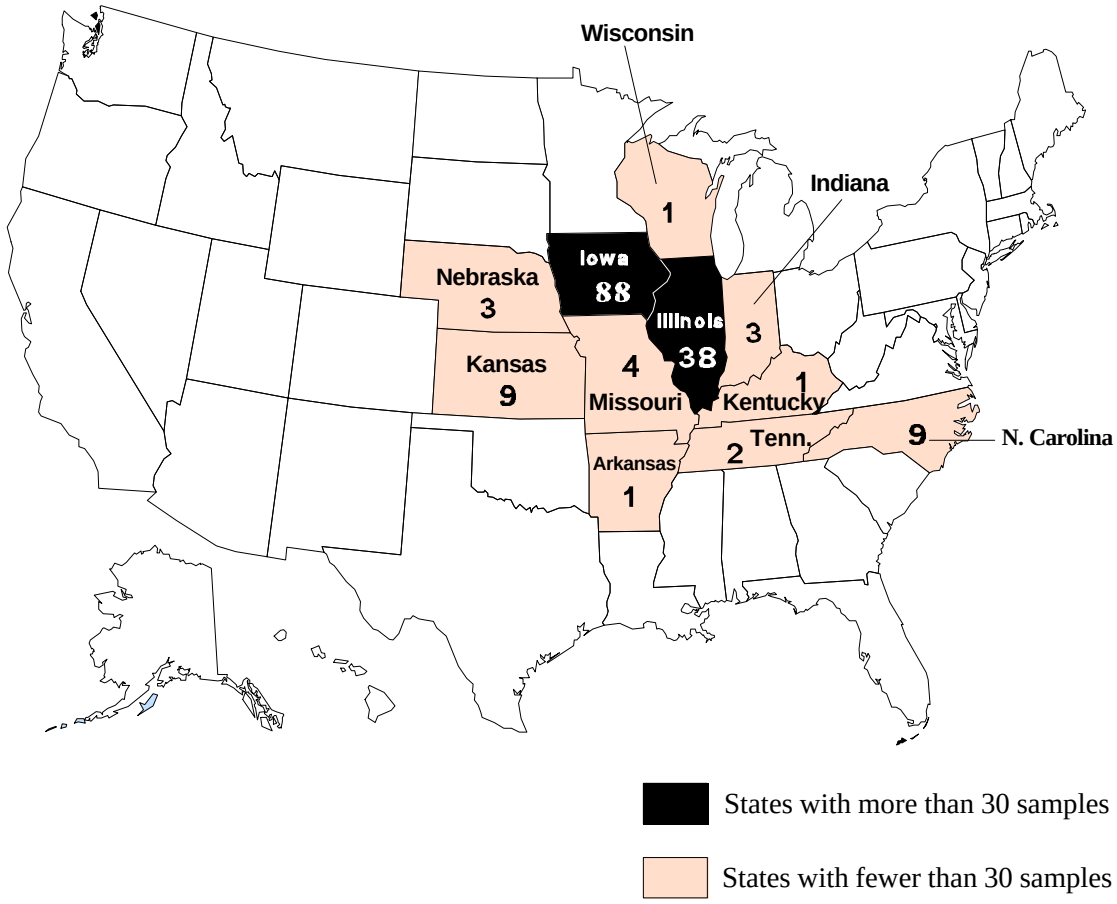
Soybean Sampling

For soybeans, GIPSA collected 159 samples for the 1996 crop year. Sample collection was truncated in the fall of 1996 due to funding constraints. As with wheat, crop production and sales data served as a basis for estimating the number of samples collected by each regional office. Regional office field managers then directed the collection of soybean samples. Sampling, shipping, and chain-of-custody procedures for soybean samples were identical to those for wheat samples. Figure 4 (Map 2) displays the sampling distribution of soybeans collected for PDP by State of origin.

Figure 4. Distribution of Grain Samples

Map 1. Crop Year 1997, Distribution of 623 Wheat Samples by State Origin

Map 2. Crop Year 1996, Distribution of 159 Soybean Samples by State Origin



Milk Sampling Program

Sampling of whole milk was based on consumption in the ten participating States. These States represented 56 percent of the national milk production and 47 percent of the fluid milk (i.e., whole, 2%, 1%, and skim) available on the U.S. market in 1996, the last year for which statistics are available. Milk samples have a relatively short production/distribution life, spanning about 2-3 weeks from the manufacturer to the consumer. Consequently, the product is not warehoused but distributed directly to supermarkets. PDP sampling was therefore directed at the 200 fluid milk plants and at approved supermarket surrogates which marketed the plants' product directly.

Sampling was apportioned by relative State share of the national production in 1996 and the fraction of total milk (expressed as a decimal) processed as liquid product to yield a maximum of 62 samples/month as follows: California 16.8%-0.26, Colorado 1.0%-0.46, Florida 1.6%-0.88, Maryland 0.8%-0.48, Michigan 3.5%-0.47, New York 7.5%-0.41, Ohio 2.8%-0.55, Texas 4.0%-0.50, Washington 3.4%-0.34, and Wisconsin 14.5%-0.20. As a result, monthly sampling quotas using a minimum of two samples were as follows: California-14, Colorado-2, Florida-5, Maryland-2, Michigan-6, New York-10, Ohio-5, Texas-6, Washington-4, and Wisconsin-8.

All 732 samples collected originated in the participating States, except for three which came from PDP border States. A list of sample collections by State is found in Table 2 and distribution by origin in Appendix B. If the fluid milk production for the given site as a percentage of total State production exceeded one divided by the State's sample quota, allowance was made for the possible collection of a second sample for the month.

Three State laboratories--California, New York, and Florida--were designated to receive and analyze milk samples. The AMS Eastern Laboratory provided services for specific residue analyses (i.e., abamectin, benomyl, doramectin, ivermectin, thiabendazole, and 5-hydroxythiabendazole sulfate) for samples collected through September 30, 1997. The California laboratory serviced California, Colorado, and Maryland; the Florida-Winter Haven laboratory received samples from Florida, Michigan, Texas, and Washington; and the New York laboratory analyzed samples from New York, Ohio, and Wisconsin.

Monitoring Aldicarb in Potatoes - Special Dietary Survey

In response to an EPA request to re-evaluate the tolerance for use of aldicarb on potatoes, PDP initiated a single-serving size survey to assess dietary risk. The survey design targeted potato samples originating from four States with a registered use for aldicarb (Florida, Idaho, Oregon, and Washington). Samples were collected for the period December 1, 1996 - December 31, 1997, by eight participating PDP States including: California, Colorado, Florida, Michigan, New York, Ohio, Texas, and Washington. During this period, 342 samples were collected and analyzed with 290 (85%) originating from targeted States. Laboratory procedures and survey results are discussed separately in Appendix C.

III. Laboratory Operations

Eleven laboratories (eight State and three Federal) performed analyses for PDP during 1997. These laboratories are equipped with instrumentation capable of detecting residues at very low levels. The laboratory staff receive intensive training and must demonstrate analytical proficiency on an ongoing basis. Scientists continuously test new technologies and develop new techniques to improve the levels of detection. Major changes in methodology are evaluated, and their soundness demonstrated and documented in accordance with PDP SOPs.

PDP participating laboratories analyzing fruit and vegetables monitored 46 pesticides plus 20 metabolites, degradates, and isomers using multiresidue methods (MRMs) and two pesticides by single or selective residue methods (SRMs). PDP participating laboratories analyzing milk monitored 49 compounds of primary concern plus 26 metabolites, degradates, and isomers using multiresidue methods (MRMs) and four pesticides plus one metabolite by single or selective residue methods (SRMs). Since SRMs are resource intensive, this type of analysis was performed only at selected laboratories for specific commodities as indicated below:

Laboratories Performing SRMs

1. APHIS, NMRAL, Gulfport, MS

Pesticide: Benomyl

Commodities: Apple Juice, Green Beans (canned/frozen) (Oct-Dec), Orange Juice, Peaches (canned), Sweet Potatoes, and Tomatoes

2. AMS Eastern Laboratory, Gastonia, NC

Pesticides: Abamectin, Benomyl, Thiabendazole and 5-Hydroxythiabendazole sulfate

Commodity: Milk (Apr-Sep)

Pesticide: Formetanate

Commodity: Pears (Oct-Dec)

3. Selected State Laboratories

Pesticide: 2,4-D

Commodity: Milk

Quality Assurance Program

The main objectives of the quality assurance/quality control (QA/QC) program are to ensure the reliability of PDP data and the performance equivalency of the participating laboratories. Direction for PDP's QA program is provided through SOPs based on EPA's Good Laboratory Practices (GLPs). For day-to-day quality assurance oversight, PDP relies on the Quality Assurance Unit (QAU) at each participating facility. As required under EPA's GLPs, the QAU operates independently from their laboratory staff. Preliminary QA/QC review procedures are performed on-site by each laboratory's QAU. Final review procedures are performed by PDP staff, who are responsible for collating and reviewing data for conformance with SOPs. Additionally, PDP staff also monitor the participants' performance through proficiency samples, QAU quarterly internal reviews, and on-site visits. Additional information on PDP's QA program is provided in Appendix D.

Sample Preparation

Laboratories are permitted to refrigerate fresh incoming fruit and vegetable samples of the same commodity for up to 72 hours and milk samples up to 240 hours, to allow for different sample arrival times from the collection sites. Frozen and canned commodities can be held in storage (freezer or shelf) until the entire sample set is ready to be homogenized. Grain samples are refrigerated until homogenization.

Upon arrival at the testing facility, samples are visually examined for acceptability and discarded if determined to be inedible (decayed, extensively bruised, or spoiled). Accepted samples are then prepared emulating the practices of the average consumer, to more closely represent actual exposure to residues. Fresh samples are prepared as follows: (1) pears are washed and cored; (2) sweet potatoes are washed; (3) tomatoes are washed with inedibles removed; (4) winter squash is washed with stem and/or end pieces removed; (5) fresh and reconstituted apple and orange juice and milk are mixed until homogeneous; (6) apple and orange juice frozen concentrate is diluted according to label directions and mixed until homogeneous; and (7) wheat and soybeans are ground and then analyzed. For canned and frozen fruit and vegetable commodities, the entire contents of the sample is homogenized--including any liquid present. Samples, except apple and orange juice and milk, are homogenized using choppers and/or blenders and separated into analytical portions (aliquots) for analysis. If testing cannot be performed immediately, the entire analytical set is frozen at -40° C, or lower, according to PDP's QA/QC requirements. Surplus aliquots, not used for the initial testing, are retained frozen in the event that replication of analysis or verification testing is needed.

Sample Analysis

For analysis of fruit and vegetables, variations and combinations of the Luke I and II extraction procedures developed by FDA were used by Florida, Michigan, New York, Ohio, and Texas. California and Washington used the multiresidue method developed by the California Department of Food and Agriculture (CDFA). Florida developed and switched to a modification of the CDFA multiresidue method in an effort to reduce solvent usage. The Luke and CDFA methods and their variations were determined to produce equivalent data for PDP analytical purposes. Residues are extracted from samples using organic solvents followed by various cleanup procedures. Selective residue methods, when employed for 2,4-D, abamectin, benomyl, formetanate, and thiabendazole, were independently validated by the laboratory(ies) performing analysis.

Various types of chromatography are used for the initial identification and quantitation of pesticides. Verification is accomplished by various forms of mass spectrometry, atomic emission detectors (AEDs), or by alternate detection systems, depending on the concentration reported. Limits of detection for various selective detectors are lower than those achieved by mass spectrometry detectors. Verification is deemed necessary due to the complexity of commodity matrices and the low concentration levels of detected residues. The verification process provides an extra measure of confidence in the identification of both the pesticide residue and its concentration.

Analysis of grain samples was performed by the GIPSA laboratory. Wheat samples were monitored for 31 pesticides and eight metabolites/degradates/isomers. Soybean samples were analyzed for 30 pesticides and nine metabolites/degradates/isomers. Extraction was accomplished using supercritical fluid extraction (a solventless system) coupled with mass spectrometry detection or post-column, high-performance liquid chromatography detection.

IV. Sample Results and Discussion

Sample Results

For 1997, most pesticide residue detections were below tolerance levels established by EPA. A tolerance is the maximum allowable quantity of a pesticide residue for a particular commodity. In PDP, the limits of detection for each pesticide/commodity pair in the testing system are analytically defined at levels low enough to conduct realistic dietary risk assessments. This enables scientists using PDP data to take into account non-detected residue findings for each pesticide/commodity combination when performing dietary risk assessments. This is illustrated in Appendices E, F, G, and H.

Appendix E shows the distribution for detected and non-detected residues in fruit and vegetables for each pesticide by commodity. Shown in Appendix E are: percent of samples with residue detections and any noted violations by pesticide/commodity combination, agricultural use, minimum and maximum concentrations detected, U.S. EPA tolerances, and where applicable Codex Alimentarius maximum residues limits (MRLs). Appendices F and G depict similar pesticide information for the grain products wheat and soybeans and Appendix H for milk samples. Tables 3A and 3B represent summaries of pesticide residue detections by commodity class and specific commodities tested, including and excluding information on postharvest residue findings.

About 57 percent of the fruit and vegetable samples (70% in fresh and 45% in processed) analyzed had detectable pesticide residues (see Table 1 for list of pesticides in the testing system). If postharvest pesticide detections are excluded, the percentage of samples with detected residues decreases to about 47 percent. Pesticide residues were detected in 87 percent of the soybean samples, 80 percent of the wheat samples, and 15 percent of the milk samples.

Postharvest Applications

Before PDP began collecting data, most available information on pesticide use in the United States was limited to pesticides applied to sustain agricultural production (preharvest applications). Little was known about pesticides applied to preserve the fruit and vegetable products after harvest (postharvest applications). PDP's database has since become one of the most comprehensive sources of postharvest pesticide use patterns, because samples are collected at points where such uses have taken place. Most postharvest applications are confined to fungicides (to control mold and fungus) and growth regulators (to prevent sprouting). PDP compounds with approved postharvest applications are the fungicides dicloran (peaches and sweet potatoes), diphenylamine, imazalil (citrus), o-phenylphenol, and thiabendazole. There were no residues of dicloran in canned peaches since there is no need for its application prior to processing. In the *1996 Annual Summary*, there were 316 dicloran detections in sweet potatoes which were not accounted for in determining residue detections from postharvest use, adjusting the number of postharvest residues detected in 1996 to 2,095 or 24.6 percent.

To illustrate the impact of postharvest uses, detections including and excluding residues of these compounds are listed in Tables 3A and 3B, respectively. About 24 percent of the residues detected in fruit and vegetables were from postharvest uses. The most significant differences in the number of residue detections as a result of postharvest uses were for sweet potatoes, where there was a 70 percent decrease in residue findings when subtracting out dicloran, and for pears, where there was a 46 percent reduction in residue detections when factoring out postharvest uses. Tables 3A and 3B show that the five fungicides mentioned above accounted for 1,670 detections (24.2%) of the 6,902 total residue detections in fruit and vegetables. Thiabendazole was the most frequently found pesticide, primarily occurring in fruit, with 737 detections (10.7% of all residues detected). Wheat data presented in Appendix F indicate that the most frequently found pesticides were chlorpyrifos methyl and malathion. These two pesticides with pre- and postharvest uses accounted for 85 percent of the residue detections in the 623 wheat samples tested. The soybean data in Appendix G shows that for the 159 samples tested, pre- and postharvest uses of chlorpyrifos and malathion combined accounted for 93 percent of residue detections.

Table 3A. Number of Samples and Residues Detected, by Commodity

	Total Samples Analyzed	Samples with Residues Detected	% of Samples with Residues Detected	Different Residues Detected	Total Residue Detections
Fresh Fruit and Vegetables:					
Pears	708	672	95	29	1,677
Spinach, Fresh	512	406	79	31	836
Sweet Potatoes	696	446	64	22	569
Tomatoes	724	456	63	38	1,029
Winter Squash, Fresh	440	176	40	31	303
TOTAL	3,080	2,156	70	67	4,414
Processed Fruit and Vegetables:					
Apple Juice	689	463	67	18	826
Green Beans	707	454	64	29	962
Orange Juice	698	132	19	10	191
Peaches	758	128	17	15	144
Spinach, Canned	168	150	89	6	191
Winter Squash, Frozen	221	117	53	21	174
TOTAL	3,241	1,444	45	50	2,488
Fruit and Vegetables:					
Number of Samples Analyzed = 6,321					
Number of Samples with Residues Detected = 3,600					
Percent with Residue Detections = 57.0%					
Total Number of Different Residues = 72					
Total Number of Residue Detections = 6,902					
Grain:					
Wheat *	623	500	80	13	901
Soybeans **	159	138	87	6	193
TOTAL	782	638	82	16	1,094
Dairy:					
Milk	732	111	15	5	112
All Commodities:					
Number of Samples Analyzed = 7,835					
Number of Samples with Residues Detected = 4,349					
Percent with Residue Detections = 55.5%					
Total Number of Different Residues = 78					
Total Number of Residue Detections = 8,108					

***** *Includes pre- and postharvest uses for chlorpyrifos, chlorpyrifos methyl and malathion*

*** Includes pre- and postharvest uses for chlorpyrifos and malathion*

Table 3B. Number of Samples and Residues Detected, by Commodity (Excludes Postharvest Applications)*

	Total Samples Analyzed	Samples with Residues Detected	% of Samples with Residues Detected	Different Residues Detected	Total Residue Detections
Fresh Fruit and Vegetables:					
Pears	708	561	79	26	898
Spinach, Fresh	512	403	79	29	825
Sweet Potatoes	696	142	20	18	168
Tomatoes	724	432	60	36	986
Winter Squash, Fresh	440	173	39	28	298
TOTAL	3,080	1,711	56	64	3,175
Processed Fruit and Vegetables:					
Apple Juice	689	355	52	15	523
Green Beans	707	451	64	26	950
Orange Juice	698	84	12	6	107
Peaches	758	108	14	12	120
Spinach, Canned	168	150	89	5	189
Winter Squash, Frozen	221	112	51	18	168
TOTAL	3,241	1,260	39	46	2,057

Fruit and Vegetables:
Number of Samples Analyzed = 6,321
Number of Samples with Residues Detected = 2,971
Percent with Residue Detections = 47.0%
Total Number of Different Residues = 69
Total Number of Residue Detections = 5,232

* Dicloran (peaches and sweet potatoes), Diphenylamine, 4-Hydroxydiphenylamine, Imazalil (citrus), o-Phenylphenol, and Thiabendazole

Data Comparisons, Fresh vs. Processed Products

Residue profiles for fresh vs. canned/frozen green beans are remarkably different. The 1997 pesticide residue findings for canned/frozen green beans were similar to the 1996 findings. These data clearly indicate that fresh and canned/frozen green beans represent different commodities having distinctively different pesticide residue profiles as illustrated in Table 4.

Table 5 depicts the comparison between fresh apples and apple juice. For the most part, residue detections are fewer in apple juice, except for carbaryl and dimethoate/omethoate, where pesticide residue detections are more frequent. Carbaryl occurred in about 30 percent of the apple juice samples tested in 1996-1997 compared to about 15 percent of the fresh apples over 4 years. The mean residue for samples with carbaryl detections in apple juice was about 15 percent of the mean residue level of positive detections in apples. Similarly,

Table 4. Comparison of Selected Residues Detected in Fresh vs. Canned/Frozen Green Beans

Year--Product Type	Endosulfans % Detections	Chlorothalonil % Detections	Acephate/ methamidophos % Detections	Carbaryl % Detections	Parathion-methyl % Detections
1993--Fresh	40.3	11.5	19.2 / 20.1	4.3	0
1994--Fresh	28.6	16.8	22.3 / 21.5	4.4	0
1995--Fresh	23.7	14.3	20.4 / 19.1	3.1	0
1996--Canned/Frozen	< 1	0	33.5 / 32.2	11.9	3.4
1997--Canned/Frozen	< 1	0	45.7 / 44.8	10.7	4.7

Table 5. Selected Residue Comparisons for Apples vs. Apple Juice

CARBARYL

	APPLES			APPLE JUICE		
Year	% of Samples w/ Detections	Maximum Value Detected, ppm	Mean of Values Detected, ppm	% of Samples w/ Detections	Maximum Value Detected, ppm	Mean of Values Detected, ppm
1993	22.3	0.80	0.14	*	*	*
1994	21.0	1.20	0.15	*	*	*
1995	11.0	0.74	0.15	*	*	*
1996	12.3	0.74	0.14	32.2	0.099	0.027
1997	*	*	*	24.6	0.17	0.019

DIMETHOATE / OMETHOATE

	APPLES			APPLE JUICE		
Year	% of Samples w/ Detections	Maximum** Value Detected, ppm	Mean of Values Detected, ppm	% of Samples w/ Detections	Maximum** Value Detected, ppm	Mean of Values Detected, ppm
1993	8.4 / 6.2	0.7	0.072 / 0.029	*	*	*
1994	11.8 / 10.7	0.6	0.045 / 0.028	*	*	*
1995	3.8 / 4.1	0.5	0.067 / 0.019	*	*	*
1996	2.8 / 2.2	0.3	0.031 / 0.018	9.0 / 2.5	0.13	0.014 / 0.015
1997	*	*	*	26.9 / 8.2	0.07	0.009 / 0.011

** Not Included in Survey*
*** Sum of Dimethoate and Omethoate*

dimethoate occurred in 20 percent of 1996-1997 apple juice samples compared to about 10 percent detected in apple samples tested in 1993-1994 and 3 percent detected in 1995-1996. The mean residue level for samples with dimethoate in apple juice was about one-fourth of the level found in apples. There was no significant difference for omethoate values in apples versus apple juice, probably due to the low level persistence of the metabolite in treated produce. The occurrence of more frequent detections of carbaryl and dimethoate in apple juice may be due to the variety of apples chosen for processing into apple juice and possible sample origin. Lower residue levels in apple juice are probably due to dissipation during processing.

Permethrins were detected in 84 percent of the canned spinach samples compared to 58 percent in the fresh spinach samples tested from 1995-1997. Dicloran was not detected in canned peaches, but was present in 56 percent of U.S. peaches from 1994-1996 and about 40 percent of all peaches tested from 1993-1996. In general, canned peaches and orange juice show fewer pesticide residue detections compared to fresh product.

In contrasting frequently detected residues in fresh product versus processed products, a significant decrease in detections is readily noted. Most of these pesticides are from postharvest uses. In comparing combined pesticide residue data in apples from 1993-96 versus apple juice in 1996-97, the following decreases in detections are noted: diphenylamine-70 percent to 9 percent and thiabendazole-60 percent to 32 percent. In comparing pesticide residue data in oranges from 1993-1996 to 1997 orange juice data, the following changes are noted in detections: imazalil-55 percent to 3 percent and thiabendazole-57 percent to 6 percent.

National Estimates

One objective of PDP is to provide and collate data collected by the ten participating States, which represent approximately 50 percent of the Nation's population (Figure 2), to project national estimates of pesticide residues for Program commodities. Some of these calculated national estimates are shown in Appendix I.

Appendix I focuses on the 36 pesticide/commodity pairs with detectable residues in at least 10 percent of the samples tested. A range of values for the sample mean (average) residue concentration for each pair is provided. The lower value for the range was determined by treating a sample without detectable residues as if it had a residue concentration equal to zero. The upper value for the range was determined by treating such a sample as if it had a residue concentration equal to the limit of detection. Appendix I also provides calculations for the 50th, 75th, and 90th percentiles for each of the pairs. The ratio of the 90th percentile to the U.S. EPA tolerance, as a normalization factor, is also shown. This demonstrates that, in most cases, the levels of detected residues are a small fraction of the tolerances for the listed pesticide/commodity pairs. Also, the residue detection percentiles for the three processed commodities--apple and orange juice and green beans--in Appendix I were weighted to reflect availability of processed product type (utilization) in 1997: canned, liquid, and/or frozen versus monthly sample collection for each product type.

Appendix J displays the estimated distributions of eight representative pesticide/commodity pairs in graphical form showing the range of values, the median at the 50th percentile, and range in percentile representing the lower and upper bound for the sample mean. In some cases there is convergence of the upper and lower bound into a single line, because using zero or the limit of detection for non-detected values becomes insignificant. These pesticide/commodity pairs are: thiabendazole/apple juice, azinphos methyl/pears, chlorpyrifos/soybeans, permethrins/spinach (fresh and canned), methamidophos/tomatoes, malathion/wheat, and endosulfan sulfate/winter squash. These graphs visually demonstrate that the overwhelming majority of pesticide testing results and the respective means (average values) are at low concentrations.

Environmental Contaminants

DDT, DDD, and DDE

A total of 6,275 fruit and vegetable samples were screened for DDE, a metabolite of DDT. Use of DDT has been prohibited in the United States since 1972. However, due to the persistence of this chemical in the environment, residues of the DDE metabolite were detected in approximately 5 percent of all samples tested. In some samples, the parent DDT and the DDD metabolite were also reported. Residues of DDE were found primarily in

41.4 percent of fresh spinach and 25.0 percent of canned spinach, as well as, 8.1 percent of fresh winter squash and 4.8 percent of the frozen winter squash samples. DDE in milk was detected in 14.2 percent of the 727 milk samples tested. No samples had residues above the allowable levels established by FDA. DDE was not in the testing profile for wheat.

OTHER EXTRANEOUS PESTICIDES

All aldrin, heptachlor, and chlordane uses (except termiticide uses) were canceled in the United States in 1974, 1978 and 1986, respectively. However, residues of dieldrin, a metabolite of aldrin, and the heptachlor epoxide metabolite were detected in winter squash samples. Dieldrin was found in 25 percent of fresh and 74 percent of frozen winter squash. Heptachlor epoxide was detected in 29 percent of frozen winter squash samples. Chlordanes and the oxychlordane metabolite were detected in some spinach and winter squash samples (see Appendix E, pages 5 and 6).

Single/Selective Residue Analyses

2,4-D and 2,4-DB

No residues were detected in a total of 727 milk samples tested for 2,4-D and 272 samples for 2,4-DB.

ABAMECTIN and THIABENDAZOLE

There were no abamectin detections in 424 milk samples tested. In 543 milk samples tested for thiabendazole, two had positive detections. The 5-hydroxythiabendazole metabolite was not detected.

BENOMYL

A total of 3,712 samples of apple juice, green beans (canned/frozen), orange juice, peaches (canned), sweet potatoes, and tomatoes were tested for benomyl, as the carbendazim metabolite. Carbendazim residues were detected in 20 (0.6%) of the fruit and vegetable samples tested. These residues were found primarily in apple juice and tomatoes. All detections were at levels below the established tolerances. There were no benomyl residue detections in the 424 milk samples tested.

FORMETANATE

Four (2.3%) of the 171 pear samples collected from October-December 1997 contained formetanate. All were well below EPA established tolerances.

Multiple Residues Detections

The PDP database provides information that can be used by EPA in evaluating the incidence of multiple residues. Multiple residues may derive from various sources, such as applications of more than one pesticide on a crop during a growing season, spray drift, or persistent environmental residues. The multiple residue information is particularly useful in responding to the 1993 National Academy of Sciences report, *Pesticides in the Diets of Infants and Children*, which recommended that coordinated recording of multiple residue scans would make possible more accurate evaluation of exposure distributions for multiple chemicals.

This became a key concept in the Food Quality Protection Act of 1996. The distribution of multiple residues in PDP's database is included as Appendix K. These data indicate that more than one pesticide residue was detected in about 30 percent of the fruit and vegetables (38% fresh and 22% processed), 51 percent of the wheat, 31 percent of the soybeans, and 0.2 percent of the milk samples tested. Any exposure assessment of individual or multiple residues depends on the actual levels of the residues detected. PDP's 1997 data show that the total pesticide level in a sample is independent of the number of residues detected. Furthermore, there is no relationship between the number of residues and presumptive tolerance violations.

Presumptive Tolerance Violations

A tolerance is defined under Section 408 of the Federal Food, Drug, and Cosmetic Act as the maximum quantity of a pesticide residue allowable on a raw agricultural commodity. Tolerances are established by EPA for pesticides used on food crops. A violation occurs when a residue is found which exceeds the tolerance level or when a residue is found for which there is no tolerance for that particular crop. With the exception of meat, poultry, and egg products, for which USDA is responsible, tolerances for all other foods are enforced by FDA. When agencies with regulatory enforcement authority collect samples for tolerance enforcement purposes, they must adhere to a quick turnaround time and chain-of-custody protocols which allow them to detain the sampled lot until results are available. PDP is not an enforcement program. Consequently, sample analysis does not have to be completed quickly (emphasis is placed on searching for residues at the lowest detectable levels--not on quick turn-

around time) and sample collection does not interfere with commodity distribution. Therefore, when samples are reported to have residues, for which there is no tolerance established or which exceed the tolerance, they are designated as "presumptive tolerance violations" and reported as such to FDA regional and headquarters offices. This is done in accordance with a Memorandum of Understanding between USDA and FDA for the purpose of pinpointing areas where closer surveillance may be needed. FDA enforcement action on PDP samples generally is not a viable option due to the time lag from sample collection to data reporting.

Presumptive tolerance violations for 1997 data are indicated in Appendices E, F, G, and H. Appendix L is a complete compilation of all presumptive violations by commodity/pesticide pair.

Import vs. Domestic Pesticide Residue Comparisons

The Pesticide Data Program was designed to provide a comprehensive statistical picture of selected pesticide residues in the U.S. food supply representative of all sources, including imports. Most commodities are domestically produced with a small foreign component. Several commodities tested over the past several years were cyclical; i.e., for part of the year domestic and part of the year import. Two major cyclical commodities in PDP were fresh grapes and peaches, where from May through October available product was domestically grown and for the other months mainly from Chile.

Appendix M is a comparison of 1994-1996 data for United States versus Chile on pesticide residues in grapes and peaches, and 1996-1997 data for United States versus Mexico on pesticide residues in tomatoes. Percentage comparisons are based on those individual pesticides where the occurrence of the residue exceeds 10 percent. Appendix M shows that the pesticides used for crop protection are markedly different depending on the country. Appendix M also includes presumptive tolerance violations for grapes and peaches (1994-1996) and tomatoes (1996-1997).

Synopsis

In 1997, a total of 6,321 fresh and processed fruit and vegetable samples, 623 wheat samples, 159 soybean samples, and 732 milk samples were analyzed for multiresidue classes of pesticides, including organochlorines, organophosphates, organosulfurs, organonitrogens, and N-methyl carbamates. Residue analyses using SRMs were performed for selected commodities only: formetanate in pears; 2,4-D, abamectin, benomyl, and thiabendazole and one of its metabolites in milk; and benomyl in six fruit and vegetable commodities. In addition, 342 potato samples, primarily from the Northwest United States and Florida, were collected and analyzed for an acute dietary survey for aldicarb and its metabolites. In total, 8,177 samples were collected and analyzed. Pesticides detected included insecticides, herbicides, fungicides, and growth regulators. Also detected were DDT and its metabolites, mainly in spinach and winter squash, as well as heptachlor epoxide and dieldrin, primarily in winter squash. The presence of these pesticides was most certainly due to environmental persistence and not the result of prohibited crop application.

Approximately 85 percent of the fresh and processed fruit and vegetable samples were domestic, 13 percent were imported, 2 percent were mixed national origin (mainly orange juice), and 0.5 percent were of unknown origin.

Of all fruit and vegetable samples tested, 383 (6%) of the samples were reported with a total of 426 presumptive tolerance violations, of which all but four were for residues where no tolerance was established. In wheat, there were 23 pirimiphos methyl presumptive tolerance violations (3.7% of the samples). In milk, there were six (0.8%) presumptive violations, mainly o-phenylphenol. The most frequent presumptive violation was for diphenylamine in pears, detected in 23 percent of the samples tested (a tolerance application for diphenylamine as a postharvest fungicide was submitted to EPA in 1998).

Vinclozolin was detected in 18 percent of canned/frozen green bean samples tested, ranging from 0.005 to 0.23 ppm. A 3 ppm Section 18 Federal Insecticide, Fungicide, and Rodenticide Act exemption for vinclozolin/green beans expired on September 30, 1995, and was reestablished at 2 ppm July 10, 1997.

At least one pesticide residue was detected in 57 percent of the fruit and vegetables, (70% fresh and 45% processed), 80 percent of the wheat, 87 percent of the soybeans, and 15 percent of the milk samples. Postharvest application pesticides contributed significantly to the number of residues detected in apple and orange juice, pears, and sweet potatoes. Overall, levels of residues detected were below tolerances.

For more information on the Pesticide Data Program, contact William J. Franks, Jr., Deputy Administrator for Science and Technology at AMS: (202) 720-5231, facsimile: (202) 720-6496, electronic-mail: William_J_Franks@usda.gov; or Robert L. Epstein, Associate Deputy Administrator: (202) 720-2158, facsimile: (202) 720-1484, and electronic-mail: Robert_L_Epstein@usda.gov.

Appendix A

Commodity History
(A Chronological Listing)

Appendix A shows a chronological listing of all commodities sampled since the inception of the program through July 1998.

APPENDIX A. COMMODITY HISTORY

Fresh Commodities

Start Date	End Date	Months in Program	Commodity
May-91	Dec-96	65**	Grapes
May-91	Dec-94	44	Lettuce
May-91	Dec-95	56	Potatoes*
Aug-91	Dec-93	29	Grapefruit
Aug-91	Dec-96	62**	Oranges
Sep-91	Dec-96	61**	Apples
Sep-91	Sep-95	49	Bananas
Feb-92	Mar-94	26	Celery
Feb-92	Dec-95	47	Green Beans
Feb-92	Sep-96	55	Peaches
Oct-92	Dec-94	27	Broccoli
Oct-92	Sep-96	48	Carrots
Jan-95	Sep-97	32**	Spinach
Feb-95	Jan-98	3@	Wheat
Jan-96			Milk
Jan-96	Jun-98	27**	Sweet Potatoes
Jul-96			Tomatoes
Dec-96		2@	Soybeans
Jan-97			Pears
Jan-97			Winter Squash
Jan-98			Strawberries***
Jul-98			Cantaloupe

* Acute dietary survey 12/96-12/97
** Excludes sampling hiatus September - November 1996
*** Frozen collected when fresh unavailable
@ Crop Years

Processed Commodities / Special Projects

Start Date	End Date	Months in Program	Commodity	Type
Apr-94	Mar-96	24	Sweet Corn	Canned/Frozen
Apr-94	Jun-96	27	Peas	Canned/Frozen
Jan-96	Jun-98	27**	Green Beans	Canned/Frozen
Jul-96			Apple Juice	Processed
Dec-96	Dec-97	13	Peaches	Canned
Jan-97			Orange Juice	Processed
Apr-97			Winter Squash	Frozen
Oct-97			Spinach	Canned
Jan-98			Strawberries	Frozen***
Jan-98			Grape Juice	Processed
Jan-98			Corn Syrup	Processed

** Excludes sampling hiatus September - November 1996
*** Frozen collected when fresh unavailable

Appendix B

Sample Origin by Grower, Packer, or Distributor

Appendix B gives the number of fruit and vegetable (F&V) and milk samples per State or country of origin and the number of samples of unknown origin. Where available, origin of fresh commodities is determined by grower or packer information. For processed commodities, origin is determined primarily by packer or distributor.

As shown in Appendix B, F&V and milk samples collected and analyzed during 1997 originated from 37 States and 23 foreign countries.

APPENDIX B. SAMPLE ORIGIN BY GROWER, PACKER, OR DISTRIBUTOR (Number of Samples per State/Country)

Part 1. Domestic Samples

	Fresh F&V					Processed F&V							No. of	% of
	PE	SP	SW	TO	WS	AJ	GB	OJ	PC	SC	WZ	MK	Domestic	Total
States = 37														
Alabama			2	2									4	0.1
Arizona		5		11	31	1	2	1	2				53	0.8
Arkansas				1			4			27			32	0.5
California	125	347	214	145	92	77	209	62	471	83	28	173	2026	28.7
Colorado	1	5		12	4		2				2	16	42	0.6
Connecticut						53		11	2				66	0.9
Delaware							1						1	<0.1
Florida		10		203	11	23	20	126	12		5	61	471	6.7
Georgia			4		3	1	8	3	7	1	2		29	0.4
Hawaii	1												1	<0.1
Idaho	1			3		9	32	3	13	4	6		71	1.0
Illinois		1		1		26	46	28	57	5	20		184	2.6
Kansas						2		5	2				9	0.1
Kentucky		3		1									4	0.1
Louisiana			171	1									172	2.4
Maine							4	1	4	3			12	0.2
Maryland	1	4	4	7	1	2	10	8	2	2		19	60	0.9
Massachusetts		12			1	12		6					31	0.4
Michigan	2	33	5	8	30	27	29	25	30	6	17	72	284	4.0
Minnesota					1	4	66	3	7	2	8		91	1.3
Mississippi			4										4	0.1
Nebraska		1											1	<0.1
New Jersey		3	2	5	12	5	3	4	3		3	1	41	0.6
New Mexico						1							1	<0.1
New York	3	4		6	9	72	35	62	8	4	17	118	338	4.8
North Carolina			207	10	2	1	1	2	6				229	3.2
Ohio		2		9	8	15	13	11	12	6	1	61	138	2.0
Oklahoma		1				2	12	6	16	3	2		42	0.6
Oregon	162	1				8	24	9	9	3	13		229	3.2
Pennsylvania		24		7	1	37	18	6	15	2	1	1	112	1.6
South Carolina		2		5		1							8	0.1
Tennessee			2	17			14			4	7		44	0.6
Texas		20	53	14	3	38	59	96	54	5	18	70	430	6.1
Utah							1					1	2	<0.1
Virginia		3		10	3	19	6	2	5				48	0.7
Washington	285	4		3	6	73	13	4	2	2	4	44	440	6.2
Wisconsin		5		3	1	4	50	4	1	6	36	95	205	2.9
Unknown State	7	7	24	14	39	7	9	5	7		9		128	1.8
No. of Domestics	588	497	692	498	258	520	691	493	747	168	199	732	6083	
% of Total (nearest %)	83	97	99	69	59	75	98	71	99	100	99	100		86.3

Part 2. Imported Samples

	Fresh F&V					Processed F&V							No. of	% of
	PE	SP	SW	TO	WS	AJ	GB	OJ	PC	SC	WZ	MK	Imports	Total
Countries = 23														
Argentina	34					60							94	1.3
Australia	2					1			1				4	0.1
Austria						6							6	0.1
Brazil						8		66					74	1.0
Canada				21		3	9	2					35	0.5
Chile	66					9							75	1.1
China						1							1	<0.1
Costa Rica								1					1	<0.1
France						1							1	<0.1
Germany						18							18	0.3
Greece									5				5	0.1
Honduras					10			1					11	0.2
Hungary						25							25	0.4
Israel				1									1	<0.1
Italy						3							3	<0.1
Mexico		12	1	193	161	12	1	7			20		407	5.8
Monaco					1								1	<0.1
Netherlands				6									6	0.1
New Zealand	4					3							7	0.1
Poland						1							1	<0.1
South Africa	13					4			1				18	0.3
Spain				1					4				5	0.1
Turkey						2							2	<0.1
Unknown Country						2	1						3	<0.1
No. of Import	119	12	1	222	172	159	11	77	11	0	20	0	804	
% of Total (nearest %)	17	2	0	31	39	23	2	11	1	0	1	0		11.4

Part 3. Mixed National Origin Samples

	Fresh F&V					Processed F&V							No. of	% of
	PE	SP	SW	TO	WS	AJ	GB	OJ	PC	SC	WZ	MK	Mixed	Total
Argentina/Germany/USA						1							1	<0.1
Argentina/Hungary						1							1	<0.1
Argentina/Italy						1							1	<0.1
Argentina/Austria/Chile/ Germany/USA						1							1	<0.1
Austria/USA						1							1	<0.1
Brazil/Costa Rica/USA								1					1	<0.1
Brazil/Mexico								2					2	<0.1
Brazil/Mexico/USA								26					26	0.4
Brazil/USA								92					92	1.3
Germany/Italy/USA						1							1	<0.1
Germany/USA						2							2	<0.1
Honduras/Mexico/USA						1		1					2	<0.1
Mexico/USA								4					4	0.1
No. of Mixed National Origin Samples						9		126					135	
% of Total (nearest %)						1		18						1.9

Part 4. Unknown Origin

	Fresh F&V					Processed F&V							No. of	% of
	PE	SP	SW	TO	WS	AJ	GB	OJ	PC	SC	WZ	MK	Unknown	Total
Unknown Origin	1	3	3	4	10	1	5	2			2		31	
% of Total (nearest %)	<0.1	1	<0.1	1	2	<0.1	1	<0.1			<0.1			0.4
GRAND TOTALS	**708**	**512**	**696**	**724**	**440**	**689**	**707**	**698**	**758**	**168**	**221**	**732**	**7053**	

COMMODITIES
AJ = Apple Juice, R/Co
GB = Green Beans, C/F
MK = Milk
OJ = Orange Juice, R/Co
PC = Peaches, Canned
PE = Pears
SC = Spinach, Canned
SP = Spinach, Fresh
SW = Sweet Potatoes
TO = Tomatoes
WS = Winter Squash, Fresh
WZ = Winter Squash, Frozen

R/Co - Ready-to-Serve / Concentrate
C/F - Canned / Frozen

Appendix C

Distribution of Residues for Aldicarb in Potatoes Special Survey

A special survey for acute dietary risk assessment use was conducted by the Pesticide Data Program. Aldicarb and its metabolites were determined in potato sample composites and single-serving analysis performed on those samples containing the highest total combined aldicarb residue in that analytical set. The resulting data provide a comparison between a composite value and the distribution of residues within that sample on a single-serving basis.

Aldicarb is a systemic insecticide used only as a soil application. Aldicarb readily metabolizes to its sulfoxide and sulfone under normal environmental conditions -- both the sulfoxide and sulfone moieties are more toxic than the parent compound. The current tolerance of combined aldicarb residues on potatoes is 1.0 ppm; however, based upon historical PDP data of actual findings, it was necessary to require extremely low detection limits -- less than 0.020 ppm total combined -- in order to obtain useful data for each component of the aldicarb tolerance expression for composite and single-serving analyses.

Laboratory Operations

Analysis for aldicarb and its metabolites on potatoes was performed by the Washington State Department of Agriculture laboratory. The Washington State laboratory utilizes a modification of the California Department of Food and Agriculture (CDFA) multiresidue method for general residue screening of fruits and vegetables. The laboratory further refined the carbamate portion of this analytical method in order to achieve detection limits for combined aldicarb and metabolites of less than 0.020 ppm -- 0.005 ppm aldicarb, 0.004 ppm aldicarb sulfoxide, and 0.005 ppm aldicarb sulfone.

Samples collected were grouped into two categories -- large (greater than 115 grams each) and small (less than 115 grams each). These target weights were specified in order for adequate reserve to be available for possible single-serving analysis. Potatoes were sampled individually or by 10 pound bags. Large potato samples consisted of 10 individual potatoes, with the laboratory selecting the 10 largest potatoes for analysis in the case of receipt of bagged potatoes. Small potato samples were composed of 20-30 individual potatoes which were randomly grouped by twos or threes for a minimum total target weight of 115 grams. Small bagged potatoes were sorted according to size and the largest 20-30 selected for grouping as with small individual potatoes.

For each sample, the 10 subsamples were washed and cut in half lengthwise. One half was labeled and frozen for possible single-serving analysis. The remaining halves were homogenized for composite analysis and frozen.

Composite samples were analyzed in sets generally consisting of 12-15 samples, but not exceeding 20 samples, in accordance with PDP QA SOPs. Each analytical set was accompanied by all applicable QA blanks and spikes for aldicarb and its metabolites. For each set, if any component of the aldicarb tolerance expression was detected in any sample, the sample in that set having the highest combined aldicarb residue was subjected to single-serving analysis. A liquid chromatography system equipped with a post-column reaction system and fluorescence detector was utilized to quantitate residues.

Results and Discussion

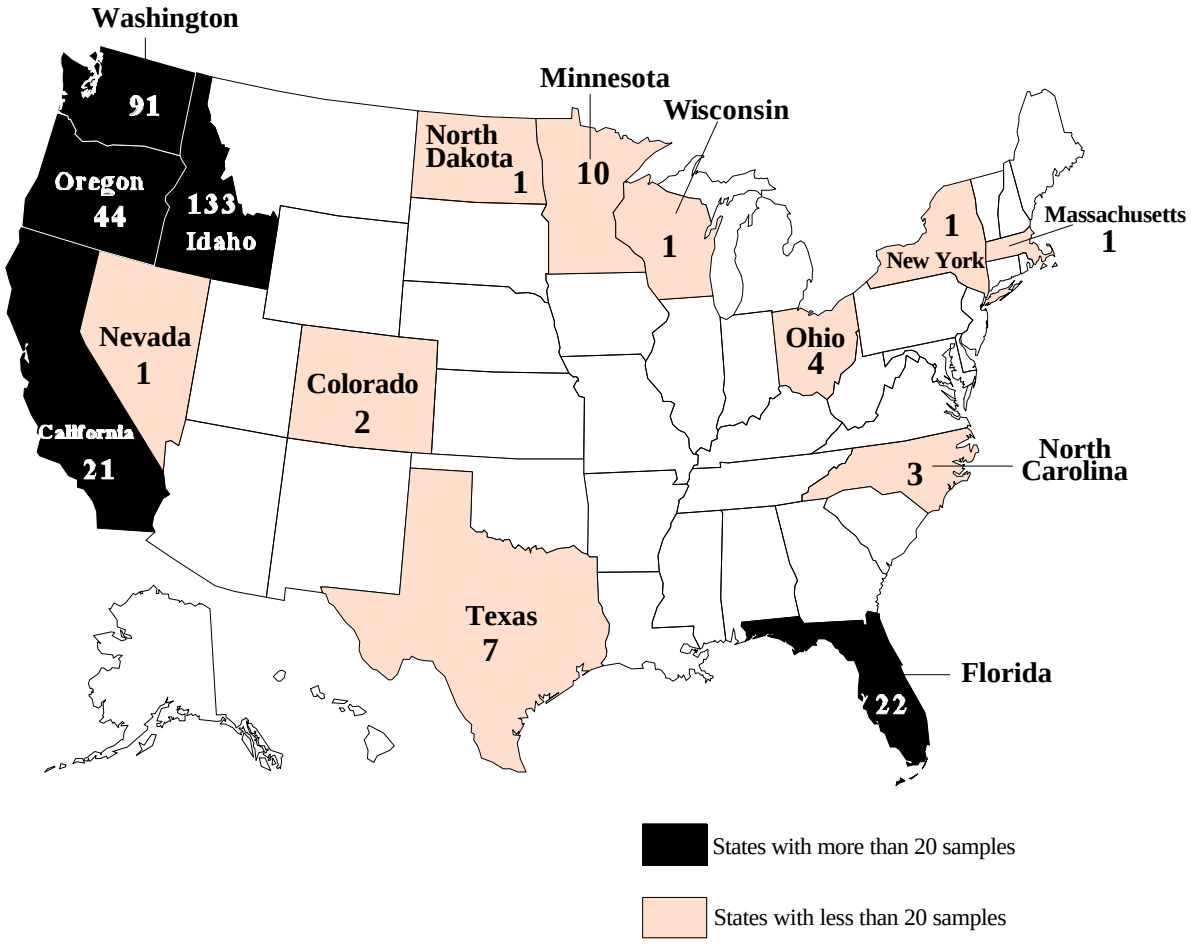
A total of 342 potato sample composites were analyzed for residues of aldicarb and its metabolites. Of the 28 analytical sets, 16 contained one or more samples with combined residues of aldicarb reported. For these sets, the sample containing the highest combined residue underwent single-serving analysis.

For composite samples where the combined aldicarb result was the highest for that set and single-serving analysis was required, no parent aldicarb residue was detected in either the composite or any single-serving analysis. For composite samples, the sulfoxide was detected in 100 percent of the samples while the sulfone was detected in 50 percent. For single-serving results, the sulfoxide was present in 57 percent of the individual analyses and the sulfone in 34 percent. When comparing the contribution of each metabolite to the total concentration reported in composite values, the sulfoxide accounts for 79 percent of the total overall combined residue and the sulfone for 21 percent. For single-serving analytical results, the sulfoxide is responsible for 78 percent of the total overall combined residue reported and the sulfone for 22 percent. The highest combined residue detected was identified in a single-serving sample and was 0.373 ppm (0.330 ppm aldicarb sulfoxide plus 0.043 ppm aldicarb sulfone) -- just slightly over one-third the established tolerance of 1.0 ppm for this pesticide/commodity pair.

This Appendix illustrates the wide variation in occurrence of residues within the single-serving samples when compared to the reported composite value. Excluding results with non-detected residues, aldicarb sulfoxide individual serving-size results varied in the magnitude of 0.1-7.4 times the reported composite value. Aldicarb sulfone individual single-serving results ranged from 0.2-6.1 times the composite value.

Mean values of single-serving analyses were generated for comparison to individual reported values. In calculating mean values, all results with non-detected residues were valued at one-half the Limit of Detection (LOD). The range of variability may be expressed as the maximum residue per unit/mean residue per unit. Using this definition, aldicarb sulfoxide variability ranged from 1.5-4.7 and aldicarb sulfone variability from 2.1-4.9.

Sample Origin by Grower, Packer, or Distributor
(Number of Samples per State)



Distribution of Residues for Composite Samples

Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	LODs, ppm	EPA Tolerance, ppm	CODEX MRLs, ppm
Aldicarb	342	0			0.005	1	0.5
Aldicarb sulfoxide	342	20	5.8	0.007 - 0.150	0.004		0.5
Aldicarb sulfone	342	9	2.6	0.008 - 0.051	0.005		0.5

Distribution of Residues for Single-Serving Portions

	Pesticide	Composite Value Detected, ppm	Single-Serving Values Detected, ppm									
			1	2	3	4	5	6	7	8	9	10
1.	Aldicarb	ND	ND	ND	ND	ND	ND	X	X	X	X	X
	Aldicarb sulfoxide	0.064	ND	ND	ND	0.180	ND	X	X	X	X	X
	Aldicarb sulfone	0.035	ND	ND	ND	0.062	ND	X	X	X	X	X
2.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X
	Aldicarb sulfoxide	0.044	0.026	0.039	0.032	ND	0.048	ND	0.007	0.055	X	X
	Aldicarb sulfone	0.037	0.041	0.008	0.032	ND	0.023	ND	0.019	0.047	X	X
3.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X
	Aldicarb sulfoxide	0.007	ND	0.035	ND	ND	ND	ND	ND	0.017	X	X
	Aldicarb sulfone	ND	ND	0.020	ND	ND	ND	ND	ND	ND	X	X
4.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Aldicarb sulfoxide	0.035	0.057	0.110	0.071	0.047	0.037	0.033	0.021	0.012	0.007	0.013
	Aldicarb sulfone	0.008	0.023	0.048	0.022	0.029	0.022	ND	0.008	ND	ND	ND
5.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Aldicarb sulfoxide	0.090	0.170	0.160	0.062	ND	0.016	0.090	0.007	0.180	0.055	0.007
	Aldicarb sulfone	0.051	0.079	0.140	0.110	ND	0.008	0.057	0.008	0.037	0.008	ND
6.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Aldicarb sulfoxide	0.045	0.007	0.007	ND	ND	ND	ND	ND	ND	ND	ND
	Aldicarb sulfone	0.008	ND	ND	ND	0.026	ND	ND	ND	ND	ND	ND
7.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	X
	Aldicarb sulfoxide	0.029	ND	0.061	0.038	0.007	0.061	ND	ND	ND	0.039	X
	Aldicarb sulfone	ND	ND	0.008	ND	ND	0.008	ND	ND	ND	0.008	X
8.	Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Aldicarb sulfoxide	0.150	0.068	0.330	0.170	0.160	0.062	0.057	0.070	0.200	0.120	0.037
	Aldicarb sulfone	0.008	0.008	0.043	0.023	0.008	0.008	ND	0.008	0.008	0.008	ND

Pesticide	Composite Value Detected, ppm	Single-Serving Values Detected, ppm									
		1	2	3	4	5	6	7	8	9	10
9. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.007	ND	ND	0.007	0.014	0.028	ND	0.025	0.015	ND	ND
Aldicarb sulfone	ND	ND	ND	ND	ND	0.008	ND	ND	ND	ND	ND
10. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.030	0.058	ND	0.056	0.007	0.064	0.015	0.007	0.028	0.180	ND
Aldicarb sulfone	0.008	0.008	ND	0.008	ND	0.008	0.008	ND	0.008	0.049	ND
11. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.028	0.020	0.094	0.019	0.036	ND	ND	0.019	0.016	0.020	ND
Aldicarb sulfone	ND	ND	0.019	ND	ND	ND	ND	ND	ND	ND	ND
12. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.007	ND	ND	ND	0.040	0.020	0.027	ND	ND	0.007	ND
Aldicarb sulfone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.045	0.043	0.056	0.033	0.029	0.028	0.048	0.053	0.038	0.007	0.037
Aldicarb sulfone	0.008	0.017	0.008	0.008	0.008	0.008	0.008	0.008	0.008	ND	0.008
14. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.007	ND	ND	ND	0.007	ND	ND	ND	ND	ND	0.007
Aldicarb sulfone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.007	ND	ND	0.007	ND	0.047	ND	ND	ND	0.052	0.007
Aldicarb sulfone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16. Aldicarb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfoxide	0.007	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldicarb sulfone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND - Non-detections
X - Not Analyzed

Appendix D

Quality Assurance Program Elements

PDP's Quality Assurance (QA) program covers all aspects of data gathering, from sample collection to data reporting. QA protocols for sampling are designed to protect sample integrity from the time of collection to the time of delivery to the testing facilities. QA protocols for testing comprise all laboratory operations from the time of sample receipt to the time data are reported to PDP's central database. In 1997, 99.6 percent of the data reported to the database met QA guidelines. Slightly over one-third of 1 percent of reported results were associated with either fortification and/or process control data which did not meet QA criteria and were rejected. As described in this appendix, the QA program has five elements: 1) Standard Operating Procedures; 2) On-site Reviews; 3) Proficiency Check Samples; 4) Quality Control Procedures; and 5) Method Performance and Confirmation Procedures.

APPENDIX D. QUALITY ASSURANCE PROGRAM ELEMENTS

1. Standard Operating Procedures - Written SOPs are in place to provide uniform administrative, sampling, and laboratory procedures. SOPs are revised annually to accommodate changes in the program. Before submission, data are reviewed by each Quality Assurance Unit for completeness and adherence to PDP requirements.

2. On-site Reviews - On-site reviews are performed to determine compliance with SOPs. Improvements in sampling, chain of custody, recordkeeping, and laboratory procedures are made as a result of on-site reviews.

3. Proficiency Check Samples - All facilities are required to participate in PDP's Check Sample Program. Check samples are issued to laboratories performing analysis with multiresidue methods and/or single/selective residue methods. Periodically, one to three prepared commodities, containing pesticide(s) of known quantities, are sent to the participating laboratories and tested under the same conditions as routine samples. The resulting data are used to determine performance equivalency among the testing laboratories, and to evaluate individual laboratory performance. During 1997, PDP laboratories received 3 proficiency sample sets consisting of 9 fruit and vegetable samples for multiresidue screening, 3 sets consisting of 9 fruit and vegetable samples for single/selective residue screening, two wheat multiresidue sets consisting of 6 samples, and two milk multiresidue sets consisting of 5 samples. For fruit and vegetable multiresidue screening, a total of 72 samples covering 8 commodities were fortified with 36 compounds, with 4 repeated, at levels approximately 1-5 times the overall limit of quantitation (LOQ). Results yield an overall mean Percent Coefficient of Variation (%C.V.) of 19%. Four incurred residues were present in these sets at levels less than 0.1 ppm, with reported results having an overall mean C.V. of 23%. For milk multiresidue screening, a total of 15 samples were fortified with 22 compounds, with 4 repeated, at levels approximately 2-3 times the overall LOQ. Results yield an overall mean C.V. of 20%.

4. Quality Control Procedures - PDP operating procedures for quality control (QC) are intended to assess method and analyst performance during sample preparation, clean-up, extraction, and, where applicable, derivatization. To maximize sample output and decrease the QC/sample ratio, samples are analyzed in analytical sets, not to exceed 20 samples per set, which include the sample set and the following components.

a. Reagent Blank: For analysis of fruit and vegetable and milk products, an amount of distilled water, equivalent to the natural moisture content of the commodity, is run through the entire analytical process to determine glassware cleanliness and system integrity. For grain analysis, performed by supercritical fluid extraction, an empty extraction cell is run through the analytical procedure to demonstrate system integrity.

b. Matrix Blank: A previously analyzed sample of the same commodity, which contains either very low concentrations of known residues or no detectable residues, is divided into two portions. The first portion is used to give background information on naturally occurring chemicals, and the second one is used to prepare a matrix spike.

c. Matrix Spike(s): Prior to extraction, a portion(s) of matrix blank is spiked with marker pesticides to determine the accuracy of the analyst and instrument performance. Marker pesticides are compounds selected from different pesticide classes (organochlorines, organophosphates, carbamates), which have physical and chemical characteristics similar to those in the class they represent. The use of marker pesticides to monitor recoveries is a modification of PDP's previous requirements that called for spiking with all pesticides. Because of the large number of pesticides in the program, spiking with all compounds required several spike mixtures (to avert coelution

problems), which, in turn, resulted in lengthy run times. During 1997, PDP laboratories quantitated a total of 25,452 matrix spikes, with an overall mean recovery of 92% and overall standard deviation of 20%.

d. Process Control Spike: A compound of physical and chemical characteristics, similar to those of the pesticides being tested, is used to evaluate the analytical process on a sample-by-sample basis. Each of the analytical set components, except the reagent and matrix blanks, is spiked with process controls. During 1997, PDP laboratories quantitated a total of 36,284 process controls on 7,835 samples, with an overall mean recovery of 95% and overall standard deviation of 18%. Of these process controls, 667 (1.8%), were rerun due to initial failure to meet PDP recovery criteria. These rerun values are not included in these statistics for illustrative purposes; however, reported data are those obtained from sample reanalysis.

5. Method Performance and Verification Procedures - Laboratories are required to determine the limits of detection (LOD) and limits of quantitation (LOQ) for each commodity/pesticide pair. LODs depend on matrix, analyte, and detector used, and range from 0.001 to 0.55 ppm. (*Information on specific LODs and LOQs is available upon request.*) Verification by mass spectrometry, atomic emission detection, or a suitable alternate detection system, is required for all initial determinations. Verified residue amounts above LOD and below LOQ are reported as BQL (below quantifiable level) and assigned values at ½ LOQ at the request of EPA for use in dietary risk assessment. If a detected residue exceeds the established tolerance, the sample is reanalyzed from the frozen homogenate, along with the appropriate blanks and a spike of the residue at the suspected level.

Appendix E

Distribution of Residues by Pesticide in Fruit and Vegetables

Appendix E shows residue detections for all fruit and vegetable pesticide/ commodity pairs tested, including range of values detected, range of Limits of Detection (LODs), and EPA & Codex MRL tolerance references for each pair. *Residue detections are highlighted in italics.*

In 1997, 6,321 fruit and vegetable samples were analyzed. A total of 383 samples (6.1%) were reported with presumptive violations. Four samples (1.0%) contained residues that exceeded the established EPA tolerance or FDA for the pesticide/commodity pair and 379 samples (99%) were reported for which no EPA tolerance was established.

Of the 383 presumptive violation samples, domestic commodities accounted for 271 samples (70.8%); imported commodities accounted for 110 samples (28.7%), and unknown origin commodities accounted for 2 samples (0.5%). *(See Appendix L for additional information concerning presumptive tolerance violations.)*

In some cases, a tolerance may or may not apply, depending on whether certain conditions are met. For example, residues of methamidophos in green beans are covered by a tolerance only if residues of acephate are also present. Of the 304 green bean samples found to contain residues of methamidophos, 297 (97.7%) were found in combination with acephate. Only one sample had methamidophos residues where acephate was not present and was reported as presumptive violation.

APPENDIX E. DISTRIBUTION OF RESIDUES BY PESTICIDE IN FRUIT AND VEGETABLES

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
1	**Acephate (insecticide)**							
	Apple Juice (V-11)	683	11	1.6	0.003 - 0.008	0.002 - 0.006	NT	-
	Green Beans	669	306	45.7	0.003 - 0.70	0.002 - 0.006	3	-
	Orange Juice	677	0			0.002 - 0.012	NT	-
	Peaches (V-3)	754	3	0.4	0.007 - 0.023	0.002 - 0.012	NT	-
	Pears	708	0			0.002 - 0.006	NT	-
	Spinach, Fresh (V-13)	512	13	2.5	0.003 - 0.10	0.002 - 0.012	NT	-
	Spinach, Canned	168	0			0.002 - 0.012	NT	-
	Sweet Potatoes (V-1)	680	1	0.1	0.007 ^	0.002 - 0.006	NT	-
	Tomatoes (V-4)	707	4	0.6	0.003 - 0.015	0.002 - 0.009	NT	0.5
	W Squash, Fresh (V-7)	440	7	1.6	0.003 - 0.083	0.002 - 0.006	NT	-
	W Squash, Frozen (V-1)	221	1	0.5	0.043 ^	0.002 - 0.006	NT	-
	Total	**6219**	**346**					
2	**Aldicarb (insecticide)**							
	Apple Juice	567	0			0.004 - 0.021	NT	-
	Green Beans	573	0			0.004 - 0.021	NT	-
	Orange Juice	692	1	0.1	0.035 ^	0.008 - 0.021	0.3	0.2
	Peaches	756	0			0.008 - 0.021	NT	-
	Pears	588	0			0.004 - 0.021	NT	-
	Spinach, Fresh	512	0			0.008 - 0.021	NT	-
	Spinach, Canned	168	0			0.008 - 0.021	NT	-
	Sweet Potatoes	566	0			0.004 - 0.021	0.1	0.1
	Tomatoes	722	0			0.004 - 0.021	NT	-
	W Squash, Fresh	349	0			0.004 - 0.021	NT	-
	W Squash, Frozen	198	0			0.004 - 0.021	NT	-
	Total	**5691**	**1**					
	Aldicarb sulfoxide							
	Apple Juice	683	0			0.007 - 0.076	NT	-
	Green Beans	703	0			0.007 - 0.076	NT	-
	Orange Juice	692	0			0.010 - 0.036	0.3	0.2
	Peaches	756	0			0.010 - 0.036	NT	-
	Pears	708	0			0.007 - 0.076	NT	-
	Spinach, Fresh	512	0			0.010 - 0.036	NT	-
	Spinach, Canned	168	0			0.010 - 0.036	NT	-
	Sweet Potatoes	683	1	0.1	0.017 ^	0.007 - 0.076	0.1	0.1
	Tomatoes	722	0			0.007 - 0.036	NT	-
	W Squash, Fresh	440	0			0.007 - 0.076	NT	-
	W Squash, Frozen	221	0			0.007 - 0.076	NT	-
	Total	**6288**	**1**					
	Aldicarb sulfone							
	Apple Juice	567	0			0.007 - 0.075	NT	-
	Green Beans	573	0			0.007 - 0.075	NT	-
	Orange Juice	692	0			0.010 - 0.041	0.3	0.2
	Peaches	756	0			0.010 - 0.041	NT	-
	Pears	588	0			0.007 - 0.075	NT	-
	Spinach, Fresh	512	0			0.010 - 0.041	NT	-
	Spinach, Canned	168	0			0.010 - 0.041	NT	-
	Sweet Potatoes	566	1	0.2	0.017 ^	0.007 - 0.075	0.1	0.1
	Tomatoes	722	0			0.007 - 0.041	NT	-
	W Squash, Fresh	349	0			0.007 - 0.075	NT	-
	W Squash, Frozen	198	0			0.007 - 0.075	NT	-
	Total	**5691**	**1**					

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
3	**Aldrin (insecticide)**							
	Apple Juice	105	0			0.002 ^	0.03 #	-
	Green Beans	108	0			0.002 ^	0.05 #	-
	Orange Juice	182	0			0.002 - 0.003	0.02 #	-
	Peaches	190	0			0.002 - 0.003	0.02 #	-
	Pears	108	0			0.002 ^	0.03 #	-
	Spinach, Fresh	123	0			0.002 - 0.003	0.05 #	-
	Spinach, Canned	72	0			0.002 - 0.003	0.05 #	-
	Sweet Potatoes	179	0			0.002 ^	0.1 #	-
	Tomatoes	198	0			0.002 - 0.003	0.05 #	-
	W Squash, Fresh	55	0			0.002 ^	0.1 #	-
	W Squash, Frozen	53	0			0.002 ^	0.1 #	-
	Total	**1373**	**0**					
4	**Anilazine (fungicide)**							
	Orange Juice	136	0			0.018 ^	NT	-
	Peaches	152	0			0.018 ^	NT	-
	Spinach, Fresh	104	0			0.018 ^	NT	-
	Spinach, Canned	35	0			0.018 ^	NT	-
	Total	**427**	**0**					
5	**Atrazine (herbicide)**							
	Apple Juice	683	0			0.010 - 0.024	NT	-
	Green Beans	707	0			0.010 - 0.024	NT	-
	Orange Juice	692	0			0.003 - 0.030	NT	-
	Peaches	756	0			0.003 - 0.030	NT	-
	Pears	708	0			0.010 - 0.024	NT	-
	Spinach, Fresh	512	0			0.003 - 0.030	NT	-
	Spinach, Canned	168	0			0.010 - 0.030	NT	-
	Sweet Potatoes	695	0			0.010 - 0.024	NT	-
	Tomatoes	722	0			0.003 - 0.030	NT	-
	W Squash, Fresh	440	0			0.010 - 0.024	NT	-
	W Squash, Frozen	221	0			0.010 - 0.024	NT	-
	Total	**6304**	**0**					
6	**Azinphos (insecticide)**							
	Apple Juice	173	0			0.006 ^	2.0	-
	Green Beans	187	0			0.006 ^	2.0	-
	Orange Juice	182	0			0.006 ^	2.0	-
	Peaches	195	0			0.006 ^	2.0	-
	Pears	184	0			0.006 ^	2.0	-
	Spinach, Fresh	129	0			0.006 ^	2.0	-
	Spinach, Canned	39	0			0.006 ^	2.0	-
	Sweet Potatoes	179	0			0.006 ^	NT	-
	Tomatoes	199	0			0.006 ^	2.0	-
	W Squash, Fresh	156	0			0.006 ^	NT	-
	W Squash, Frozen	2	0			0.006 ^	NT	-
	Total	**1625**	**0**					
7	**Azinphos methyl (insecticide)**							
	Apple Juice	683	43	6.3	.010 - 0.62	0.006 - 0.024	2.0	1
	Green Beans	692	2	0.3	0.022 - 0.038	0.006 - 0.024	2.0	0.5
	Orange Juice	692	0			0.006 - 0.030	2.0	1
	Peaches	754	1	0.1	0.053 ^	0.006 - 0.030	2.0	4
	Pears	702	479	68.2	0.010 - 0.99	0.006 - 0.024	2.0	1
	Spinach, Fresh	512	0			0.006 - 0.030	2.0	0.5
	Spinach, Canned	168	0			0.006 - 0.023	2.0	0.5
	Sweet Potatoes	695	0			0.006 - 0.024	NT	0.5

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Tomatoes	705	10	1.4	0.013 - 0.71	0.006 - 0.030	2.0	0.5
	W Squash, Fresh	440	0			0.006 - 0.024	NT	0.5
	W Squash, Frozen	221	0			0.006 - 0.024	NT	0.5
	Total	**6264**	**535**					
8	**Benomyl - analyzed as carbendazim (fungicide)**							
	Apple Juice	679	7	1.0	0.083 - 0.27	0.050 ^	7.0	-
	Green Beans	177	0			0.050 ^	2.0	2
	Orange Juice	689	0			0.050 ^	10.0	-
	Peaches	752	1	0.1	0.083 ^	0.050 ^	15.0	-
	Sweet Potatoes	693	1	0.1	0.18 ^	0.050 ^	0.2	1
	Tomatoes	722	11	1.5	0.083 - 0.24	0.050 ^	5.0	-
	Total	**3712**	**20**					
9	**BHCs (insecticide)**							
	BHC alpha							
	Apple Juice	105	0			0.003 ^	0.05 #	-
	Green Beans	108	0			0.003 ^	0.05 #	-
	Orange Juice	108	0			0.003 ^	0.05 #	-
	Peaches	115	0			0.003 ^	0.05 #	-
	Pears	108	0			0.003 ^	0.05 #	-
	Spinach, Fresh	81	0			0.003 ^	0.05 #	-
	Spinach, Canned	27	0			0.003 ^	0.05 #	-
	Sweet Potatoes	179	0			0.003 ^	0.05 #	-
	Tomatoes	108	0			0.003 ^	0.05 #	-
	W Squash, Fresh	55	0			0.003 ^	0.05 #	-
	W Squash, Frozen	53	0			0.003 ^	0.05 #	-
	Total	**1047**	**0**					
	BHC beta							
	Apple Juice	105	0			0.003 ^	0.05 #	-
	Green Beans	108	0			0.003 ^	0.05 #	-
	Orange Juice	108	0			0.003 ^	0.05 #	-
	Peaches	115	0			0.003 ^	0.05 #	-
	Pears	108	0			0.003 ^	0.05 #	-
	Spinach, Fresh	81	0			0.003 ^	0.05 #	-
	Spinach, Canned	27	0			0.003 ^	0.05 #	-
	Sweet Potatoes	179	0			0.003 ^	0.05 #	-
	Tomatoes	108	0			0.003 ^	0.05 #	-
	W Squash, Fresh	55	0			0.003 ^	0.05 #	-
	W Squash, Frozen	53	0			0.003 ^	0.05 #	-
	Total	**1047**	**0**					
	BHC delta							
	Apple Juice	105	0			0.003 ^	0.05 #	-
	Green Beans	108	0			0.003 ^	0.05 #	-
	Orange Juice	108	0			0.003 ^	0.05 #	-
	Peaches	115	0			0.003 ^	0.05 #	-
	Pears	108	0			0.003 ^	0.05 #	-
	Spinach, Fresh	81	0			0.003 ^	0.05 #	-
	Spinach, Canned	27	0			0.003 ^	0.05 #	-
	Sweet Potatoes	179	0			0.003 ^	0.05 #	-
	Tomatoes	108	0			0.003 ^	0.05 #	-
	W Squash, Fresh	55	0			0.003 ^	0.05 #	-
	W Squash, Frozen	53	0			0.003 ^	0.05 #	-
	Total	**1047**	**0**					

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
10	**Bifenthrin (insecticide)**							
	Pears (V-1)	1	1	100	0.032 ^	0.010 ^	NT	0.5
	W Squash, Fresh (V-2)	2	2	100	0.017 - 0.021	0.010 ^	0.1 R	-
	Total	**3**	**3**					
11	**Captan (fungicide)**							
	Apple Juice	676	1	0.1	0.046 ^	0.006 - 0.017	25	25
	Green Beans	677	0			0.006 - 0.017	25	-
	Orange Juice	690	0			0.006 - 0.017	NT	15
	Peaches	756	0			0.006 - 0.017	50	15
	Pears	683	64	9.4	0.010 - 2.2	0.006 - 0.017	25	25
	Spinach, Fresh	432	0			0.006 - 0.015	100	-
	Spinach, Canned	147	0			0.006 - 0.075	100	-
	Sweet Potatoes	695	0			0.006 - 0.017	NT	-
	Tomatoes	722	2	0.3	0.020 - 0.026	0.006 - 0.017	25	15
	W Squash, Fresh	428	1	0.2	1.6 ^	0.006 - 0.017	25	-
	W Squash, Frozen	221	0			0.006 - 0.017	25	-
	Total	**6127**	**68**					
	Tetrahydrophthalimide (THPI)							
	Apple Juice	30	30	100	0.017 - 0.15	0.010 - 0.050	25	25
	Total	**30**	**30**					
12	**Carbaryl (insecticide)**							
	Apple Juice	683	168	24.6	0.007 - 0.17	0.004 - 0.10	10.0	5
	Green Beans	698	75	10.7	0.007 - 0.60	0.004 - 0.025	10	5
	Orange Juice	692	24	3.5	0.010 - 0.031	0.006 - 0.021	10	7
	Peaches	739	80	10.8	0.010 - 0.48	0.006 - 0.021	10	10
	Pears	708	42	5.9	0.007 - 0.81	0.004 - 0.025	10.0	5
	Spinach, Fresh	512	0			0.006 - 0.021	12	10
	Spinach, Canned	168	0			0.006 - 0.021	12	10
	Sweet Potatoes (X-1)	695	2	0.3	0.010 - 0.29	0.004 - 0.025	0.2	-
	Tomatoes	722	2	0.3	0.020 - 0.15	0.004 - 0.020	10	5
	W Squash, Fresh	440	0			0.004 - 0.025	10	3
	W Squash, Frozen	221	1	0.5	0.042 ^	0.004 - 0.025	10	3
	Total	**6278**	**394**					
	1-Napthol							
	Apple Juice	137	0			0.034 ^	10.0	5
	Green Beans	142	19	13.4	0.036 - 0.87	0.020 - 0.034	10	5
	Pears	142	0			0.034 ^	10	5
	Sweet Potatoes	140	0			0.034 ^	0.2	-
	Tomatoes	141	4	2.8	0.057 ^	0.034 ^	10	5
	W Squash, Fresh	73	0			0.034 ^	10	3
	W Squash, Frozen	65	1	1.5	0.057 ^	0.034 ^	10	3
	Total	**840**	**24**					
13	**Carbofuran (insecticide)**							
	Apple Juice	683	0			0.006 - 0.025	NT	-
	Green Beans (V-2)	703	2	0.3	0.034 - 0.051	0.006 - 0.025	NT	-
	Orange Juice	692	0			0.010 - 0.031	2.5	-
	Peaches	756	0			0.010 - 0.031	NT	-
	Pears	708	0			0.006 - 0.025	NT	0.1
	Spinach, Fresh	512	0			0.010 - 0.031	NT	-
	Spinach, Canned	168	0			0.010 - 0.031	NT	-
	Sweet Potatoes	695	0			0.006 - 0.025	NT	-
	Tomatoes	722	0			0.006 - 0.020	NT	0.1

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	W Squash, Fresh	440	0			0.006 - 0.025	0.6	-
	W Squash, Frozen	221	0			0.006 - 0.025	0.6	-
	Total	**6300**	**2**					
	3-Hydroxycarbofuran							
	Apple Juice	683	0			0.009 - 0.076	NT	-
	Green Beans	707	0			0.009 - 0.076	NT	-
	Orange Juice	692	0			0.010 - 0.020	2.5	-
	Peaches	756	0			0.010 - 0.020	NT	-
	Pears	708	0			0.009 - 0.076	NT	0.1
	Spinach, Fresh	512	0			0.010 - 0.020	NT	-
	Spinach, Canned	168	0			0.010 - 0.020	NT	-
	Sweet Potatoes	693	0			0.009 - 0.076	NT	-
	Tomatoes	722	0			0.009 - 0.020	NT	0.1
	W Squash, Fresh	440	0			0.009 - 0.076	0.6	-
	W Squash, Frozen	221	0			0.009 - 0.076	0.6	-
	Total	**6302**	**0**					
14	**Carbophenothion (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans	108	0			0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	NT	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	-
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
15	**Chlordanes (insecticide)**							
	Chlordane cis							
	Apple Juice	105	0			0.001 ^	0.1 #	0.02 #
	Green Beans	108	0			0.001 ^	0.1 #	0.02 #
	Orange Juice	108	0			0.001 ^	0.1 #	0.02 #
	Peaches	115	0			0.001 ^	0.1 #	0.02 #
	Pears	108	0			0.001 ^	0.1 #	0.02 #
	Spinach, Fresh	81	1	1.2	0.002 ^	0.001 ^	0.1 #	0.02 #
	Spinach, Canned	27	0			0.001 ^	0.1 #	0.02 #
	Sweet Potatoes	179	0			0.001 ^	0.1 #	0.02 #
	Tomatoes	108	0			0.001 ^	0.1 #	0.02 #
	W Squash, Fresh	55	1	1.8	0.002 ^	0.001 ^	0.1 #	0.02 #
	W Squash, Frozen	53	4	7.5	0.002 - 0.016	0.001 ^	0.1 #	0.02 #
	Total	**1047**	**6**					
	Chlordane trans							
	Apple Juice	105	0			0.001 ^	0.1 #	0.02 #
	Green Beans	108	0			0.001 ^	0.1 #	0.02 #
	Orange Juice	108	0			0.001 ^	0.1 #	0.02 #
	Peaches	115	0			0.001 ^	0.1 #	0.02 #
	Pears	108	0			0.001 ^	0.1 #	0.02 #
	Spinach, Fresh	81	1	1.2	0.002 ^	0.001 ^	0.1 #	0.02 #
	Spinach, Canned	27	0			0.001 ^	0.1 #	0.02 #
	Sweet Potatoes	179	0			0.001 ^	0.1 #	0.02 #
	Tomatoes	108	0			0.001 ^	0.1 #	0.02 #

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	W Squash, Fresh	55	1	1.8	0.002 ^	0.001 ^	0.1 #	0.02 #
	W Squash, Frozen	53	3	5.7	0.004 - 0.006	0.001 ^	0.1 #	0.02 #
	Total	**1047**	**5**					
	Oxychlordane							
	Apple Juice	105	0			0.002 ^	0.1 #	0.02 #
	Green Beans	108	0			0.002 ^	0.1 #	0.02 #
	Orange Juice	108	0			0.002 ^	0.1 #	0.02 #
	Peaches	115	0			0.002 ^	0.1 #	0.02 #
	Pears	108	0			0.002 ^	0.1 #	0.02 #
	Spinach, Fresh	81	0			0.002 ^	0.1 #	0.02 #
	Spinach, Canned	27	0			0.002 ^	0.1 #	0.02 #
	Sweet Potatoes	179	0			0.002 ^	0.1 #	0.02 #
	Tomatoes	108	0			0.002 ^	0.1 #	0.02 #
	W Squash, Fresh	55	1	1.8	0.005 ^	0.002 ^	0.1 #	0.02 #
	W Squash, Frozen	53	2	3.8	0.003 - 0.005	0.002 ^	0.1 #	0.02 #
	Total	**1047**	**3**					
16	**Chlorfenvinphos alpha/beta (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans	108	0			0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	NT	1
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	0.05
	Tomatoes	108	0			0.003 ^	NT	0.1
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
17	**Chlorothalonil (fungicide)**							
	Apple Juice	660	0			0.005 - 0.030	NT	-
	Green Beans	684	0			0.005 - 0.030	5	5
	Orange Juice	689	0			0.003 - 0.008	NT	5
	Peaches	756	0			0.003 - 0.048	0.5	25
	Pears	669	0			0.005 - 0.030	NT	-
	Spinach, Fresh (V-1)	455	1	0.2	0.007 ^	0.003 - 0.008	NT	-
	Spinach, Canned	168	0			0.004 - 0.008	NT	-
	Sweet Potatoes	661	0			0.005 - 0.048	NT	-
	Tomatoes	708	54	7.6	0.008 - 1.7	0.003 - 0.031	5	5
	W Squash, Fresh	405	27	6.7	0.008 - 0.23	0.005 - 0.030	5	5
	W Squash, Frozen	221	0			0.005 - 0.030	5	5
	Total	**6076**	**82**					
18	**Chlorpropham (herbicide, growth regulator)**							
	Apple Juice	683	0			0.008 - 0.020	NT	-
	Green Beans	707	0			0.008 - 0.020	0.3	-
	Orange Juice	692	0			0.008 - 0.152	NT	-
	Peaches	756	0			0.008 - 0.152	NT	-
	Pears	708	0			0.008 - 0.020	NT	-
	Spinach, Fresh	512	0			0.008 - 0.152	0.3	-
	Spinach, Canned	168	0			0.010 - 0.152	0.3	-
	Sweet Potatoes	681	0			0.008 - 0.020	NT	-
	Tomatoes	722	0			0.008 - 0.152	0.1	-
	W Squash, Fresh (V-1)	440	1	0.2	0.017 ^	0.008 - 0.020	NT	-
	W Squash, Frozen	221	0			0.010 - 0.020	NT	-
	Total	**6290**	**1**					

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
19	**Chlorpyrifos (insecticide)**							
	Apple Juice	683	1	0.1	0.015 ^	0.003 - 0.011	1.5	1
	Green Beans	707	0			0.003 - 0.011	0.05	0.2
	Orange Juice	692	1	0.1	0.005 ^	0.003 - 0.009	1.0	0.3
	Peaches	754	0			0.003 - 0.009	0.05	-
	Pears	708	13	1.8	0.005 - 0.054	0.003 - 0.011	0.05	0.5
	Spinach, Fresh (V-11)	512	11	2.1	0.005 - 0.026	0.003 - 0.009	NT	-
	Spinach, Canned	168	0			0.003 - 0.009	NT	-
	Sweet Potatoes	695	76	10.9	0.005 - 0.037	0.003 - 0.011	0.05	-
	Tomatoes	707	92	13	0.005 - 0.31	0.003 - 0.011	0.5	0.5
	W Squash, Fresh	440	0			0.003 - 0.011	NT	-
	W Squash, Frozen (V-4)	221	4	1.8	0.005 ^	0.003 - 0.011	NT	-
	Total	**6287**	**198**					
20	**Chlorpyrifos methyl (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	0.5
	Green Beans	108	0			0.003 ^	NT	0.1
	Orange Juice	108	0			0.003 ^	NT	0.5
	Peaches	115	0			0.003 ^	NT	0.5
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	0.5
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
21	**Coumaphos (insecticide)**							
	Apple Juice	52	0			0.005 ^	NT	-
	Green Beans	54	0			0.005 ^	NT	-
	Orange Juice	54	0			0.005 ^	NT	-
	Peaches	54	0			0.005 ^	NT	-
	Pears	54	0			0.005 ^	NT	-
	Spinach, Fresh	27	0			0.005 ^	NT	-
	Spinach, Canned	27	0			0.005 ^	NT	-
	Sweet Potatoes	78	0			0.005 ^	NT	-
	Tomatoes	54	0			0.005 ^	NT	-
	W Squash, Fresh	27	0			0.005 ^	NT	-
	W Squash, Frozen	27	0			0.005 ^	NT	-
	Total	**508**	**0**					
	Coumaphos oxygen analog							
	Apple Juice	52	0			0.008 ^	NT	-
	Green Beans	54	0			0.008 ^	NT	-
	Orange Juice	54	0			0.008 ^	NT	-
	Peaches	54	0			0.008 ^	NT	-
	Pears	54	0			0.008 ^	NT	-
	Spinach, Fresh	27	0			0.008 ^	NT	-
	Spinach, Canned	27	0			0.008 ^	NT	-
	Sweet Potatoes	78	0			0.008 ^	NT	-
	Tomatoes	54	0			0.008 ^	NT	-
	W Squash, Fresh	27	0			0.008 ^	NT	-
	W Squash, Frozen	27	0			0.008 ^	NT	-
	Total	**508**	**0**					
22	**Cyfluthrin (insecticide)**							
	Apple Juice	105	0			0.050 ^	NT	0.5
	Green Beans	108	0			0.050 ^	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Orange Juice	108	0			0.050 ^	0.2	-
	Peaches	115	0			0.050 ^	NT	-
	Pears	108	0			0.050 ^	NT	-
	Spinach, Fresh	81	0			0.050 ^	NT	-
	Spinach, Canned	27	0			0.050 ^	NT	-
	Sweet Potatoes	179	0			0.050 ^	NT	-
	Tomatoes	108	0			0.050 ^	0.20	0.5
	W Squash, Fresh	55	0			0.050 ^	NT	-
	W Squash, Frozen	53	0			0.050 ^	NT	-
	Total	**1047**	**0**					
23	**Cypermethrin (insecticide)**							
	Apple Juice	105	0			0.025 ^	NT	2
	Green Beans	108	0			0.025 ^	NT	0.5
	Orange Juice	419	0			0.020 - 0.045	NT	2
	Peaches	459	0			0.020 - 0.045	NT	2
	Pears	108	0			0.025 ^	NT	2
	Spinach, Fresh	315	0			0.020 - 0.045	NT	2
	Spinach, Canned	107	0			0.025 - 0.045	NT	2
	Sweet Potatoes	179	0			0.025 ^	NT	0.05
	Tomatoes (V-2)	287	2	0.7	0.033 - 0.067	0.020 - 0.045	NT	0.5
	W Squash, Fresh	55	0			0.025 ^	NT	-
	W Squash, Frozen	53	0			0.025 ^	NT	-
	Total	**2195**	**2**					
24	**DCPA (herbicide)**							
	Apple Juice	683	0			0.003 - 0.008	NT	-
	Green Beans	707	0			0.003 - 0.008	2	-
	Orange Juice	692	0			0.003 - 0.008	NT	-
	Peaches	756	0			0.003 - 0.008	NT	-
	Pears	708	0			0.003 - 0.008	NT	-
	Spinach, Fresh (V-15)	512	15	2.9	0.005 - 0.045	0.003 - 0.008	NT	-
	Spinach, Canned	168	0			0.003 - 0.006	NT	-
	Sweet Potatoes	695	0			0.003 - 0.008	2	-
	Tomatoes	707	0			0.003 - 0.008	1	-
	W Squash, Fresh	440	0			0.003 - 0.008	1	-
	W Squash, Frozen	221	5	2.3	0.012 - 0.089	0.003 - 0.007	1	-
	Total	**6289**	**20**					
25	**DDT (insecticide)**							
	Apple Juice	278	0			0.003 - 0.008	0.1 #	-
	Green Beans	284	0			0.003 - 0.008	0.2 #	-
	Orange Juice	601	0			0.003 - 0.010	0.1 #	-
	Peaches	654	0			0.003 - 0.010	0.2 #	-
	Pears	292	0			0.003 - 0.008	0.1 #	-
	Spinach, Fresh	386	37	9.6	0.005 - 0.073	0.001 - 0.010	0.5 #	-
	Spinach, Canned	146	0			0.003 - 0.015	0.5 #	-
	Sweet Potatoes	358	0			0.003 - 0.008	1 #	-
	Tomatoes	486	0			0.003 - 0.010	0.05 #	-
	W Squash, Fresh	211	4	1.9	0.010 ^	0.003 - 0.008	0.1 #	-
	W Squash, Frozen	55	0			0.003 - 0.008	0.1 #	-
	Total	**3751**	**41**					
	DDD (TDE)							
	Apple Juice	278	0			0.003 - 0.008	0.1 #	-
	Green Beans	295	0			0.003 - 0.008	0.2 #	-
	Orange Juice	601	0			0.003 - 0.023	0.1 #	-
	Peaches	654	0			0.003 - 0.023	0.2 #	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Pears	292	0			0.003 - 0.008	0.1 #	-
	Spinach, Fresh	444	1	0.2	0.005 ^	0.003 - 0.023	0.5 #	-
	Spinach, Canned	146	0			0.003 - 0.013	0.5 #	-
	Sweet Potatoes	358	0			0.003 - 0.008	1 #	-
	Tomatoes	486	1	0.2	0.005 ^	0.003 - 0.010	0.05 #	-
	W Squash, Fresh	211	0			0.003 - 0.008	0.1 #	-
	W Squash, Frozen	55	0			0.003 - 0.008	0.1 #	-
	Total	**3820**	**2**					
	DDE							
	Apple Juice	683	0			0.003 - 0.008	0.1 #	-
	Green Beans	707	2	0.3	0.005 - 0.010	0.003 - 0.008	0.2 #	-
	Orange Juice	692	0			0.003 - 0.010	0.1 #	-
	Peaches	756	0			0.003 - 0.010	0.2 #	-
	Pears	708	0			0.003 - 0.008	0.1 #	-
	Spinach, Fresh	512	212	41.4	0.005 - 0.11	0.003 - 0.009	0.5 #	-
	Spinach, Canned	168	42	25.0	0.005 - 0.030	0.003 - 0.010	0.5 #	-
	Sweet Potatoes	681	10	1.5	0.005 - 0.053	0.003 - 0.008	1 #	-
	Tomatoes	707	0			0.003 - 0.010	0.05 #	-
	W Squash, Fresh	440	21	4.8	0.005 - 0.065	0.003 - 0.008	0.1 #	-
	W Squash, Frozen	221	18	8.1	0.005 - 0.074	0.003 - 0.007	0.1 #	-
	Total	**6275**	**305**					
26	**DEF (defoliant)**							
	Apple Juice	52	0			0.002 ^	NT	-
	Green Beans	54	0			0.002 ^	NT	-
	Orange Juice	54	0			0.002 ^	NT	-
	Peaches	54	0			0.002 ^	NT	-
	Pears	54	0			0.002 ^	NT	-
	Spinach, Fresh	27	0			0.002 ^	NT	-
	Spinach, Canned	27	0			0.002 ^	NT	-
	Sweet Potatoes	78	0			0.002 ^	NT	-
	Tomatoes	54	0			0.002 ^	NT	-
	W Squash, Fresh	27	0			0.002 ^	NT	-
	W Squash, Frozen	27	0			0.002 ^	NT	-
	Total	**508**	**0**					
27	**Demeton (insectide)**							
	Orange Juice	136	0			0.010 ^	NT	-
	Peaches	152	0			0.010 ^	NT	-
	Spinach, Fresh	104	0			0.010 ^	NT	-
	Spinach,Canned	35	0			0.010 ^	NT	-
	Total	**427**	**0**					
28	**Demeton-S (insecticide)**							
	Orange Juice	136	0			0.019 ^	NT	-
	Peaches	152	0			0.019 ^	NT	-
	Spinach, Fresh	104	0			0.019 ^	NT	-
	Spinach,Canned	35	0			0.019 ^	NT	-
	Total	**427**	**0**					
29	**Demeton-S sulfone (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans (V-10)	108	10	9.3	0.005 - 0.015	0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	NT	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	-
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**10**					
30	**Diazinon (insecticide)**							
	Apple Juice	683	0			0.002 - 0.011	0.5	0.5
	Green Beans	707	7	0.9	0.003 - 0.018	0.002 - 0.011	0.5	0.5
	Orange Juice	692	0			0.002 - 0.014	0.7	0.5
	Peaches	754	0			0.002 - 0.014	0.7	0.7
	Pears	708	24	3.4	0.003 - 0.094	0.002 - 0.011	0.5	0.5
	Spinach, Fresh	512	8	1.6	0.003 - 0.29	0.002 - 0.13	0.7	0.7
	Spinach, Canned	168	0			0.002 - 0.014	0.7	0.7
	Sweet Potatoes	695	3	0.4	0.003 - 0.007	0.002 - 0.011	0.1	0.5
	Tomatoes	707	2	0.3	0.003 - 0.015	0.002 - 0.011	0.75	0.5
	W Squash, Fresh	440	1	0.2	0.003 ^	0.002 - 0.011	0.75	0.5
	W Squash, Frozen	221	0			0.002 - 0.011	0.75	0.5
	Total	**6287**	**45**					
	Diazinon oxygen analog							
	Spinach, Fresh	1	1	100	0.17 ^	0.004 ^	0.7	0.7
	Total	**1**	**1**					
31	**Dichlorvos DDVP (insecticide)**							
	Apple Juice	682	0			0.002 - 0.007	0.5	-
	Green Beans	707	0			0.002 - 0.007	0.5	-
	Orange Juice	692	0			0.002 - 0.015	3	-
	Peaches	756	0			0.002 - 0.015	0.5	-
	Pears	708	1	0.1	0.005 ^	0.002 - 0.007	0.5	-
	Spinach, Fresh	512	0			0.002 - 0.015	3	-
	Spinach, Canned	168	0			0.002 - 0.015	3	-
	Sweet Potatoes	695	0			0.002 - 0.007	0.5	-
	Tomatoes	722	0			0.002 - 0.015	0.5	-
	W Squash, Fresh	440	0			0.002 - 0.007	0.5	-
	W Squash, Frozen	221	0			0.002 - 0.007	0.5	-
	Total	**6303**	**1**					
32	**Dicloran (fungicide)**							
	Apple Juice	683	0			0.006 - 0.010	NT	-
	Green Beans	707	2	0.3	0.013 ^	0.006 - 0.010	20	2
	Orange Juice	692	0			0.001 - 0.009	NT	-
	Peaches	756	0			0.001 - 0.009	20	15
	Pears	708	0			0.006 - 0.010	NT	-
	Spinach, Fresh (V-8)	512	8	1.6	0.002 - 0.022	0.001 - 0.009	NT	-
	Spinach, Canned	168	0			0.001 - 0.009	NT	-
	Sweet Potatoes	679	388	57.1	0.010 - 1.7	0.006 - 0.010	10	-
	Tomatoes	707	7	0.9	0.013 - 0.41	0.006 - 0.009	5	0.5
	W Squash, Fresh	440	0			0.006 - 0.010	NT	-
	W Squash, Frozen	221	0			0.006 - 0.010	NT	-
	Total	**6273**	**405**					
33	**Dicofol (insecticide)**							
	Apple Juice	683	0			0.003 - 0.029	5	5
	Green Beans	707	4	0.6	0.005 - 0.15	0.003 - 0.029	5	5
	Orange Juice	692	2	0.3	0.010 ^	0.003 - 0.030	10	5
	Peaches	756	0			0.003 - 0.030	10	5
	Pears	708	20	2.8	0.010 - 1.9	0.003 - 0.029	5	5

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Spinach, Fresh	512	0			0.003 - 0.030	NT	5
	Spinach, Canned	168	0			0.003 - 0.030	NT	5
	Sweet Potatoes	695	0			0.003 - 0.029	NT	5
	Tomatoes	722	12	1.7	0.010 - 0.17	0.003 - 0.030	5	1
	W Squash, Fresh	440	1	0.2	0.081 ^	0.003 - 0.029	5	5
	W Squash, Frozen	221	0			0.003 - 0.029	5	5
	Total	**6304**	**39**					
34	**Dieldrin (insecticide)**							
	Apple Juice	144	0			0.002 - 0.005	0.03 #	-
	Green Beans	148	0			0.002 - 0.005	0.05 #	-
	Orange Juice	283	0			0.002 - 0.005	0.02 #	-
	Peaches	307	0			0.002 - 0.005	0.02 #	-
	Pears	147	0			0.002 - 0.005	0.03 #	-
	Spinach, Fresh	201	3	1.5	0.003 - 0.016	0.002 - 0.005	0.05 #	-
	Spinach, Canned	84	0			0.002 - 0.005	0.05 #	-
	Sweet Potatoes	203	0			0.002 - 0.005	0.1 #	-
	Tomatoes	150	1	0.7	0.005 ^	0.002 - 0.005	0.05 #	-
	W Squash, Fresh	81	20	24.7	0.003 - 0.093	0.001 - 0.018	0.1 #	-
	W Squash, Frozen	91	67	73.6	0.003 - 0.10	0.002 - 0.018	0.1 #	-
	Total	**1839**	**91**					
35	**Dimethoate (insecticide)**							
	Apple Juice	683	184	26.9	0.003 - 0.054	0.002 - 0.009	2	1
	Green Beans	706	13	1.8	0.003 - 0.29	0.002 - 0.009	2	-
	Orange Juice	692	0			0.002 - 0.011	2	2
	Peaches (V-1)	752	1	0.1	0.051 ^	0.002 - 0.011	NT	-
	Pears	708	5	0.7	0.003 - 0.060	0.002 - 0.009	2	1
	Spinach, Fresh (X-1) [a]	501	32	6.4	0.003 - 1.9	0.002 - 0.011	2	1
	Spinach, Canned	168	0			0.002 - 0.009	2	1
	Sweet Potatoes	695	0			0.002 - 0.009	NT	-
	Tomatoes	705	1	0.1	0.005 ^	0.002 - 0.011	2	1
	W Squash, Fresh	440	0			0.002 - 0.009	NT	-
	W Squash, Frozen	221	0			0.002 - 0.009	NT	-
	Total	**6271**	**236**					
	Omethoate							
	Apple Juice	683	56	8.2	0.007 - 0.015	0.004 - 0.018	2	1
	Green Beans	707	5	0.7	0.007 - 0.03	0.004 - 0.018	2	-
	Orange Juice	692	0			0.004 - 0.016	2	2
	Peaches	756	0			0.004 - 0.016	NT	-
	Pears	708	4	0.6	0.008 - 0.026	0.004 - 0.018	2	1
	Spinach, Fresh (X-1) [a]	512	65	12.7	0.007 - 0.76	0.004 - 0.016	2	1
	Spinach, Canned	168	0			0.004 - 0.016	2	1
	Sweet Potatoes	681	0			0.004 - 0.018	NT	-
	Tomatoes	707	20	2.8	0.007 - 0.035	0.004 - 0.015	2	1
	W Squash, Fresh	440	0			0.004 - 0.018	NT	-
	W Squash, Frozen	221	0			0.004 - 0.018	NT	-
	Total	**6275**	**150**					
36	**Diphenylamine (fungicide)**							
	Apple Juice	668	57	8.5	0.013 - 0.15	0.008 - 0.030	10	5
	Green Beans (V-6)	693	6	0.9	0.013 - 0.25	0.008 - 0.030	NT	-
	Orange Juice (V-2)	678	2	0.3	0.050 ^	0.008 - 0.152	NT	-
	Peaches (V-1)	735	1	0.1	0.14 ^	0.008 - 0.152	NT	-
	Pears (V-158)	693	158	22.8	0.013 - 1.8	0.008 - 0.030	NT	-
	Spinach, Fresh (V-1)	498	1	0.2	0.050 ^	0.008 - 0.152	NT	-
	Spinach, Canned (V-2)	168	2	1.2	0.017 - 0.20	0.008 - 0.152	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Sweet Potatoes (V-1)	695	1	0.1	0.017 ^	0.008 - 0.030	NT	-
	Tomatoes (V-4)	707	4	0.6	0.013 - 0.025	0.008 - 0.152	NT	-
	W Squash, Fresh (V-1)	426	1	0.2	0.050 ^	0.008 - 0.030	NT	-
	W Squash, Frozen (V-1)	221	1	0.5	0.025 ^	0.008 - 0.030	NT	-
	Total	**6182**	**234**					
	4-Hydroxydiphenylamine							
	Apple Juice	53	0			0.015 ^	NT	-
	Green Beans	54	0			0.015 ^	NT	-
	Orange Juice	54	0			0.015 ^	NT	-
	Peaches	61	0			0.015 ^	NT	-
	Pears	54	0			0.015 ^	NT	-
	Spinach, Fresh	54	0			0.015 ^	NT	-
	Sweet Potatoes	101	0			0.015 ^	NT	-
	Tomatoes	54	0			0.015 ^	NT	-
	W Squash, Fresh	28	0			0.015 ^	NT	-
	W Squash, Frozen	26	0			0.015 ^	NT	-
	Total	**539**	**0**					
37	**Disulfoton (insecticide)**							
	Apple Juice	683	0			0.003 - 0.010	NT	-
	Green Beans	707	0			0.003 - 0.010	0.75	0.5
	Orange Juice	679	0			0.003 - 0.013	NT	-
	Peaches	756	0			0.003 - 0.013	NT	-
	Pears	707	0			0.003 - 0.010	NT	-
	Spinach, Fresh	512	0			0.003 - 0.013	0.75	0.5
	Spinach, Canned	168	0			0.003 - 0.010	0.75	0.5
	Sweet Potatoes	695	0			0.003 - 0.010	NT	0.5
	Tomatoes	707	0			0.003 - 0.013	0.75	0.5
	W Squash, Fresh	440	0			0.003 - 0.010	NT	0.5
	W Squash, Frozen	221	0			0.003 - 0.010	NT	0.5
	Total	**6275**	**0**					
	Disulfoton sulfone							
	Apple Juice	318	0			0.004 - 0.009	NT	-
	Green Beans	319	0			0.004 - 0.009	0.75	0.5
	Orange Juice	370	0			0.004 - 0.007	NT	-
	Peaches	399	0			0.004 - 0.007	NT	-
	Pears	325	0			0.004 - 0.009	NT	-
	Spinach, Fresh	263	0			0.004 - 0.007	0.75	0.5
	Spinach, Canned	101	0			0.004 - 0.007	0.75	0.5
	Sweet Potatoes	383	0			0.004 - 0.009	NT	0.5
	Tomatoes	282	0			0.004 - 0.007	0.75	0.5
	W Squash, Fresh	210	0			0.004 - 0.009	NT	0.5
	W Squash, Frozen	87	0			0.005 - 0.009	NT	0.5
	Total	**3057**	**0**					
38	**Diuron (herbicide)**							
	Apple Juice	105	0			0.003 ^	1	-
	Green Beans	108	0			0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	1	-
	Peaches	115	0			0.003 ^	0.1	-
	Pears	108	0			0.003 ^	1	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	-
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					

Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
39 Doramectin (anthelmintic)							
Green Beans (V-2)	2	2	100	0.005 ^	0.003 ^	NT	-
Total	**2**	**2**					
40 Endosulfans (insecticide)							
Endosulfan I							
Apple Juice	683	0			0.002 - 0.007	2.0	1
Green Beans	707	3	0.4	0.003 ^	0.002 - 0.007	2.0	0.5
Orange Juice	692	0			0.002 - 0.005	NT	2
Peaches	756	0			0.002 - 0.005	2.0	2
Pears	708	8	1.1	0.003 - 0.029	0.002 - 0.007	2.0	1
Spinach, Fresh	512	7	1.4	0.003 - 0.11	0.002 - 0.005	2.0	2
Spinach, Canned	168	0			0.002 - 0.005	2.0	2
Sweet Potatoes	695	5	0.7	0.003 - 0.012	0.002 - 0.007	0.2	0.2
Tomatoes	709	121	17.1	0.003 - 0.33	0.002 - 0.006	2.0	2
W Squash, Fresh	440	32	7.3	0.003 - 0.048	0.002 - 0.007	2.0	2
W Squash, Frozen	221	13	5.9	0.012 - 0.085	0.002 - 0.007	2.0	2
Total	**6291**	**189**					
Endosulfan II							
Apple Juice	683	0			0.003 - 0.007	2.0	1
Green Beans	707	3	0.4	0.005 ^	0.003 - 0.007	2.0	0.5
Orange Juice	692	0			0.002 - 0.008	NT	2
Peaches	756	0			0.002 - 0.008	2.0	2
Pears	708	17	2.4	0.005 - 0.081	0.003 - 0.007	2.0	1
Spinach, Fresh	512	12	2.3	0.003 - 0.15	0.002 - 0.008	2.0	2
Spinach, Canned	168	0			0.002 - 0.008	2.0	2
Sweet Potatoes	695	4	0.6	0.005 - 0.010	0.003 - 0.007	0.2	0.2
Tomatoes	722	158	21.9	0.005 - 0.10	0.003 - 0.008	2.0	2
W Squash, Fresh	440	23	5.2	0.005 - 0.015	0.003 - 0.007	2.0	2
W Squash, Frozen	221	5	2.3	0.012 - 0.024	0.003 - 0.007	2.0	2
Total	**6304**	**222**					
Endosulfan sulfate							
Apple Juice	683	0			0.003 - 0.010	2.0	1
Green Beans	707	4	0.6	0.005 - 0.011	0.003 - 0.010	2.0	0.5
Orange Juice	692	0			0.003 - 0.008	NT	2
Peaches	756	1	0.1	0.005 ^	0.003 - 0.008	2.0	2
Pears	693	15	2.2	0.005 - 0.017	0.003 - 0.010	2.0	1
Spinach, Fresh	512	45	8.8	0.005 - 0.94	0.003 - 0.008	2.0	2
Spinach, Canned	168	0			0.003 - 0.008	2.0	2
Sweet Potatoes	695	10	1.4	0.005 - 0.017	0.003 - 0.010	0.2	0.2
Tomatoes	722	140	19.4	0.005 - 0.098	0.003 - 0.010	2.0	2
W Squash, Fresh	440	111	25.2	0.005 - 0.086	0.003 - 0.010	2.0	2
W Squash, Frozen	221	15	6.8	0.005 - 0.036	0.003 - 0.010	2.0	2
Total	**6289**	**341**					
41 Ethalfluralin (herbicide)							
Apple Juice	105	0			0.05 ^	NT	-
Green Beans	108	0			0.05 ^	NT	-
Orange Juice	108	0			0.05 ^	NT	-
Peaches	115	0			0.05 ^	NT	-
Pears	108	0			0.05 ^	NT	-
Spinach, Fresh	81	0			0.05 ^	NT	-
Spinach, Canned	27	0			0.05 ^	NT	-
Sweet Potatoes	179	0			0.05 ^	NT	-
Tomatoes	108	0			0.05 ^	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	W Squash, Fresh	55	0			0.05 ^	0.05	-
	W Squash, Frozen	53	0			0.05 ^	0.05	-
	Total	**1047**	**0**					
42	**Ethion (insecticide)**							
	Apple Juice	683	0			0.001 - 0.006	2.0	2
	Green Beans	707	0			0.001 - 0.006	2.0	2
	Orange Juice	692	69	9.9	0.002 - 0.006	0.001 - 0.009	2.0	2
	Peaches	754	0			0.001 - 0.009	1.0	1
	Pears	708	0			0.001 - 0.006	2.0	2
	Spinach, Fresh	512	0			0.001 - 0.009	NT	-
	Spinach, Canned	168	0			0.001 - 0.009	NT	-
	Sweet Potatoes	683	0			0.001 - 0.006	NT	-
	Tomatoes	707	1	0.1	0.049 ^	0.001 - 0.009	2.0	2
	W Squash, Fresh	440	0			0.001 - 0.006	NT	0.5
	W Squash, Frozen (V-3)	221	3	1.4	0.005 ^	0.001 - 0.006	NT	0.5
	Total	**6275**	**73**					
43	**Ethoprop (insecticide)**							
	Orange Juice	136	0			0.015 ^	NT	-
	Peaches	152	0			0.015 ^	NT	-
	Spinach, Fresh	104	0			0.015 ^	NT	-
	Spinach, Canned	35	0			0.015 ^	NT	-
	Total	**427**	**0**					
44	**Fenamiphos (insecticide)**							
	Apple Juice	683	0			0.002 - 0.009	0.25	-
	Green Beans	707	0			0.002 - 0.009	NT	-
	Orange Juice	692	0			0.002 - 0.013	0.60	0.5
	Peaches	756	0			0.002 - 0.013	0.25	-
	Pears	708	0			0.002 - 0.009	NT	-
	Spinach, Fresh	512	0			0.002 - 0.013	NT	-
	Spinach, Canned	168	0			0.002 - 0.012	NT	-
	Sweet Potatoes	695	0			0.002 - 0.009	NT	0.1
	Tomatoes (V-1)	722	1	0.1	0.007 ^	0.002 - 0.013	NT	0.2
	W Squash, Fresh	440	0			0.002 - 0.009	NT	-
	W Squash, Frozen	221	0			0.002 - 0.009	NT	-
	Total	**6304**	**1**					
	Fenamiphos sulfoxide							
	Apple Juice	394	0			0.005 - 0.036	0.25	-
	Green Beans	386	0			0.005 - 0.036	NT	-
	Orange Juice	325	0			0.005 - 0.022	0.60	0.5
	Peaches	369	0			0.005 - 0.022	0.25	-
	Pears	404	0			0.005 - 0.036	NT	-
	Spinach, Fresh	253	0			0.005 - 0.022	NT	-
	Spinach, Canned	84	0			0.005 - 0.022	NT	-
	Sweet Potatoes	387	0			0.005 - 0.036	NT	0.1
	Tomatoes (V-2)	345	2	0.6	0.013 - 0.028	0.005 - 0.022	NT	0.2
	W Squash, Fresh	193	0			0.005 - 0.036	NT	-
	W Squash, Frozen	196	0			0.005 - 0.036	NT	-
	Total	**3336**	**2**					
	Fenamiphos sulfone							
	Apple Juice	513	0			0.005 - 0.036	0.25	-
	Green Beans	520	0			0.005 - 0.036	NT	-
	Orange Juice	626	0			0.005 - 0.080	0.60	0.5
	Peaches	693	0			0.005 - 0.080	0.25	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Pears	537	0			0.005 - 0.036	NT	-
	Spinach, Fresh	461	0			0.005 - 0.080	NT	-
	Spinach, Canned	168	0			0.005 - 0.020	NT	-
	Sweet Potatoes	512	0			0.005 - 0.036	NT	0.1
	Tomatoes (V-3)	662	3	0.5	0.013 ^	0.005 - 0.080	NT	0.2
	W Squash, Fresh	301	0			0.005 - 0.036	NT	-
	W Squash, Frozen	196	0			0.005 - 0.036	NT	-
	Total	**5189**	**3**					
45	**Fenitrothion (insecticide)**							
	Apple Juice	52	0			0.001 ^	NT	0.5
	Green Beans	54	0			0.001 ^	NT	-
	Orange Juice	54	0			0.001 ^	NT	2
	Peaches	54	0			0.001 ^	NT	1
	Pears	54	0			0.001 ^	NT	0.5
	Spinach, Fresh	27	0			0.001 ^	NT	-
	Spinach, Canned	27	0			0.001 ^	NT	-
	Sweet Potatoes	78	0			0.001 ^	NT	-
	Tomatoes	54	0			0.001 ^	NT	0.5
	W Squash, Fresh	27	0			0.001 ^	NT	-
	W Squash, Frozen	27	0			0.001 ^	NT	-
	Total	**508**	**0**					
	Fenitrothion oxygen analog							
	Apple Juice	52	0			0.002 ^	NT	0.5
	Green Beans	54	0			0.002 ^	NT	-
	Orange Juice	54	0			0.002 ^	NT	2
	Peaches	54	0			0.002 ^	NT	1
	Pears	54	0			0.002 ^	NT	0.5
	Spinach, Fresh	27	0			0.002 ^	NT	-
	Spinach, Canned	27	0			0.002 ^	NT	-
	Sweet Potatoes	78	0			0.002 ^	NT	-
	Tomatoes	54	0			0.002 ^	NT	0.5
	W Squash, Fresh	27	0			0.002 ^	NT	-
	W Squash, Frozen	27	0			0.002 ^	NT	-
	Total	**508**	**0**					
46	**Fenpropathrin (insecticide)**							
	Tomatoes	1	1	100	0.37 ^	0.026 ^	0.6	-
	Total	**1**	**1**					
47	**Fenthion (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	2
	Green Beans	108	0			0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	NT	0.2
	Peaches	115	0			0.003 ^	NT	2
	Pears	108	0			0.003 ^	NT	2
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	0.1
	Tomatoes	108	0			0.003 ^	NT	0.5
	W Squash, Fresh	55	0			0.003 ^	NT	0.2
	W Squash, Frozen	53	0			0.003 ^	NT	0.2
	Total	**1047**	**0**					
48	**Fenvalerate (insecticide)**							
	Apple Juice	683	2	0.3	0.050 ^	0.03 - 0.033	2.0	2
	Green Beans	707	9	1.3	0.050 - 0.070	0.03 - 0.033	2.0	1

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Orange Juice	692	0			0.007 - 0.11	NT	2
	Peaches	756	2	0.3	0.050 ^	0.007 - 0.11	10.0	5
	Pears	708	2	0.3	0.050 ^	0.03 - 0.033	2.0	2
	Spinach, Fresh	512	0			0.007 - 0.11	NT	-
	Spinach, Canned	168	0			0.007 - 0.092	NT	-
	Sweet Potatoes (V-1)	680	1	0.1	0.050 ^	0.030 - 0.33	NT	0.05
	Tomatoes	707	6	0.8	0.027 - 0.11	0.016 - 0.33	1.0	1
	W Squash, Fresh	440	2	0.5	0.050 ^	0.030 - 0.33	1.0	0.5
	W Squash, Frozen	221	0		0.050 - 0.070	0.030 - 0.33	1.0	0.5
	Total	**6274**	**24**					
	Esfenvalerate							
	Apple Juice	546	2	0.4	0.033 - 0.042	0.020 - 0.098	2.0	2
	Green Beans	566	8	1.4	0.033 - 0.042	0.020 - 0.098	2.0	1
	Orange Juice	381	0			0.020 - 0.098	NT	2
	Peaches	412	1	0.2	0.042 ^	0.020 - 0.098	10.0	5
	Pears	566	1	0.2	0.033 ^	0.020 - 0.098	2.0	2
	Spinach, Fresh	278	0			0.020 - 0.098	NT	-
	Spinach, Canned	88	0			0.020 - 0.098	NT	-
	Sweet Potatoes	541	0			0.020 - 0.098	NT	0.25
	Tomatoes	402	4	0.9	0.033 - 0.042	0.020 - 0.098	1.0	1
	W Squash, Fresh	367	1	0.3	0.19 ^	0.020 - 0.098	1.0	0.5
	W Squash, Frozen	156	0			0.020 - 0.098	1.0	0.5
	Total	**4303**	**17**					
49	**Fonofos (insecticide)**							
	Apple Juice	69	0			0.005 - 0.006	NT	-
	Green Beans	58	0			0.006 ^	0.01	-
	Pears	70	0			0.005 - 0.006	NT	-
	Sweet Potatoes	70	0			0.006 ^	0.1	-
	Tomatoes	59	0			0.006 ^	0.1	-
	W Squash, Fresh	35	0			0.005 - 0.006	NT	-
	W Squash, Frozen	24	0			0.006 ^	NT	-
	Total	**385**	**0**					
50	**Formetanate (insecticide)**							
	Pears	171	4	2.3	0.083 - 0.17	0.050 ^	3	-
	Total	**171**	**4**					
51	**Heptachlor (insecticide)**							
	Apple Juice	105	0			0.001 ^	0.01 #	-
	Green Beans	108	0			0.001 ^	0.01 #	-
	Orange Juice	182	0			0.001 - 0.002	0.01 #	0.01 #
	Peaches	190	0			0.001 - 0.002	0.01 #	-
	Pears	108	0			0.001 ^	0.01 #	-
	Spinach, Fresh	123	0			0.001 - 0.002	0.01 #	-
	Spinach, Canned	72	0			0.001 - 0.002	0.01 #	-
	Sweet Potatoes	179	0			0.001 ^	0.01 #	-
	Tomatoes	198	0			0.001 - 0.002	0.01 #	-
	W Squash, Fresh	55	0			0.001 ^	0.01 #	-
	W Squash, Frozen	53	0			0.001^	0.01 #	-
	Total	**1373**	**0**					
	Heptachlor epoxide							
	Apple Juice	144	0			0.001 - 0.003	0.01 #	-
	Green Beans	156	0			0.001 - 0.003	0.01 #	-
	Orange Juice	221	0			0.001 - 0.003	0.01 #	0.01 #
	Peaches	238	0			0.001 - 0.003	0.01 #	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Pears	147	0			0.001 - 0.003	0.01 #	-
	Spinach, Fresh	139	0			0.001 - 0.003	0.01 #	-
	Spinach, Canned	94	0			0.001 - 0.003	0.01 #	-
	Sweet Potatoes	203	0			0.001 - 0.003	0.01 #	-
	Tomatoes	239	0			0.001 - 0.003	0.01 #	-
	W Squash, Fresh (X-1)	74	4	5.4	0.002 - 0.015	0.001 - 0.003	0.01 #	-
	W Squash, Frozen (X-1)	79	23	29.1	0.002 - 0.025	0.001 - 0.003	0.01 #	-
	Total	**1734**	**27**					
52	**Imazalil (fungicide)**							
	Apple Juice	683	0			0.010 - 0.070	NT	5
	Green Beans	707	0			0.010 - 0.070	NT	-
	Orange Juice	677	22	3.2	0.017 - 0.10	0.010 - 0.152	10.0	5
	Peaches	756	0			0.010 - 0.152	NT	-
	Pears (V-1)	660	1	0.2	0.017 ^	0.010 - 0.070	NT	5
	Spinach, Fresh	512	0			0.010 - 0.152	NT	-
	Spinach, Canned	168	0			0.010 - 0.152	NT	-
	Sweet Potatoes	695	0			0.010 - 0.070	NT	-
	Tomatoes	705	0			0.010 - 0.152	NT	-
	W Squash, Fresh	425	0			0.010 - 0.070	NT	-
	W Squash, Frozen	221	0			0.010 - 0.070	NT	-
	Total	**6209**	**23**					
53	**Iprodione (fungicide)**							
	Apple Juice	683	0			0.008 - 0.031	NT	10
	Green Beans	707	4	0.6	0.013 - 0.053	0.008 - 0.031	2.0	-
	Orange Juice	692	0			0.015 - 0.045	NT	-
	Peaches	756	20	2.6	0.025 - 0.093	0.015 - 0.045	20.0	10
	Pears (V-23)	693	23	3.3	0.013 - 0.38	0.008 - 0.031	NT	10
	Spinach, Fresh (V-1)	512	1	0.2	0.030 ^	0.015 - 0.045	NT	-
	Spinach, Canned	168	0			0.015 - 0.045	NT	-
	Sweet Potatoes	695	0			0.008 - 0.031	NT	-
	Tomatoes (V-6)	707	6	0.8	0.025 - 0.10	0.015 - 0.045	NT	5
	W Squash, Fresh	440	0			0.008 - 0.031	NT	-
	W Squash, Frozen	221	0			0.008 - 0.031	NT	-
	Total	**6274**	**54**					
54	**Lambda cyhalothrin + isomer (insecticide)**							
	Spinach, Fresh (V-1)	1	1	100	0.039 ^	0.005 ^	NT	-
	Spinach, Canned (V-1)	1	1	100	1.4 ^	0.002 ^	NT	-
	Tomatoes	5	5	100	0.009 - 0.096	0.002 ^	0.1	-
	Total	**7**	**7**					
55	**Lindane - BHC gama (insecticide)**							
	Apple Juice	683	0			0.002 - 0.006	1	0.5
	Green Beans	707	0			0.002 - 0.006	0.5	-
	Orange Juice	692	0			0.002 - 0.005	0.5	-
	Peaches	756	0			0.002 - 0.005	1	-
	Pears	708	0			0.002 - 0.006	1	0.5
	Spinach, Fresh	512	2	0.4	0.005 - 0.011	0.002 - 0.005	1	2
	Spinach, Canned	168	0			0.002 - 0.004	1	2
	Sweet Potatoes	681	0			0.002 - 0.006	0.5	-
	Tomatoes	707	0			0.002 - 0.005	3	2
	W Squash, Fresh	440	0			0.002 - 0.006	3	-
	W Squash, Frozen	221	0			0.003 - 0.006	3	-
	Total	**6275**	**2**					

Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
56 Linuron (herbicide)							
Apple Juice	105	0			0.003 ^	NT	-
Green Beans	108	0			0.003 ^	NT	-
Orange Juice	108	0			0.003 ^	NT	-
Peaches	115	0			0.003 ^	NT	-
Pears	108	0			0.003 ^	NT	-
Spinach, Fresh	81	0			0.003 ^	NT	-
Spinach, Canned	27	0			0.003 ^	NT	-
Sweet Potatoes	179	0			0.003 ^	NT	-
Tomatoes	108	0			0.003 ^	NT	-
W Squash, Fresh	55	0			0.003 ^	NT	-
W Squash, Frozen	53	0			0.003 ^	NT	-
Total	**1047**	**0**					
57 Malathion (insecticide)							
Apple Juice	683	0			0.002 - 0.018	8	2
Green Beans	707	0			0.002 - 0.018	8	2
Orange Juice	692	0			0.002 - 0.018	8	4
Peaches	756	0			0.002 - 0.018	8	6
Pears	708	0			0.002 - 0.018	8	0.5
Spinach, Fresh	512	0			0.002 - 0.018	8	8
Spinach, Canned	168	0			0.002 - 0.018	8	8
Sweet Potatoes	695	1	0.1	0.023 ^	0.002 - 0.018	1	0.5
Tomatoes	707	0			0.002 - 0.018	8	3
W Squash, Fresh	440	0			0.002 - 0.018	8	-
W Squash, Frozen	221	0			0.002 - 0.018	8	-
Total	**6289**	**1**					
58 Metalaxyl (fungicide)							
Apple Juice	179	0			0.003 - 0.008	0.2	1
Green Beans	196	1	0.5	0.005 ^	0.003 - 0.008	0.2	-
Orange Juice	108	0			0.003 ^	1.0	5
Peaches	115	0			0.003 ^	1.0	-
Pears	198	0			0.003 - 0.008	NT	1
Spinach, Fresh	81	8	9.9	0.005 - 0.040	0.003 ^	10.0	2
Spinach, Canned	27	0			0.003 ^	10.0	2
Sweet Potatoes	253	0			0.003 - 0.008	0.5	-
Tomatoes	108	1	0.9	0.026 ^	0.003 ^	1.0	0.5
W Squash, Fresh	93	4	4.3	0.005 - 0.014	0.003 - 0.008	1.0	0.2
W Squash, Frozen	90	1	1.1	0.013 ^	0.003 - 0.008	1.0	0.2
Total	**1448**	**15**					
59 Methamidophos (insecticide)							
Apple Juice (V-14)	683	14	2	0.002 - 0.005	0.001 - 0.006	NT	-
Green Beans (V-1) @	679	304	44.8	0.002 - 0.17	0.001 - 0.006	NT	-
Orange Juice	677	0			0.001 - 0.015	NT	-
Peaches (V-7)	756	7	0.9	0.005 - 0.027	0.001 - 0.015	NT	-
Pears	708	0			0.001 - 0.006	NT	-
Spinach, Fresh (V-11)	512	11	2.1	0.002 - 0.072	0.001 - 0.015	NT	-
Spinach, Canned	168	0			0.001 - 0.015	NT	-
Sweet Potatoes (V-1)	695	1	0.1	0.005 ^	0.001 - 0.006	NT	-
Tomatoes	710	217	30.6	0.002 - 0.35	0.001 - 0.015	1.0	0.01
W Squash, Fresh (V-16)	440	16	3.6	0.002 - 0.039	0.001 - 0.006	NT	-
W Squash, Frozen (V-1)	221	1	0.5	0.015 ^	0.001 - 0.006	NT	-
Total	**6249**	**571**					

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
60	**Methidathion (insecticide)**							
	Apple Juice	683	0			0.003 - 0.010	0.05	0.5
	Green Beans	707	0			0.003 - 0.010	NT	-
	Orange Juice	692	10	1.4	0.005 ^	0.003 - 0.013	2.0	2
	Peaches	756	0			0.003 - 0.013	0.05	0.2
	Pears	708	1	0.1	0.005 ^	0.003 - 0.010	0.05	0.5
	Spinach, Fresh	512	0			0.003 - 0.013	NT	-
	Spinach, Canned	168	0			0.003 - 0.008	NT	-
	Sweet Potatoes	695	0			0.003 - 0.010	NT	-
	Tomatoes	707	0			0.003 - 0.013	NT	0.1
	W Squash, Fresh	440	0			0.003 - 0.010	NT	-
	W Squash, Frozen	221	0			0.003 - 0.010	NT	-
	Total	**6289**	**11**					
61	**Methiocarb- analyzed as sulfoxide (insecticide)**							
	Apple Juice	173	0			0.016 ^	NT	-
	Green Beans	187	0			0.016 ^	NT	-
	Orange Juice	493	0			0.015 - 0.043	0.02	0.05
	Peaches	539	0			0.015 - 0.043	15	-
	Pears	184	0			0.016 ^	NT	-
	Spinach, Fresh	363	0			0.015 - 0.043	NT	-
	Spinach, Canned	119	0			0.015 - 0.043	NT	-
	Sweet Potatoes	179	0			0.016 ^	NT	-
	Tomatoes	378	0			0.015 - 0.020	NT	-
	W Squash, Fresh	156	0			0.016 ^	NT	-
	W Squash, Frozen	2	0			0.016 ^	NT	-
	Total	**2773**	**0**					
62	**Methomyl (insecticide)**							
	Apple Juice	683	0			0.007 - 0.032	1	2
	Green Beans	707	7	0.9	0.012 - 0.10	0.007 - 0.032	2	2
	Orange Juice	692	0			0.008 - 0.032	2	1
	Peaches	756	0			0.008 - 0.032	5	5
	Pears	708	0			0.007 - 0.032	4 R	2
	Spinach, Fresh	512	51	9.9	0.020 - 1.5	0.008 - 0.032	6	5
	Spinach, Canned	168	0			0.008 - 0.032	6	5
	Sweet Potatoes	695	0			0.007 - 0.032	0.2	-
	Tomatoes	722	0			0.007 - 0.032	1	1
	W Squash, Fresh	440	0			0.007 - 0.032	0.2	-
	W Squash, Frozen	221	0			0.007 - 0.032	0.2	-
	Total	**6304**	**58**					
63	**Methoxychlor (insecticide)**							
	Apple Juice	668	0			0.006 - 0.026	14	-
	Green Beans	693	0			0.006 - 0.026	14	-
	Orange Juice	692	0			0.005 - 0.023	NT	-
	Peaches	756	0			0.005 - 0.023	14	-
	Pears	708	3	0.4	0.010 - 0.096	0.006 - 0.026	14	-
	Spinach, Fresh	512	0			0.005 - 0.023	14	-
	Spinach, Canned	168	0			0.005 - 0.023	14	-
	Sweet Potatoes	695	0			0.006 - 0.026	7	-
	Tomatoes	707	0			0.005 - 0.026	14	-
	W Squash, Fresh	440	0			0.006 - 0.026	14	-
	W Squash, Frozen	221	0			0.006 - 0.026	14	-
	Total	**6260**	**3**					
64	**Mevinphos E/Z (insecticide)**							
	Apple Juice	683	0			0.002 - 0.014	0.5	0.5
	Green Beans	707	0			0.002 - 0.014	0.25	0.1

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Orange Juice	692	0			0.002 - 0.015	0.2	0.2
	Peaches	756	0			0.002 - 0.015	1.0	0.5
	Pears	708	0			0.002 - 0.014	0.5	0.2
	Spinach, Fresh	512	0			0.002 - 0.015	1.0	0.5
	Spinach, Canned	168	0			0.002 - 0.015	1.0	0.5
	Sweet Potatoes	695	0			0.002 - 0.014	NT	-
	Tomatoes	722	0			0.002 - 0.015	0.2	-
	W Squash, Fresh	440	0			0.002 - 0.014	NT	-
	W Squash, Frozen	221	0			0.002 - 0.014	NT	-
	Total	**6304**	**0**					
65	**Myclobutanil (fungicide)**							
	Apple Juice	683	0			0.008 - 0.045	0.5	-
	Green Beans	707	0			0.008 - 0.045	NT	-
	Orange Juice	692	0			0.010 - 0.076	NT	-
	Peaches	756	2	0.3	0.025 ^	0.010 - 0.076	2.0	-
	Pears	708	0			0.008 - 0.045	NT	-
	Spinach, Fresh	512	0			0.010 - 0.076	NT	-
	Spinach, Canned	168	0			0.015 - 0.076	NT	-
	Sweet Potatoes	695	0			0.008 - 0.045	NT	-
	Tomatoes (V-1)	722	1	0.1	0.040 ^	0.010 - 0.076	0.3 R	-
	W Squash, Fresh	440	1	0.2	0.013 ^	0.008 - 0.045	0.3	-
	W Squash, Frozen	221	0			0.008 - 0.045	0.3	-
	Total	**6304**	**4**					
66	**Oxamyl (insecticide)**							
	Apple Juice	683	1	0.1	0.017 ^	0.009 - 0.035	2	2
	Green Beans	707	0			0.009 - 0.035	NT	0.2
	Orange Juice	692	0			0.010 - 0.035	3	5
	Peaches	756	0			0.010 - 0.035	NT	-
	Pears	708	6	0.8	0.017 - 0.12	0.009 - 0.035	2.0	-
	Spinach, Fresh	512	0			0.010 - 0.035	NT	-
	Spinach, Canned	168	0			0.010 - 0.035	NT	-
	Sweet Potatoes	695	0			0.009 - 0.035	0.1	0.1
	Tomatoes	722	6	0.8	0.015 - 0.043	0.009 - 0.035	2	2
	W Squash, Fresh	440	0			0.009 - 0.035	2.0	-
	W Squash, Frozen	221	0			0.009 - 0.035	2.0	-
	Total	**6304**	**13**					
67	**Oxydemeton methyl sulfone (insecticide)**							
	Apple Juice	105	0			0.003 ^	1	-
	Green Beans	108	0			0.003 ^	0.5	-
	Orange Juice	108	0			0.003 ^	1	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	0.3	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	-
	W Squash, Fresh	55	0			0.003 ^	0.3	-
	W Squash, Frozen	53	0			0.003 ^	0.3	-
	Total	**1047**	**0**					
68	**Oxyfluorfen (herbicide)**							
	Apple Juice	105	0			0.010 ^	0.05	-
	Green Beans	108	0			0.010 ^	NT	-
	Orange Juice	108	0			0.010 ^	NT	-
	Peaches	115	0			0.010 ^	0.05	-
	Pears	108	0			0.010 ^	0.05	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Spinach, Fresh	81	0			0.010 ^	0.05	-
	Spinach, Canned	27	0			0.010 ^	0.05	-
	Sweet Potatoes	179	0			0.010 ^	NT	-
	Tomatoes	108	0			0.010 ^	NT	-
	W Squash, Fresh	55	0			0.010 ^	NT	-
	W Squash, Frozen	53	0			0.010 ^	NT	-
	Total	**1047**	**0**					
69	**Parathion (insecticide)**							
	Apple Juice	590	0			0.002 - 0.006	1	0.5
	Green Beans	612	0			0.002 - 0.006	1	-
	Orange Juice	601	0			0.002 - 0.015	1	0.5
	Peaches	654	0			0.002 - 0.015	1	1
	Pears	614	4	0.7	0.003 - 0.31	0.002 - 0.006	1	0.5
	Spinach, Fresh	444	0			0.002 - 0.015	1	-
	Spinach, Canned	146	4	2.7	0.005 - 0.017	0.002 - 0.015	1	-
	Sweet Potatoes	671	0			0.002 - 0.006	0.1	-
	Tomatoes	627	0			0.002 - 0.015	1	-
	W Squash, Fresh	399	0			0.002 - 0.006	1	-
	W Squash, Frozen	177	0			0.002 - 0.006	1	-
	Total	**5535**	**8**					
70	**Parathion methyl (insecticide)**							
	Apple Juice	683	2	0.3	0.003 ^	0.002 - 0.013	1	-
	Green Beans	707	33	4.7	0.003 - 0.38	0.002 - 0.013	1	-
	Orange Juice	692	0			0.002 - 0.013	1	-
	Peaches	756	0			0.002 - 0.013	1	-
	Pears	708	37	5.2	0.003 - 0.079	0.002 - 0.013	1	-
	Spinach, Fresh	512	1	0.2	0.003 ^	0.002 - 0.013	1	-
	Spinach, Canned	168	0			0.002 - 0.013	1	-
	Sweet Potatoes	695	2	0.3	0.003 - 0.014	0.002 - 0.013	0.1	-
	Tomatoes	707	1	0.1	0.012 ^	0.002 - 0.013	1	-
	W Squash, Fresh	440	0			0.002 - 0.013	1	-
	W Squash, Frozen	221	0			0.002 - 0.013	1	-
	Total	**6289**	**76**					
	Parathion oxygen analog							
	Pears	1	1	100	0.029 ^	0.001 ^	1	-
	Total	**1**	**1**					
71	**Permethrins (insecticide)**							
	Apple Juice	683	1	0.1	0.048 ^	0.008 - 0.040	0.05	2
	Green Beans	707	0			0.008 - 0.040	NT	1
	Orange Juice	692	0			0.008 - 0.076	NT	0.5
	Peaches	756	0			0.008 - 0.076	5.0	2
	Pears	708	0			0.008 - 0.040	3.0	2
	Spinach, Fresh	512	271	52.9	0.017 - 9.2	0.005 - 0.076	20.0	2
	Spinach, Canned	168	141	83.9	0.067 - 5.0	0.005 - 0.076	20.0	2
	Sweet Potatoes (V-3)	695	3	0.4	0.021 ^	0.005 - 0.040	NT	-
	Tomatoes	707	80	11.3	0.017 - 0.173	0.005 - 0.076	2	1
	W Squash, Fresh	440	9	2.0	0.013 - 0.106	0.005 - 0.040	3.0	0.5
	W Squash, Frozen	221	0			0.008 - 0.032	3.0	0.5
	Total	**6289**	**505**					
72	**o-Phenylphenol (fungicide)**							
	Apple Juice	590	32	5.4	0.005 - 0.038	0.003 - 0.015	25	25
	Green Beans (V-5)	612	5	0.8	0.005 - 0.025	0.003 - 0.015	NT	-
	Orange Juice	601	16	2.7	0.017 - 0.033	0.010 - 0.021	10	10
	Peaches	654	21	3.2	0.017 - 0.033	0.010 - 0.021	20	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Pears	614	154	25.1	0.005 - 11	0.003 - 0.015	25	25
	Spinach, Fresh (V-10)	444	10	2.3	0.017 ^	0.010 - 0.021	NT	-
	Spinach, Canned	146	0			0.010 - 0.020	NT	-
	Sweet Potatoes	671	10	1.5	0.017 - 0.10	0.003 - 0.015	15	-
	Tomatoes	627	39	6.2	0.005 - 0.51	0.003 - 0.020	10	-
	W Squash, Fresh (V-1)	399	1	0.3	0.017 ^	0.003 - 0.015	NT	-
	W Squash, Frozen (V-1)	177	1	0.6	0.005 ^	0.003 - 0.015	NT	-
	Total	**5535**	**289**					
73	**Phorate (insecticide)**							
	Apple Juice	683	0			0.003 - 0.030	NT	-
	Green Beans	707	0			0.003 - 0.030	0.1	0.1
	Orange Juice	692	0			0.004 - 0.030	NT	-
	Peaches	756	0			0.004 - 0.030	NT	-
	Pears	708	0			0.003 - 0.030	NT	-
	Spinach, Fresh	512	0			0.004 - 0.030	NT	-
	Spinach, Canned	168	0			0.004 - 0.030	NT	-
	Sweet Potatoes	695	0			0.003 - 0.030	NT	-
	Tomatoes	707	0			0.003 - 0.030	0.1	0.1
	W Squash, Fresh	440	0			0.003 - 0.030	NT	-
	W Squash, Frozen	221	0			0.003 - 0.030	NT	-
	Total	**6289**	**0**					
	Phorate sulfoxide							
	Apple Juice	335	0			0.004 - 0.076	NT	-
	Green Beans	343	0			0.004 - 0.076	0.1	0.1
	Orange Juice	364	0			0.004 - 0.061	NT	-
	Peaches	399	0			0.004 - 0.061	NT	-
	Pears	344	0			0.004 - 0.076	NT	-
	Spinach, Fresh	281	0			0.004 - 0.061	NT	-
	Spinach, Canned	84	0			0.004 - 0.030	NT	-
	Sweet Potatoes	343	0			0.004 - 0.076	NT	-
	Tomatoes	374	0			0.004 - 0.076	0.1	0.1
	W Squash, Fresh	169	0			0.004 - 0.076	NT	-
	W Squash, Frozen	162	0			0.004 - 0.076	NT	-
	Total	**3198**	**0**					
	Phorate sulfone							
	Apple Juice	513	0			0.003 - 0.024	NT	-
	Green Beans	520	0			0.003 - 0.024	0.1	0.1
	Orange Juice	636	0			0.003 - 0.024	NT	-
	Peaches	693	0			0.003 - 0.024	NT	-
	Pears	537	0			0.003 - 0.024	NT	-
	Spinach, Fresh	461	0			0.003 - 0.024	NT	-
	Spinach, Canned	168	0			0.003 - 0.024	NT	-
	Sweet Potatoes	512	0			0.003 - 0.024	NT	-
	Tomatoes	647	0			0.003 - 0.024	0.1	0.1
	W Squash, Fresh	301	0			0.003 - 0.024	NT	-
	W Squash, Frozen	196	0			0.003 - 0.024	NT	-
	Total	**5184**	**0**					
	Phorate oxygen analog							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans	108	0			0.003 ^	0.1	0.1
	Orange Juice	108	0			0.003 ^	NT	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	0.1	0.1
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
	Phorate oxygen analog sulfone							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans	108	0			0.003 ^	0.1	0.1
	Orange Juice	108	0			0.003 ^	NT	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	0.1	0.1
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
74	**Phosalone (insecticide)**							
	Apple Juice	278	0			0.006 ^	10.0	5
	Green Beans	295	0			0.006 ^	NT	-
	Orange Juice	601	0			0.006 - 0.030	3.0	1
	Peaches	654	0			0.006 - 0.030	15.0	5
	Pears	292	0			0.006 ^	10.0	2
	Spinach, Fresh	444	0			0.006 - 0.030	NT	-
	Spinach, Canned	146	0			0.006 - 0.030	NT	-
	Sweet Potatoes	358	0			0.006 ^	NT	-
	Tomatoes	486	0			0.006 - 0.030	NT	1
	W Squash, Fresh	211	0			0.006 ^	NT	-
	W Squash, Frozen	55	0			0.006 ^	NT	-
	Total	**3820**	**0**					
75	**Phosmet (insecticide)**							
	Apple Juice	590	0			0.005 - 0.024	10	10
	Green Beans	612	0			0.005 - 0.024	NT	-
	Orange Juice	601	0			0.005 - 0.030	5	5
	Peaches	654	0			0.005 - 0.030	10	10
	Pears	613	114	18.6	0.008 - 0.72	0.005 - 0.024	10	10
	Spinach, Fresh	444	0			0.005 - 0.030	NT	-
	Spinach, Canned	146	0			0.005 - 0.015	NT	-
	Sweet Potatoes	671	38	5.7	0.010 - 0.42	0.005 - 0.024	10	10
	Tomatoes	627	0			0.005 - 0.030	2.0	-
	W Squash, Fresh	399	0			0.005 - 0.024	NT	-
	W Squash, Frozen	177	0			0.005 - 0.024	NT	-
	Total	**5534**	**152**					
76	**Phosphamidon (insecticide)**							
	Apple Juice	683	0			0.002 - 0.092	1	0.5
	Green Beans	707	0			0.002 - 0.092	NT	0.2
	Orange Juice	692	0			0.002 - 0.080	0.75	0.4
	Peaches	756	0			0.002 - 0.080	NT	0.2
	Pears	708	0			0.002 - 0.092	NT	0.5
	Spinach, Fresh	512	0			0.002 - 0.080	NT	0.2
	Spinach, Canned	168	0			0.002 - 0.030	NT	0.2
	Sweet Potatoes	695	0			0.002 - 0.092	NT	0.05
	Tomatoes	722	0			0.002 - 0.092	0.1	0.1

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	W Squash, Fresh	440	0			0.002 - 0.092	NT	-
	W Squash, Frozen	221	0			0.002 - 0.092	NT	-
	Total	**6304**	**0**					
77	**Piperonyl butoxide (synergist)**							
	Apple Juice	105	0			0.040 ^	8	-
	Green Beans	108	0			0.040 ^	8	-
	Orange Juice	108	0			0.040 ^	8	-
	Peaches	115	1	0.9	0.12 ^	0.040 ^	8	-
	Pears	108	0			0.040 ^	8	-
	Spinach, Fresh	81	0			0.040 ^	NT	-
	Spinach, Canned	27	0			0.040 ^	NT	-
	Sweet Potatoes	179	8	4.5	0.067 - 0.18	0.040 ^	0.25	-
	Tomatoes	108	1	0.9	0.067 ^	0.040 ^	8	-
	W Squash, Fresh (V-2)	55	2	3.6	0.067 ^	0.040 ^	NT	-
	W Squash, Frozen	53	0			0.040 ^	NT	-
	Total	**1047**	**12**					
78	**Pirimiphos methyl (insecticide)**							
	Apple Juice	121	0			0.001 - 0.005	NT	2
	Green Beans	112	0			0.001 - 0.005	NT	0.5
	Orange Juice	54	0			0.001 ^	NT	2
	Peaches	54	0			0.001 ^	NT	-
	Pears	124	0			0.001 - 0.005	NT	2
	Spinach, Fresh	27	0			0.001 ^	NT	5
	Spinach, Canned	27	0			0.001 ^	NT	5
	Sweet Potatoes	148	0			0.001 - 0.005	NT	-
	Tomatoes	113	0			0.001 - 0.005	NT	1
	W Squash, Fresh	62	0			0.001 - 0.005	NT	-
	W Squash, Frozen	51	0			0.001 - 0.005	NT	-
	Total	**893**	**0**					
79	**Profenofos (insecticide)**							
	Apple Juice	52	0			0.001 ^	NT	-
	Green Beans	54	0			0.001 ^	NT	-
	Orange Juice	54	0			0.001 ^	NT	-
	Peaches	54	0			0.001 ^	NT	-
	Pears	54	0			0.001 ^	NT	-
	Spinach, Fresh	27	0			0.001 ^	NT	-
	Spinach, Canned	27	0			0.001 ^	NT	-
	Sweet Potatoes	78	0			0.001 ^	NT	-
	Tomatoes	54	0			0.001 ^	NT	-
	W Squash, Fresh	27	0			0.001 ^	NT	-
	W Squash, Frozen	27	0			0.001 ^	NT	-
	Total	**508**	**0**					
80	**Propargite (insecticide)**							
	Apple Juice	683	0			0.008 - 0.045	3	5
	Green Beans	707	1	0.1	0.037 ^	0.008 - 0.045	20	20
	Orange Juice	692	0			0.012 - 0.15	5	5
	Peaches	756	0			0.012 - 0.15	7	7
	Pears	708	8	1.1	0.013 - 0.49	0.008 - 0.045	3	5
	Spinach, Fresh	512	0			0.012 - 0.15	NT	-
	Spinach, Canned	168	0			0.020 - 0.091	NT	-
	Sweet Potatoes	694	0			0.008 - 0.045	NT	-
	Tomatoes	707	0			0.020 - 0.15	NT	2
	W Squash, Fresh	440	0			0.008 - 0.045	NT	-
	W Squash, Frozen	221	0			0.008 - 0.045	NT	-
	Total	**6288**	**9**					

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
81	**Quintozene - PCNB (fungicide)**							
	Apple Juice	676	0			0.003 - 0.006	NT	-
	Green Beans	707	1	0.1	0.005 ^	0.003 - 0.006	0.1	0.01
	Orange Juice	692	0			0.001 - 0.006	NT	-
	Peaches	756	0			0.001 - 0.006	NT	-
	Pears	708	0			0.003 - 0.006	NT	-
	Spinach, Fresh (V-3)	512	3	0.6	0.002 ^	0.001 - 0.006	NT	-
	Spinach, Canned	168	0			0.001 - 0.006	NT	-
	Sweet Potatoes	695	0			0.003 - 0.006	NT	0.1
	Tomatoes	707	0			0.003 - 0.006	0.1	-
	W Squash, Fresh (V-1)	440	1	0.2	0.010 ^	0.003 - 0.006	NT	-
	W Squash, Frozen	221	0			0.003 - 0.006	NT	-
	Total	**6282**	**5**					
	Hexachlorobenzene (HCB)							
	Apple Juice	676	0			0.002 - 0.004	NT	-
	Green Beans	707	0			0.002 - 0.004	0.1	-
	Orange Juice	692	0			0.001 - 0.004	NT	-
	Peaches	756	0			0.001 - 0.004	NT	-
	Pears	708	0			0.002 - 0.004	NT	-
	Spinach, Fresh	512	0			0.001 - 0.004	NT	-
	Spinach, Canned	168	0			0.001 - 0.004	NT	-
	Sweet Potatoes	668	0			0.002 - 0.004	NT	-
	Tomatoes	707	0			0.002 - 0.004	NT	-
	W Squash, Fresh (V-2)	440	2	0.5	0.005 - 0.007	0.002 - 0.004	NT	-
	W Squash, Frozen	221	0			0.002 - 0.004	NT	-
	Total	**6255**	**2**					
	Pentachloroaniline (PCA)							
	Orange Juice	136	0			0.001 ^	NT	-
	Peaches	152	0			0.001 ^	NT	-
	Spinach, Fresh (V-2)	104	2	1.9	0.002 ^	0.001 ^	NT	-
	Spinach, Canned	35	0			0.001 ^	NT	-
	W Squash, Fresh (V-1)	1	1	100	0.005 ^	0.003 ^	NT	-
	Total	**428**	**3**					
	Pentachlorobenzene (PCB)							
	Apple Juice	683	0			0.002 - 0.004	NT	-
	Green Beans	707	0			0.002 - 0.004	0.1	-
	Orange Juice	692	0			0.002 - 0.003	NT	-
	Peaches	756	0			0.002 - 0.003	NT	-
	Pears	708	0			0.002 - 0.004	NT	-
	Spinach, Fresh	512	0			0.002 - 0.003	NT	-
	Spinach, Canned	168	0			0.002 - 0.003	NT	-
	Sweet Potatoes	695	0			0.002 - 0.004	NT	-
	Tomatoes	707	0			0.002 - 0.004	NT	-
	W Squash, Fresh	440	0			0.002 - 0.004	NT	-
	W Squash, Frozen	221	0			0.002 - 0.004	NT	-
	Total	**6289**	**0**					
82	**Simazine (herbicide)**							
	Apple Juice	105	0			0.012 ^	0.25	-
	Green Beans	108	0			0.012 ^	NT	-
	Orange Juice	108	0			0.012 ^	0.25	-
	Peaches	115	0			0.012 ^	0.25	-
	Pears	108	0			0.012 ^	0.25	-
	Spinach, Fresh	81	0			0.012 ^	NT	-
	Spinach, Canned	27	0			0.012 ^	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	Sweet Potatoes	179	0			0.012 ^	NT	-
	Tomatoes	108	0			0.012 ^	NT	-
	W Squash, Fresh	55	0			0.012 ^	NT	-
	W Squash, Frozen	53	0			0.012 ^	NT	-
	Total	**1047**	**0**					
83	**Sulprofos (insecticide)**							
	Apple Juice	105	0			0.003 ^	NT	-
	Green Beans	108	0			0.003 ^	NT	-
	Orange Juice	108	0			0.003 ^	NT	-
	Peaches	115	0			0.003 ^	NT	-
	Pears	108	0			0.003 ^	NT	-
	Spinach, Fresh	81	0			0.003 ^	NT	-
	Spinach, Canned	27	0			0.003 ^	NT	-
	Sweet Potatoes	179	0			0.003 ^	NT	-
	Tomatoes	108	0			0.003 ^	NT	-
	W Squash, Fresh	55	0			0.003 ^	NT	-
	W Squash, Frozen	53	0			0.003 ^	NT	-
	Total	**1047**	**0**					
84	**Tecnazene (fungicide)**							
	Apple Juice	105	0			0.006 ^	NT	-
	Green Beans	108	0			0.006 ^	NT	-
	Orange Juice	108	0			0.006 ^	NT	-
	Peaches	115	0			0.006 ^	NT	-
	Pears	108	0			0.006 ^	NT	-
	Spinach, Fresh	81	0			0.006 ^	NT	-
	Spinach, Canned	27	0			0.006 ^	NT	-
	Sweet Potatoes	179	0			0.006 ^	NT	-
	Tomatoes	108	0			0.006 ^	NT	-
	W Squash, Fresh	55	0			0.006 ^	NT	-
	W Squash, Frozen	53	0			0.006 ^	NT	-
	Total	**1047**	**0**					
85	**Terbufos (insecticide)**							
	Apple Juice	683	0			0.002 - 0.025	NT	-
	Green Beans	707	0			0.002 - 0.025	NT	-
	Orange Juice	692	0			0.002 - 0.025	NT	-
	Peaches	756	0			0.002 - 0.025	NT	-
	Pears	708	0			0.002 - 0.025	NT	-
	Spinach, Fresh	512	0			0.002 - 0.025	NT	-
	Spinach, Canned	168	0			0.002 - 0.025	NT	-
	Sweet Potatoes	695	0			0.002 - 0.025	NT	-
	Tomatoes	707	0			0.002 - 0.025	NT	-
	W Squash, Fresh	440	0			0.002 - 0.025	NT	-
	W Squash, Frozen	221	0			0.002 - 0.025	NT	-
	Total	**6289**	**0**					
	Terbufos sulfone							
	Apple Juice	513	0			0.003 - 0.048	NT	-
	Green Beans	520	0			0.003 - 0.048	NT	-
	Orange Juice	636	0			0.003 - 0.013	NT	-
	Peaches	693	0			0.003 - 0.013	NT	-
	Pears	537	0			0.003 - 0.048	NT	-
	Spinach, Fresh	461	0			0.003 - 0.013	NT	-
	Spinach, Canned	168	0			0.003 - 0.009	NT	-
	Sweet Potatoes	512	0			0.003 - 0.048	NT	-
	Tomatoes	647	0			0.003 - 0.013	NT	-

	Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
	W Squash, Fresh	301	0			0.003 - 0.048	NT	-
	W Squash, Frozen	196	0			0.003 - 0.048	NT	-
	Total	**5184**	**0**					
86	**Tetrachlorvinphos (insecticide)**							
	Apple Juice	303	0			0.003 - 0.016	10	-
	Green Beans	282	0			0.003 - 0.016	NT	-
	Orange Juice	271	0			0.003 - 0.016	NT	-
	Peaches	303	0			0.003 - 0.016	0.1	-
	Pears	313	0			0.003 - 0.016	10	-
	Spinach, Fresh	130	0			0.003 - 0.016	NT	-
	Spinach, Canned	168	0			0.003 - 0.016	NT	-
	Sweet Potatoes	369	0			0.003 - 0.016	NT	-
	Tomatoes	288	0			0.003 - 0.016	5	-
	W Squash, Fresh	182	0			0.003 - 0.016	NT	-
	W Squash, Frozen	117	0			0.003 - 0.016	NT	-
	Total	**2726**	**0**					
87	**Thiabendazole (fungicide)**							
	Apple Juice	677	214	31.6	0.015 - 0.93	0.009 - 0.045	10	10
	Green Beans (V-1)	707	1	0.1	0.015 ^	0.009 - 0.045	NT	-
	Orange Juice	677	44	6.5	0.042 - 0.34	0.025 - 0.076	10	10
	Peaches (V-2)	754	2	0.3	0.042 ^	0.025 - 0.076	NT	-
	Pears	695	467	67.2	0.015 - 4.7	0.009 - 0.045	10	10
	Spinach, Fresh	509	0			0.030 - 0.076	NT	-
	Spinach, Canned	168	0			0.030 - 0.076	NT	-
	Sweet Potatoes (V-2)	695	2	0.3	0.015 - 0.042	0.009 - 0.045	NT	2
	Tomatoes	705	0			0.009 - 0.076	NT	-
	W Squash, Fresh (V-3)	425	3	0.7	0.015 - 0.42	0.009 - 0.045	NT	-
	W Squash, Frozen (V-4)	221	4	1.8	0.015 ^	0.009 - 0.045	NT	-
	Total	**6233**	**737**					
88	**Trifluralin (herbicide)**							
	Apple Juice	683	0			0.008 - 0.030	NT	-
	Green Beans	707	0			0.008 - 0.030	0.05	-
	Orange Juice	692	0			0.002 - 0.030	0.05	-
	Peaches	756	0			0.002 - 0.030	0.05	-
	Pears	708	0			0.008 - 0.030	NT	-
	Spinach, Fresh	512	0			0.002 - 0.030	0.05	-
	Spinach, Canned	168	1	0.6	0.025 ^	0.002 - 0.030	0.05	-
	Sweet Potatoes	695	0			0.008 - 0.030	0.05	-
	Tomatoes	707	0			0.003 - 0.030	0.05	-
	W Squash, Fresh	440	1	0.2	0.013 ^	0.008 - 0.030	0.05	-
	W Squash, Frozen	221	1	0.5	0.013 ^	0.008 - 0.030	0.05	-
	Total	**6289**	**3**					
89	**Vinclozolin (fungicide)**							
	Apple Juice	683	0			0.006 - 0.014	NT	1
	Green Beans	684	123	17.9	0.005 - 0.23	0.003 - 0.014	2.0 TT	2
	Orange Juice	692	0			0.002 - 0.010	NT	-
	Peaches	756	0			0.002 - 0.010	25.0	5
	Pears	708	0			0.006 - 0.014	NT	1
	Spinach, Fresh (V-1)	512	1	0.2	0.014 ^	0.002 - 0.010	NT	-
	Spinach, Canned	168	0			0.002 - 0.010	NT	-
	Sweet Potatoes	695	0			0.006 - 0.014	NT	-
	Tomatoes (V-6)	707	6	0.8	0.010 - 0.25	0.004 - 0.010	NT	3
	W Squash, Fresh	428	0			0.006 - 0.014	NT	-
	W Squash, Frozen	221	0			0.006 - 0.014	NT	-
	Total	**6254**	**130**					

Pesticide	Total Samples Screened	Samples with Detections	% of Samples with Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm

Total No. of Different Residues Detected:	**72**
Total No. of Samples Analyzed:	**6,321**
Total No. of Residues Detected:	**6,902**

Underlined compounds are subject to the full quality assurance program requirements.

^ Only one distinct detected concentration or LOD value was reported for the pair.

(V) Residue was found where no tolerance was established by EPA. Following V are the number of occurrences.

(X) Residue was found which exceeds EPA tolerance or FDA action level. Following X are the number of occurrences.

NT No tolerance level was set for that pesticide / commodity pair.

@ All other residues were detected in combination with acephate, for which a tolerance exists.

Numbers shown are Action Levels established by FDA and Codex Extraneous Maximum Residue Levels (EMRLs) for some pesticides. Under FQPA, responsibility for establishing tolerances in lieu of action levels has been transferred to EPA. In the interim, action levels are used.

TT There is a temporary tolerance for vinclozolin in Green Beans as of July 1997. For PDP purposes the temporary tolerance was applied for the entire year.

a Dimethoate/omethoate part of same tolerance expression.

For those pesticide/commodity pairs where the minimum detected value is less than the limit of quantitation (3 times the limit of detection), the reported values are estimates. In a few cases, this may apply to the maximum detected value.

Appendix F

Distribution of Residues by Pesticide in Wheat
Crop Year 1997

Appendix F shows residue detections for all wheat samples tested for pesticides, minimum and maximum concentrations reported, Limits of Detection (LODs), and whether a tolerance or MRL is established for each pesticide in wheat. All pesticides analyzed in wheat are included in the QA program. *Residue detections are highlighted in italics.*

In 1997, the Pesticide Data Program analyzed 623 domestic wheat samples. A total of 500 samples (80%) were reported with residue detections. There were 23 samples, all primiphos methyl, reported as presumptive tolerance violations. *(See Appendix L for additional information concerning presumptive tolerance violations.)*

APPENDIX F. DISTRIBUTION OF RESIDUES BY PESTICIDE IN WHEAT

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Aldicarb	623				0.005	NT	--
Aldicarb sulfone	623				0.005	NT	--
Atrazine	*623*	*10*	*1.6*	*0.003 - 0.031*	*0.002*	*0.25*	--
Azinphos methyl	618				0.013	0.2	0.2
Carbaryl	*623*	*2*	*0.3*	*0.005^*	*0.005*	*3*	*5*
Carbofuran	*623*	*6*	*0.9*	*0.008 - 0.022*	*0.005*	*0.1*	*0.1*
3-Hydroxycarbofuran	623				0.005	0.1	0.1
Chlorpyrifos	*623*	*40*	*6.4*	*0.010 - 0.040*	*0.006*	*0.5*	--
Chlorpyrifos methyl	*622*	*346*	*55.6*	*0.002 - 1.8*	*0.001*	*6.0*	*10*
Demeton S	623				0.006	NT	--
Diazinon	*623*	*5*	*0.8*	*0.013^*	*0.008*	*0.05*	--
Dichlorvos (DDVP)	612				0.003	0.5	2
Diclofop methyl (herbicide)	623				0.006	0.1	--
Dimethoate	623				0.009	0.04	--
Omethoate	603				0.011	0.04	--
Disulfoton	623				0.003	0.3	0.2
Disulfoton sulfone	623				0.015	0.3	0.2
Endosulfans						0.1	--
Endosulfan I	623				0.008	0.1	--
Endosulfan II	623				0.010	0.1	--
Endosulfan sulfate	623				0.003	0.1	--
Fenitrothion	618				0.003	NT	5
Fenitrothion oxygen analog	558				0.006	NT	--
Imazalil	*543*	*8*	*1.5*	*0.010 - 0.024*	*0.006*	*0.05*	*0.01*
Linuron	603				0.010	0.25	--
Malathion	*623*	*425*	*68.2*	*0.005 - 7.6*	*0.003*	*8*	*8*
Methiocarb	623				0.015	NT	0.05
Methomyl	623				0.005	1	--
Methoxychlor	*617*	*32*	*5.2*	*0.012 - 0.73*	*0.007*	*2*	--
Oxamyl	623				0.005	NT	--
Parathion	623				0.013	1	--

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Parathion methyl	*623*	*1*	*0.2*	*0.031^*	*0.006*	*1*	--
Phorate	623				0.003	0.05	0.05
Phorate sulfone	*564*	*1*	*0.2*	*0.008^*	*0.005*	*0.05*	*0.05*
Pirimiphos methyl (V-23)	*623*	*23*	*3.7*	*0.003^*	*0.002*	*NT*	*10*
Thiabendazole	*291*	*2*	*0.7*	*0.012 - 0.027*	*0.007*	*1.0*	*0.2*
Triallate (herbicide)	623				0.010	0.05	--
Trifluralin	623				0.007	0.05	--

^ - Only one distinct detected concentration or LOD value was reported for the pair.
NT - No tolerance level was set for that pesticide / commodity pair.
V - Residue was found where no tolerance was established by EPA. Following "V" are the number of occurences.

Appendix G

Distribution of Residues by Pesticide in Soybeans
Crop Year 1996

Appendix G shows residue detections for all soybean samples tested for pesticides, minimum and maximum concentrations reported, Limits of Detection (LODs), and whether a tolerance or MRL is established for each pesticide in soybeans. All pesticides analyzed in soybeans are included in the QA program. *Residue detections are highlighted in italics.*

In 1997, the Pesticide Data Program analyzed 159 domestic soybean samples. A total of 138 samples (87%) were reported with residue detections. No samples were reported as presumptive tolerance violations.

APPENDIX G. DISTRIBUTION OF RESIDUES BY PESTICIDE IN SOYBEANS

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Alachlor (herbicide)	159				0.002	0.2	--
Aldicarb	159				0.005	0.02	0.02
Aldicarb sulfone	159				0.007	0.02	0.02
Azinphos methyl	159				0.005	0.2	0.05
BHCs							
BHC alpha	159				0.004	NT #	--
BHC beta	159				0.004	NT #	--
BHC delta	159				0.002	NT #	--
Carbaryl	159				0.003	5	1
Carbofuran	159				0.006	0.2	0.2
3-Hydroxycarbofuran	159				0.007	0.2	0.2
Chlorpyrifos	*157*	*126*	*80.3*	*0.003 - 0.20*	*0.002*	*0.3*	--
DDT	159				0.003	0.2 #	--
DDD (TDE)	*159*	*1*	*0.6*	*0.008^*	*0.001*	*0.2 #*	--
Diazinon	159				0.002	0.1	--
Diclofop methyl (herbicide)	159				0.005	0.1	--
Dieldrin	*159*	*6*	*3.8*	*0.003^*	*0.002*	*0.05 #*	--
Dimethoate	159				0.005	0.05	--
Disulfoton	158				0.003	0.1	--
Endrin (insecticide)	159				0.008	NT	--
Fenamiphos	159				0.002	0.05	0.05
Fenvalerate/Esfenvalerate	159				0.012	0.05	0.1
Fluazifop butyl (herbicide)	159				0.002	1	--
Linuron	159				0.010	1	--
Malathion	*159*	*53*	*33.3*	*0.003 - 0.33*	*0.002*	*8*	--
Methiocarb	159				0.017	NT	--
Methomyl	159				0.006	0.2	0.2
Metolachlor (herbicide)	*159*	*5*	*3.1*	*0.002 - 0.007*	*0.001*	*0.2*	--
Metribuzin (herbicide)	159				0.003	0.1	--
Oxamyl	159				0.006	0.2	0.1

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Parathion	159				0.011	0.1	--
Parathion methyl	159				0.004	0.1	--
Pendimethalin (herbicide)	159				0.005	0.1	--
Permethrins	136				0.004	0.05	0.05
Phorate	156				0.002	0.1	0.05
Thiabendazole	*136*	*2*	*1.5*	*0.012^*	*0.007*	*0.1*	--

^ - Only one distinct detected concentration or LOD value was reported for the pair.

- Numbers shown are Action Levels established by FDA. Under FQPA, responsibility for establishing tolerances in lieu of action levels has been transferred to EPA. In the interim, action levels are used.

NT - No tolerance level was set for that pesticide / commodity pair.

Appendix H

Distribution of Residues by Pesticide in Milk

Appendix H shows residue detections for all milk samples tested for pesticides, minimum and maximum concentrations reported, Limits of Detection (LODs), and whether a tolerance is established for each pesticide in milk. *Residue detections are highlighted in italics.*

In 1997, the Pesticide Data Program analyzed 732 domestic milk samples. A total of 111 samples (15%) were reported with residue detections. Six samples were reported as presumptive tolerance violations. *(See Appendix L for additional information concerning presumptive tolerance violations.)*

Milk is a uniquely marketed commodity in that most fluid milk is consumed in the State where it is produced. This was evident in the milk samples collected by the 10 participating States in 1997, where 721 of the 732 samples collected were marketed in the 10 participating States, and only 3 samples originated from non-participating PDP States.

Implementation of new methodology, developed by the California Department of Food and Agriculture to determine pesticide residues in whole milk, allowed detection of the DDE metabolite of DDT at 0.001 ppm, the lowest reportable level in the PDP system. Of the 103 milk samples with detectable DDE residues, 0.002-0.018 ppm (at or just above quantifiable limits), 80 originated in California, 18 in Texas, 2 in Colorado, 2 in New York, and 1 in Maryland.

Notice: 246 records for the compound MCPA were removed from the PDP database in February 2001 because they were submitted in error by one of the three reporting laboratories and were not identified during the data review process. MCPA was not validated by the laboratory in question, therefore the results should not have been reported.

APPENDIX H. DISTRIBUTION OF RESIDUES BY PESTICIDE IN MILK

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
2,4-DB (herbicide)	272				0.005^	NT	--
2,4-D (herbicide)	727				0.005 - 0.010	0.1 (W)	0.05
Abamectin (insecticide)	424				0.001^	0.005 T	--
Acephate	727				0.001 - 0.002	0.1 (W)	0.1
Aldicarb	727				0.003 - 0.005	0.002 (W)	0.01
Aldicarb sulfoxide	727				0.004 - 0.012	0.002 (W)	0.01
Aldicarb sulfone	727				0.004 - 0.009	0.002 (W)	0.01
Atrazine	727				0.001 - 0.012	0.02 (W)	--
Azinphos methyl	727				0.003 - 0.007	0.04 (W)	--
BHCs							
BHC alpha	727				0.001^	0.3 (F)#	--
BHC beta	727				0.001^	0.3 (F)#	--
BHC delta	727				0.001^	0.3 (F)#	--
Benomyl (Carbendazim (MBC))	424				0.002^	0.1 (W)	0.1
Captan	272				0.003^	NT	--
Carbaryl	727				0.002 - 0.003	0.3 (W)	0.1
Carbofuran	727				0.004^	0.02 T	0.05
3-Hydroxycarbofuran	727				0.004^	0.02 T	0.05
Carbophenothion	727				0.001 - 0.002	NT	--
Chlordanes	727				0.001 - 0.002	NT	0.002#
Oxychlordane	665				0.001 - 0.002	NT	0.002#
Chlorfenvinphos alpha	518				0.001 - 0.002	NT	0.008
Chlorfenvinphos beta	481				0.001^	NT	0.008
Chlorothalonil	272				0.003^	NT	--
Chlorpropham	727				0.001 - 0.005	0.05 *	--
Chlorpyrifos	727				0.001 - 0.002	0.25 (F) 0.01 (W)	0.01
Chlorpyrifos methyl	727				0.001 - 0.002	1.25 (F) 0.05 (W)	0.01
Coumaphos	249				0.002 - 0.054	0.5 (F) N(W)	--
Coumaphos oxygen analog	134				0.003^	0.5 (F) N(W)	--
Cyfluthrin	272				0.020^	15.0 (F) 0.5 (W)	0.01
Cypermethrin	272				0.010^	0.05 *	0.05
Dalapon (herbicide, growth regulator)	272				0.010^	0.1 (W)	--

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
DCPA	272				0.001^	NT	--
DDT	727				0.001 - 0.006	1.25 (F)# N(W)	0.05#
DDD (TDE)	727				0.001 - 0.006	1.25 (F)# N(W)	0.05#
DDE	*727*	*103*	*14.2*	*0.002 - 0.018*	*0.001 - 0.003*	1.25 (F)# N(W)	0.05#
DEF	249				0.001 - 0.007	0.002 (W)	--
Demeton-S sulfone	272				0.001^	NT	--
Diazinon	518				0.001 - 0.002	NT	0.02
Dicamba (herbicide)	727				0.004 - 0.008	0.3 (W)	--
Dichlorvos (DDVP)	727				0.001 - 0.002	*0.02 (W)*	*0.02*
Dicloran	272				0.003^	*NT*	--
Dicofol	272				0.002 - 0.003	*NT*	--
Dieldrin	727				0.001 - 0.003	0.3 (F)#	0.006#
Dimethoate	727				0.001^	0.002 (W)	--
Omethoate	727				0.001 - 0.002	0.002 (W)	--
Diphenylamine (DPA) (V-1)	*665*	*1*	*0.2*	*0.010^*	*0.006 - 0.020*	*0 (W)*	--
4-Hydroxydiphenylamine	138				0.006^		
Disulfoton	665				0.001^	NT	--
Disulfoton sulfone	665				0.001 - 0.002	NT	--
Diuron	272				0.012^	NT	--
Endosulfans							
Endosulfan I	727				0.001^	*0.5 (F) N(W)*	*0.004*
Endosulfan II	727				0.001 - 0.002	0.5 (F) N(W)	0.004
Endosulfan sulfate	727				0.001^	0.5 (F) N(W)	0.004
Ethalfluralin	727				0.007 - 0.020	0.5 (W)	--
Ethion	727				0.001^	0.5 (F) N(W)	0.02
Fenamiphos	727				0.001 - 0.002	0.01 (W)	--
Fenamiphos sulfoxide	497				0.002 - 0.005	0.01 (W)	--
Fenamiphos sulfone	727				0.002 - 0.005	0.01 (W)	--
Fenitrothion	249				0.001 - 0.002	NT	0.002
Fenitrothion o-analog	249				0.001 - 0.002	NT	0.002
Fenitrothion metabolite	133				0.008^	NT	0.002
Fenthion	727				0.001^	0.01 (W)	0.05
Fenvalerate	727				0.012 - 0.021	7.0 (F) 0.3 (W)	0.1
Esfenvalerate	727				0.008 - 0.013	7.0 (F) 0.3 (W)	0.1

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Heptachlor	727				0.001^	0.01 (F)#	0.006#
Heptachlor epoxide	727				0.001^	0.01 (F)#	0.006#
Imazalil	272				0.004^	0.01 (W)	--
Iprodione	727				0.004 - 0.006	0.5 (W)	--
Ivermectin (anthelmintic)	*424*	*1*	*0.2*	*0.002^*	*0.001^*	*NA*	*NA*
Lindane (BHC gamma)	727				0.001 - 0.006	0.3 (F)	0.01
Linuron	272				0.001^	NT	--
Malathion	727				0.001 - 0.002	0.5 (F)	--
Malathion oxygen analog	61				0.005^	0.5 (F)	--
MCPA (herbicide)	481*				0.008^	0.01 (W)	--
	* Originally reported 727 samples screened for MCPA. See Notice at end of Appendix.						
Methamidophos	272				0.001^	NT	0.01
Methidathion	727				0.001 - 0.002	0.03 (W)	0.001
Methiocarb	455				0.004 - 0.005	NT	0.05
Methomyl	727				0.003 - 0.006	NT	0.02
Methoxychlor	518				0.002 - 0.003	1.25 (F)	--
Mevinphos E/Z	272				0.001^	NT	--
Myclobutanil	272				0.006^	0.2 (W)	0.01
Oxamyl	481				0.004 - 0.006	NT	--
Oxydemeton methyl sulfone	272				0.001^	0.01 (W)	--
Oxyfluorfen	727				0.003 - 0.006	0.05 (W)	--
Parathion	518				0.001 - 0.002	NT	--
Parathion methyl	518				0.001^	NT	--
Permethrins	727				0.003 - 0.032	6.25 (F) 0.25 (W)	0.1
o-Phenylphenol (V-5)	*273*	*5*	*1.8*	*0.010 - 0.017*	*0.006 - 0.010*	*NT*	--
Phorate	727				0.001 - 0.020	0.02 (W)	0.05
Phorate sulfoxide	518				0.002 - 0.076	0.02 (W)	0.05
Phorate sulfone	518				0.001 - 0.002	0.02 (W)	0.05
Phorate oxygen analog	272				0.001^	0.02 (W)	0.05
Phorate oxygen analog sulfone	272				0.001^	0.02 (W)	0.05
Phosalone	272				0.003^	NT	--
Phosmet	272				0.003^	NT	0.02
Phosphamidon	272				0.001^	NT	--
Picloram (herbicide)	272				0.008^	0.05 (W)	--
Pirimiphos methyl	249				0.001 - 0.003	3.0 (F) 0.1 (W)	0.05
Pirimiphos methyl degradate	134				0.008^	3.0 (F) 0.1 (W)	--
Profenofos	249				0.001 - 0.004	0.01 (W)	0.01

Pesticide	Total Samples Screened	Samples with Detections	% of Samples w/ Detections	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm	Codex MRLs, ppm
Propargite	563				0.018 - 0.075	2.0 (F) 0.08 (W)	0.1
Quintozene (PCNB)	727				0.001^	NT	--
Hexachlorobenzene	272				0.001^	NT	--
Pentachlorobenzene	272				0.001^	NT	--
Pentachlorophenol	272				0.005^	NT	--
Simazine	727				0.001 - 0.005	0.02 (W)	--
Sulprofos	727				0.001 - 0.004	0.01 (W)	--
Tecnazene	272				0.003^	NT	--
Terbufos	272				0.001^	NT	0.01
Terbufos sulfone	272				0.001^	NT	0.01
Tetrachlorvinphos	727				0.001 - 0.005	0.5 (F) N(W)	--
Thiabendazole	*543*	*2*	*0.4*	*0.050^*	*0.010 - 0.030*	*0.4 (W)*	*0.01*
5-Hydroxythiabendazole sulfate	424				0.15^	0.4 (W)	0.01
Triclopyr (herbicide)	272				0.008^	0.1 (W)	--
Trifluralin	272				0.006^	NT	--
Vinclozolin	272				0.003^	NT	0.05

Underlined compounds are subject to the full quality assurance program requirements.
(F) - Tolerance on Fat Basis
(W) - Tolerance for whole milk
(V) - Residue was found where no tolerance was established by EPA. Following "V" are the number of occurences.
- Numbers shown are Action Levels (AL) established by FDA and Codex Extraneous Maximum Residue Levels (EMRLs). Under FQPA, responsibility for establishing tolerances in lieu of action levels has been transferred to EPA. In the interim, action levels are used.
NT - No tolerance level set for that pesticide / commodity pair.
T - Temporary tolerance
N - Negligible
NA - Not applicable
^ - Only one distinct detected concentration or LOD value was reported for the pair.
* - Interim tolerance

Where the minimum detected value is less than the limit of quantitation (3 times the limit of detection), the reported values are estimates. In a few cases, this may apply to the maximum detected value.

Notice: 246 records for the compound MCPA were removed from the PDP database in February 2001 because they were submitted in error by one of the the three reporting laboratories and were not identified during the data review process. MCPA was not validated by the laboratory in question, therefore the results should not have been reported.

Appendix I

National Estimates for Concentration Percentiles vs. Tolerance

(Pairs With Residue Detections in at Least 10 Percent of Samples)

Appendix I shows 36 pesticide or metabolite/commodity pairs with detections in at least 10 percent of the samples tested. Concentrations detected are arranged in percentiles. The 90th percentile is compared to the tolerance established for each pesticide/commodity pair.

The meaning of a percentile can be most easily explained through an example. For the azinphos methyl/pears pair, the 50th percentile, or median, is estimated to be 0.027 ppm. This means that PDP estimates that at least 50 percent of pears available to U.S. consumers had azinphos methyl residues of 0.027 ppm or less, while at least 50 percent had residues of 0.027 ppm or more. Similarly, the 75th percentile (or the upper quartile) for this pair is estimated to be 0.072 ppm, which means that at least 75 percent of pears had residues of 0.072 ppm or less, while at least 25 percent had residues of 0.072 ppm or more. Finally, the 90th percentile (or the last decile) is estimated to be 0.13 ppm, meaning that at least 90 percent of all pears had azinphos methyl residues of 0.13 ppm or less, while at least 10 percent had residues of 0.13 ppm or more.

Percent detections and percentiles for fresh pears, tomatoes, and sweet potatoes were weighted to reflect 1996 monthly AMS marketing data (1997 data not available). There were no marketing data for winter squash. Spinach was not weighted since sampling ended September 30.

For the two processed commodities--apple juice and green beans--the percentile concentrations were weighted to reflect marketplace availability (utilization) versus samples collected monthly.

Commodity	Collected	Utilization
AJ (Liquid:Frozen)	2:1	4:1
GB (Canned:Frozen)	10:9	2:1

APPENDIX I. NATIONAL ESTIMATES FOR CONCENTRATION PERCENTILES vs. TOLERANCE
(Pairs With Residue Detections in at Least 10 Percent of Samples)

	Commodity / Pesticide	% of Samples with Detections	Mean** Lower	Mean** Upper	Percentiles 50th	Percentiles 75th	Percentiles 90th	Ratio of 90th Percentile to Tolerance
1	**Apple Juice (W)**							
	Carbaryl	24.9	0.005	0.015	*	*	0.019	0.002
	Dimethoate	24.7	0.002	0.006	*	*	0.010	0.005
	Thiabendazole	31.5	0.064	0.085	*	0.063	0.280	0.028
2	**Green Beans (C&F) (W)**							
	1 Naphthol [(1)]	16.0	0.025	0.053	*	*	0.086	--
	Acephate	46.0	0.027	0.029	*	0.025	0.068	0.023
	Carbaryl	7.9	0.005	0.016	*	*	*	*
	Methamidophos [(2)]	45.8	0.011	0.013	*	0.016	0.031	--
	Vinclozolin	12.7	0.004	0.013	*	*	0.012	***
3	**Milk**							
	DDE	14.2	0.001	0.002	*	*	0.002	0.002
4	**Peaches (Canned)**							
	Carbaryl	10.8	0.009	0.020	*	*	0.012	0.001
5	**Pears (W)**							
	Azinphos methyl	67.6	0.059	0.064	0.027	0.072	0.130	0.065
	Diphenylamine (DPA)	24.0	0.022	0.031	*	*	0.038	NT
	o-Phenylphenol	27.9	0.018	0.029	*	*	0.044	0.004
	Phosmet	17.4	0.403	0.412	0.220	0.530	0.960	0.096
	Thiabendazole	72.0	0.227	0.234	*	*	0.071	0.003
6	**Soybean Grain**							
	Chlorpyrifos	80.3	0.012	0.012	0.006	0.013	0.027	0.090
	Malathion	33.3	0.005	0.006	*	0.003	0.007	0.001
7	**Spinach (Canned)**							
	DDE	25.0	0.003	0.008	*	0.002	0.012	0.024
	Permethrins	83.9	0.999	1.004	0.600	1.535	2.700	0.135
8	**Spinach (Fresh)**							
	DDE	41.4	0.007	0.010	*	0.012	0.023	0.046
	Omethoate	12.7	0.013	0.022	*	*	0.023	0.012
	Permethrins	52.9	0.834	0.843	0.032	1.060	2.900	0.145
9	**Sweet Potatoes (W)**							
	Chlorpyrifos	10.5	0.001	0.007	*	*	0.004	0.070
	Dicloran	56.3	0.160	0.163	0.055	0.250	0.450	0.059
10	**Tomatoes (W)**							
	Chlorpyrifos	13.1	0.005	0.010	*	*	0.011	0.021
	Endosulfan I	17.0	0.002	0.006	*	*	0.007	0.004
	Endosulfan II	21.7	0.003	0.007	*	*	0.013	0.007
	Endosulfan sulfate	19.4	0.003	0.008	*	*	0.011	0.006
	Methamidophos	30.9	0.013	0.016	*	0.007	0.038	0.038
	Permethrins	11.6	0.009	0.035	*	*	0.023	0.012

Commodity / Pesticide	% of Samples with Detections	Mean**		Percentiles			Ratio of 90th Percentile to Tolerance
		Lower	Upper	50th	75th	90th	
11 Wheat Grain							
Chlorpyrifos methyl	55.6	0.059	0.060	0.003	0.034	0.181	0.030
Malathion	68.2	0.146	0.147	0.008	0.038	0.266	0.033
12 Winter Squash (Fresh)							
Dieldrin	24.7	0.008	0.010	*	*	0.030	0.300
Endosulfan sulfate	25.2	0.005	0.010	*	0.004	0.019	0.009
13 Winter Squash (Frozen)							
Dieldrin	73.6	0.021	0.021	0.015	0.033	0.047	0.470
Heptachlor epoxide	29.1	0.002	0.003	*	0.004	0.008	0.750

* The percentile value is estimated to be below the Limit of Detection (LOD).

** The mean is estimated with a range of values. The lower bound is calculated with non-detections valued at zero. The upper bound is calculated using the LOD.

*** FIFRA Section 18 exemption expired September 30, 1995, reestablished July 10, 1997.

(W) - Weighted for utilization. The Percent of Samples with Detections was recalculated to reflect national estimates.

(C&F) - Canned & Frozen Samples

NT - No Tolerance

(1) - Metabolite of carbaryl

(2) - See acephate tolerance

Appendix J

Cumulative Distributions of Residues for Selected Pesticide/Commodity Pairs

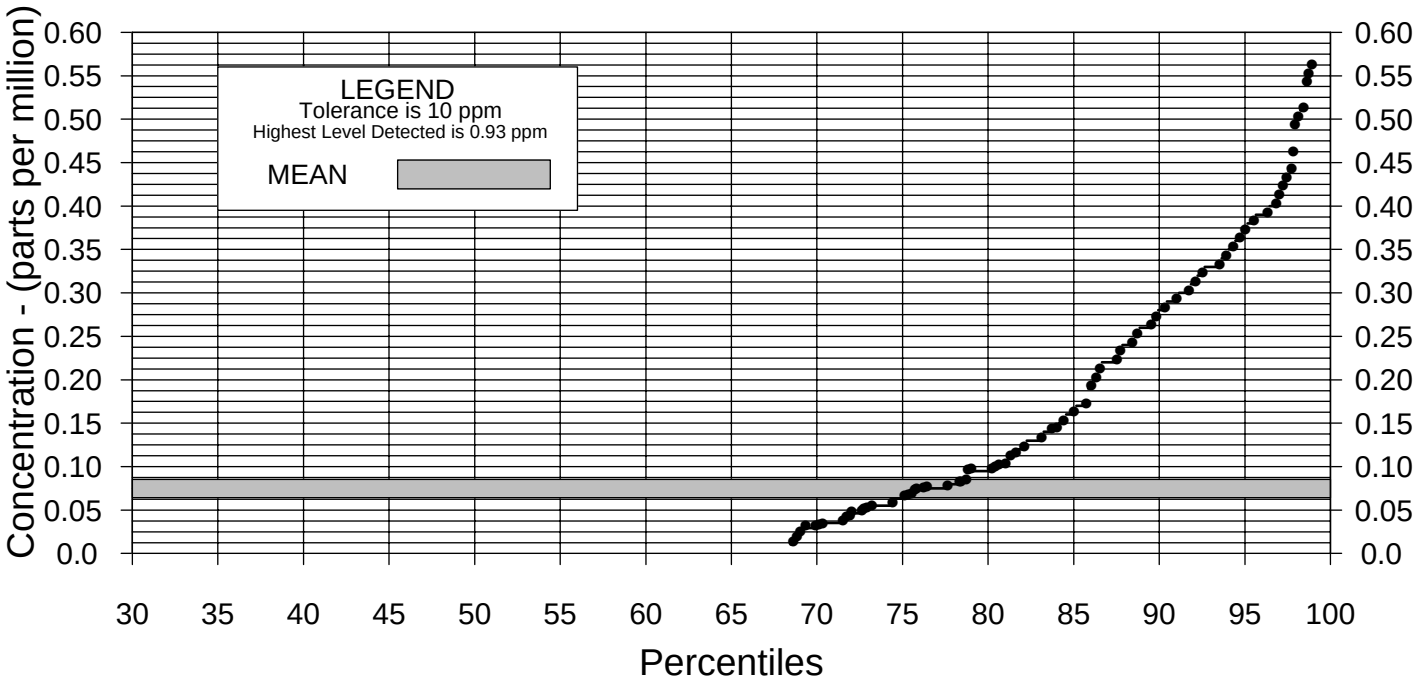
In Appendix J, the concentrations detected (in parts per million, except where otherwise noted) are plotted versus the calculated percentiles for the following eight pesticide/commodity pairs:

Thiabendazole/Apple Juice
Azinphos methyl/Pears
Chlorpyrifos/Soybeans
Permethrins/Spinach (Fresh)
Permethrins/Spinach (Canned)
Methamidophos/Tomatoes
Malathion/Wheat
Endosulfan sulfate/Winter Squash (Fresh)

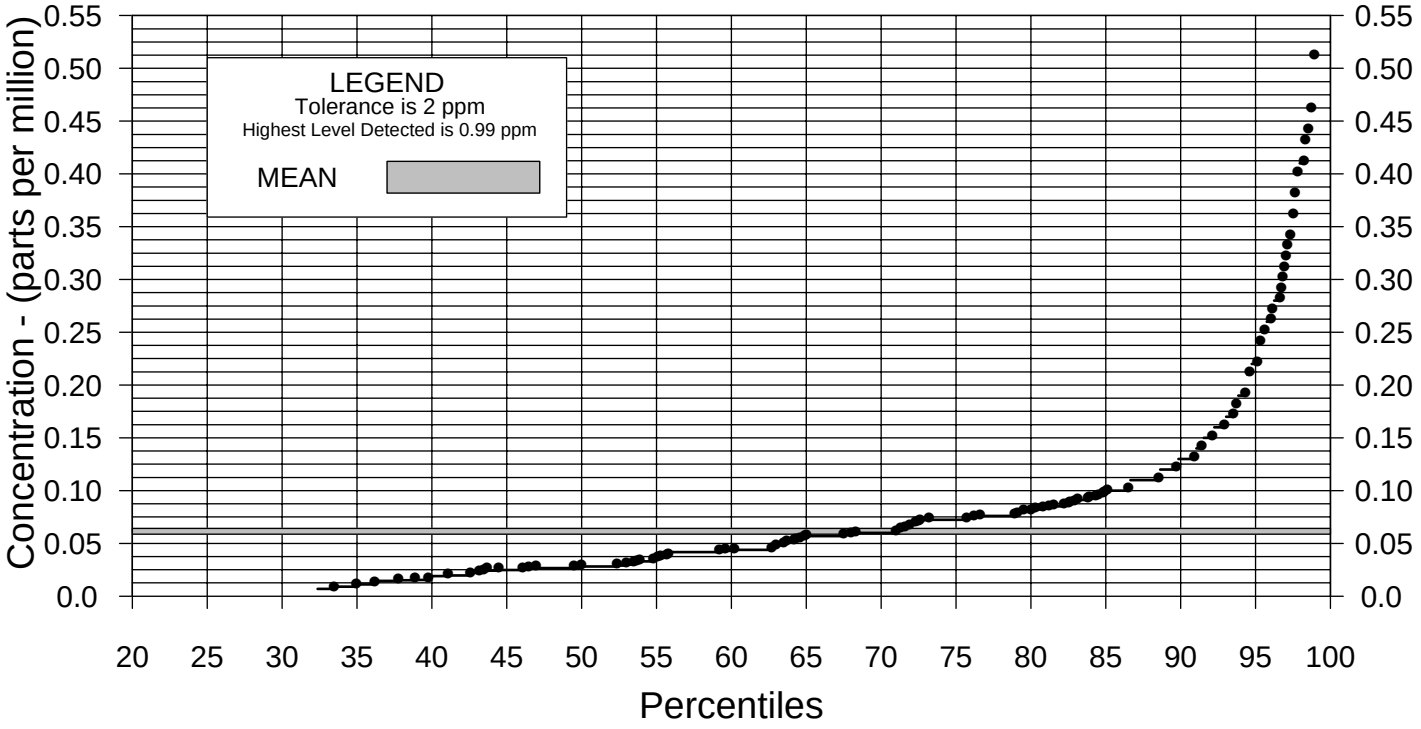
The distribution of residues for all of the PDP pesticide/commodity pairs has the same curved shape. The highest percentile graphed in the appendix is the 99th, which in each case is lower than the highest concentration detected in the sample (refer to the value shown in each graph's legend). Inclusion of the highest concentration would cause graph distortion, which would obscure concentrations in the low ranges. The tolerance for the pesticide/commodity pair is also indicated in the legend of each graph. The large dots show the percentage of the commodity at or below a given level of residue concentration. For example, an estimated 50th percent of pears available to U.S. consumers in 1997 had azinphos methyl residue concentrations of 0.027 ppm or less. The solid lines, tailing the large dots, depict percentage values. The lowest value of these solid lines indicates the estimated percentage of the commodity available to U.S. consumers with no detectable residues. For azinphos methyl in pears, this is 33 percent. The shaded bar denotes the range of values estimated for the mean. For azinphos methyl/pears the mean range is approximately 0.059-0.064 ppm, corresponding to the 65th percentile.

APPENDIX J. CUMULATIVE DISTRIBUTION OF RESIDUES FOR SELECTED PESTICIDE/COMMODITY PAIRS

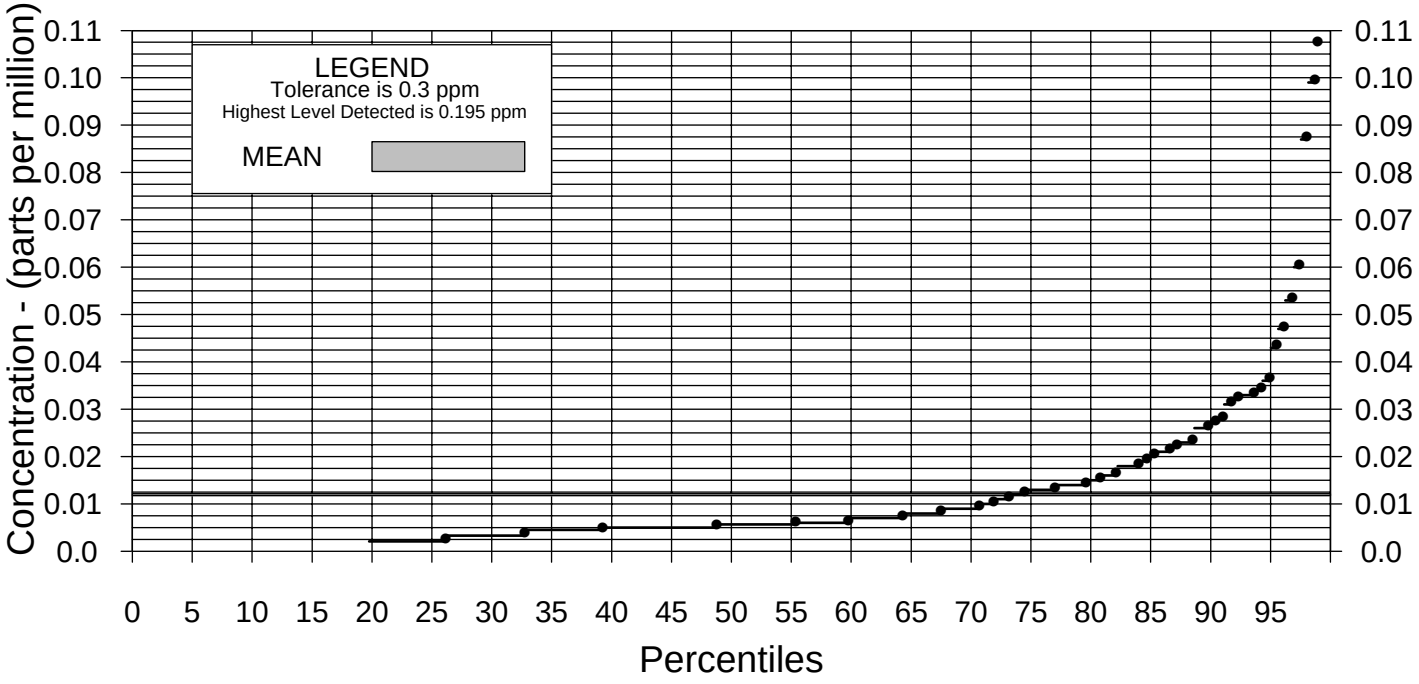
Thiabendazole / Apple Juice



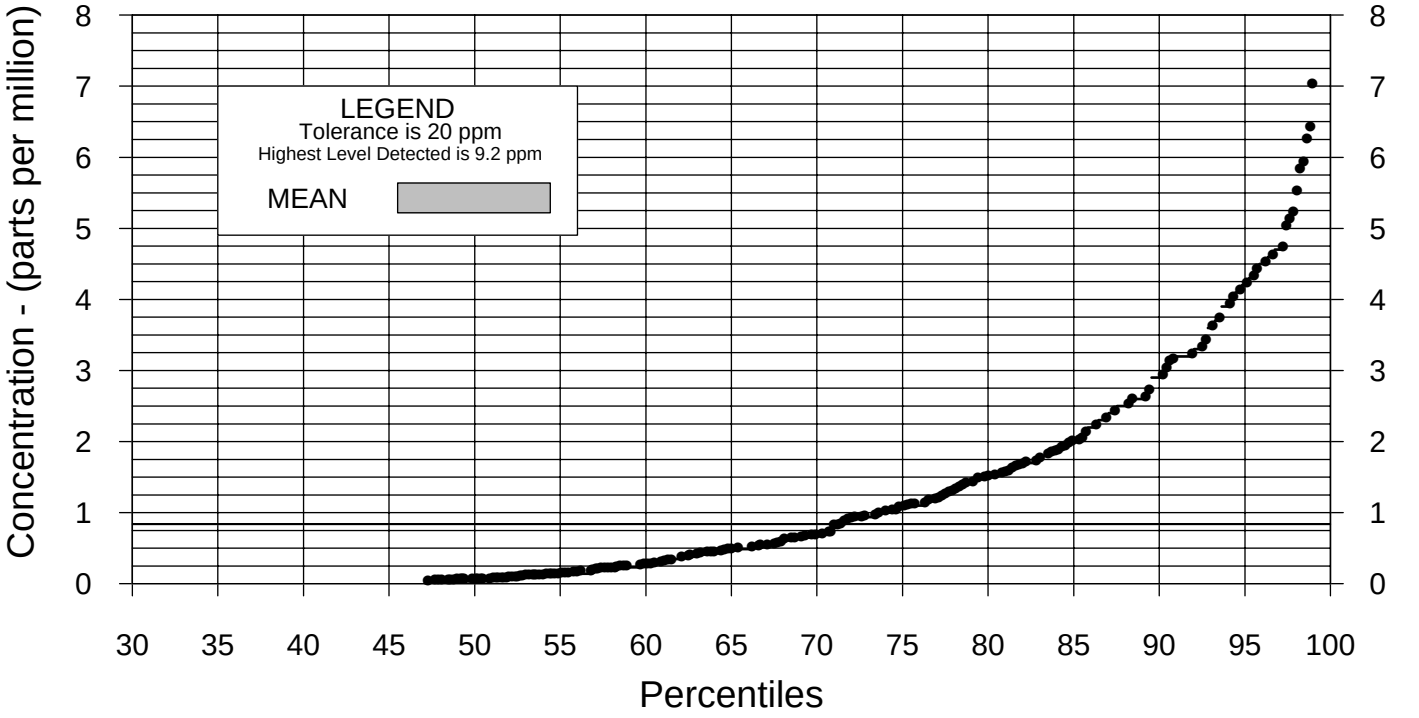
Azinphos methyl / Pears



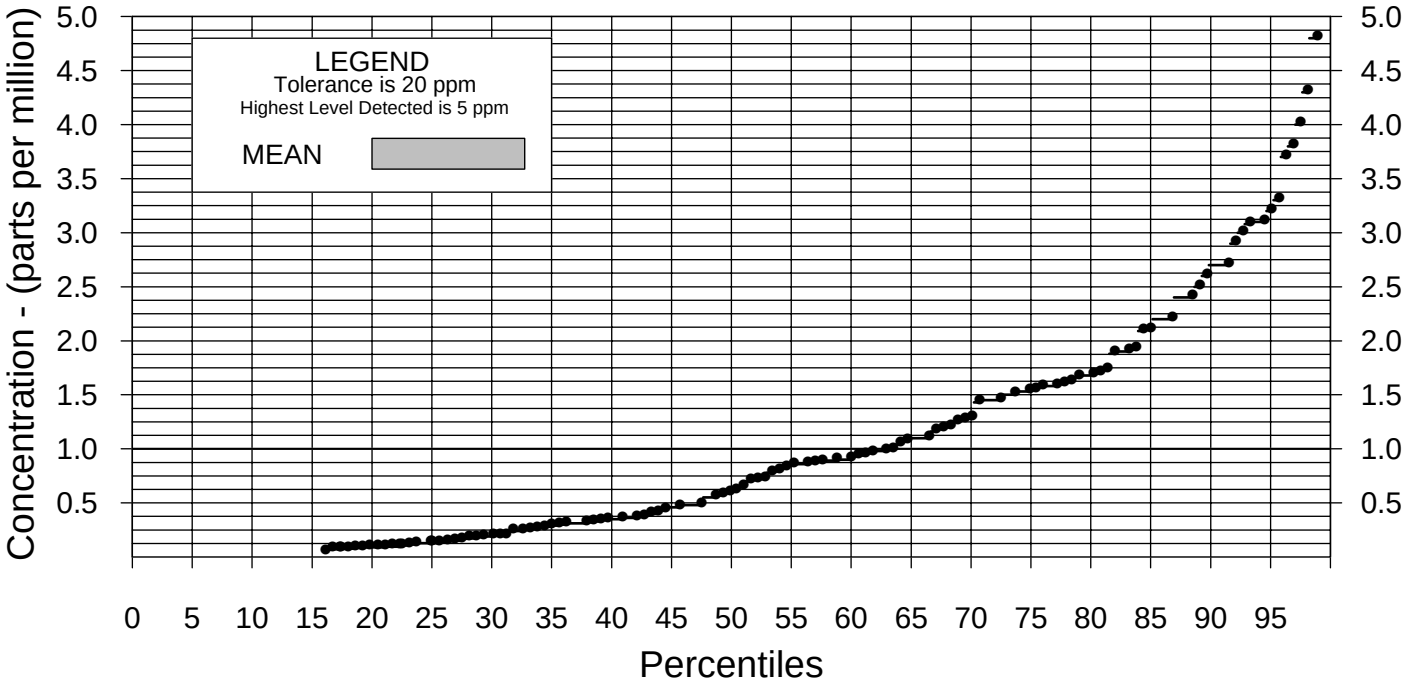
Chlorpyrifos / Soybeans



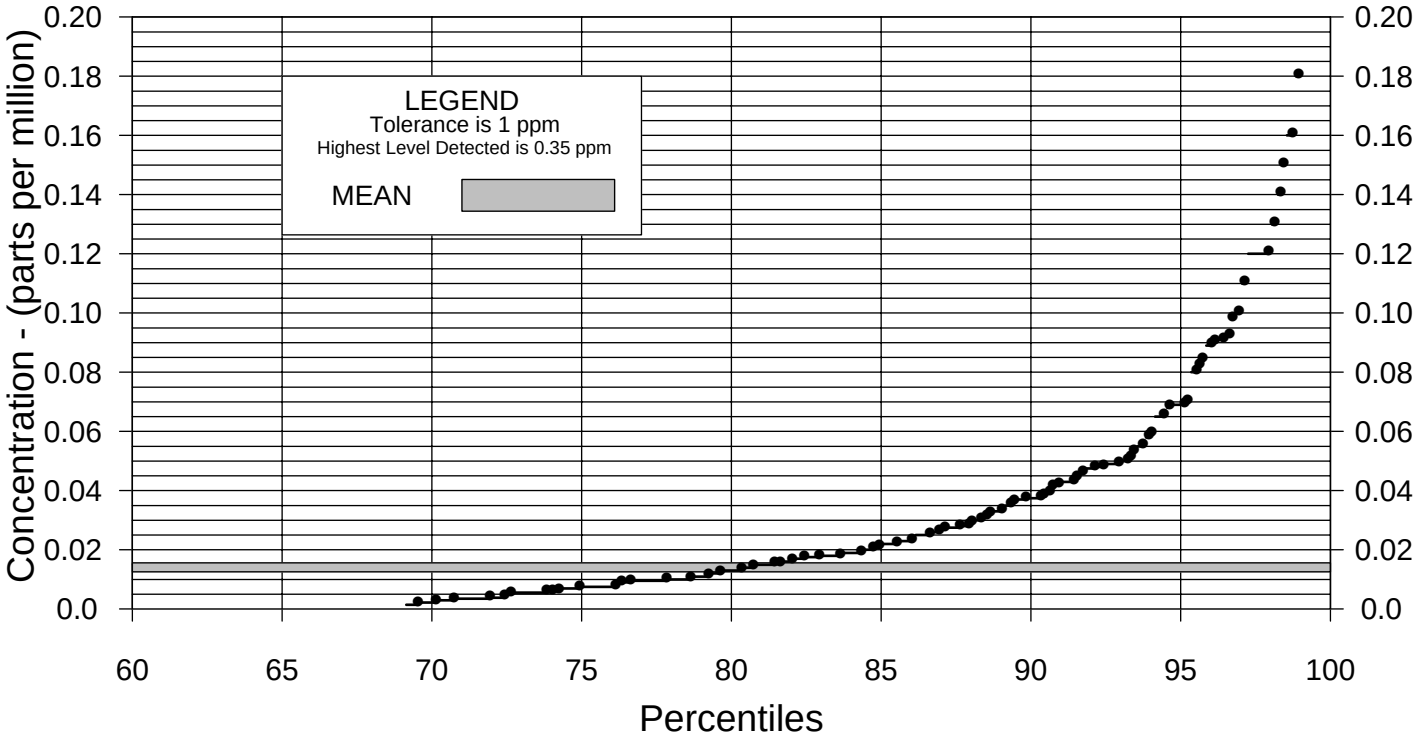
Permethrins / Spinach (Fresh)



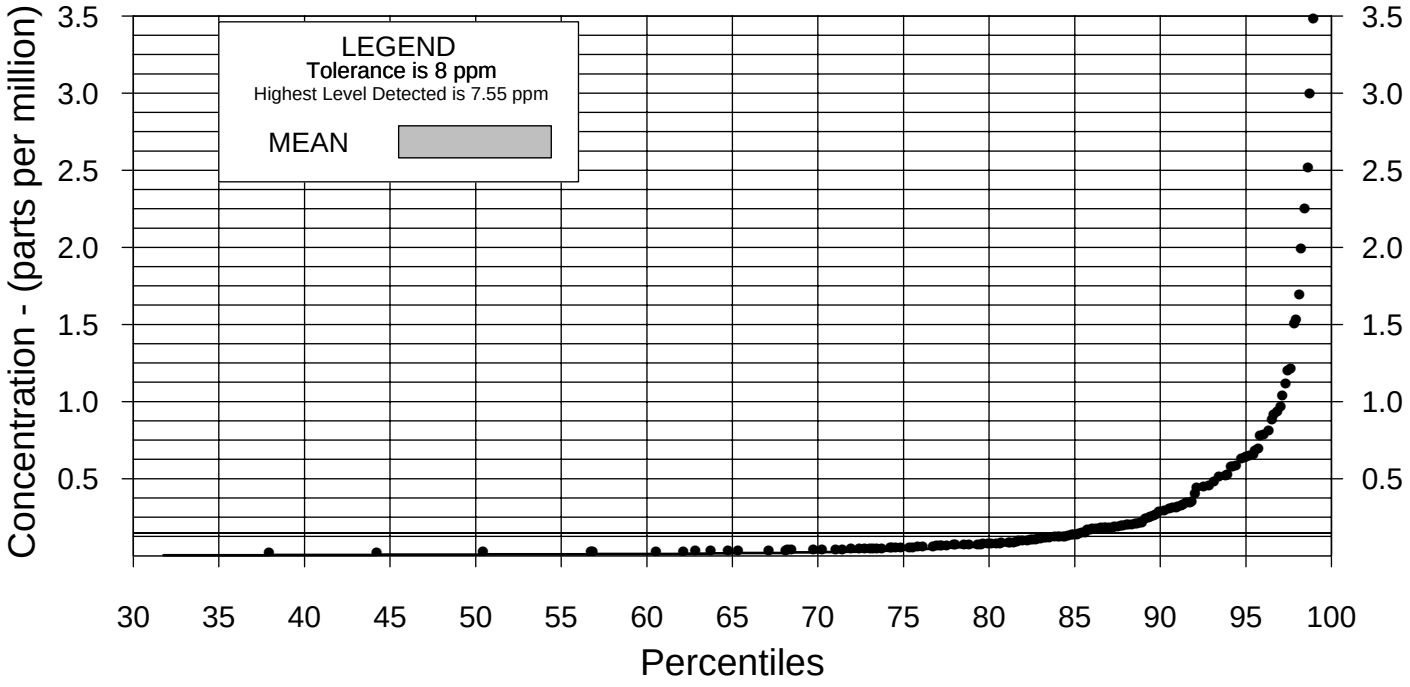
Permethrins / Spinach (Canned)



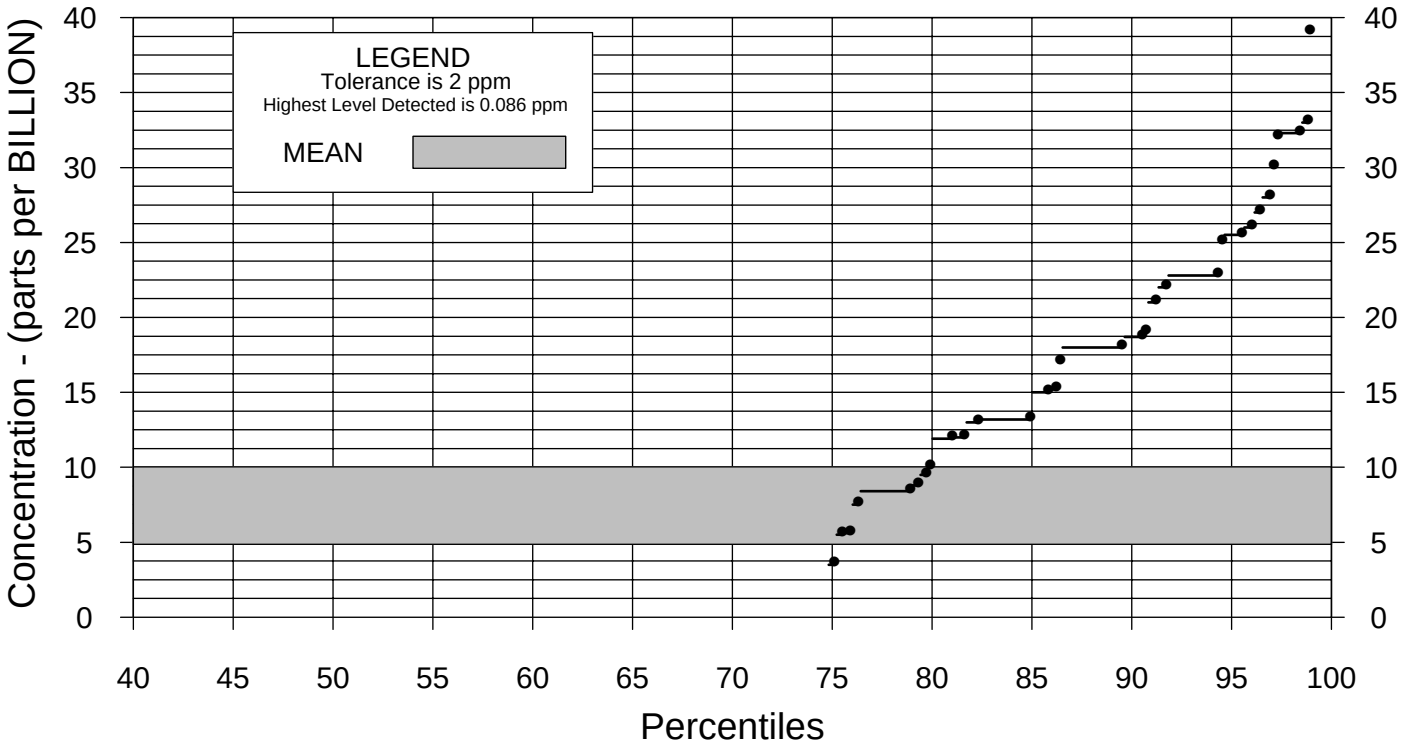
Methamidophos / Tomatoes



Malathion / Wheat



Endosulfan sulfate / Winter Squash (Fresh)



Appendix K

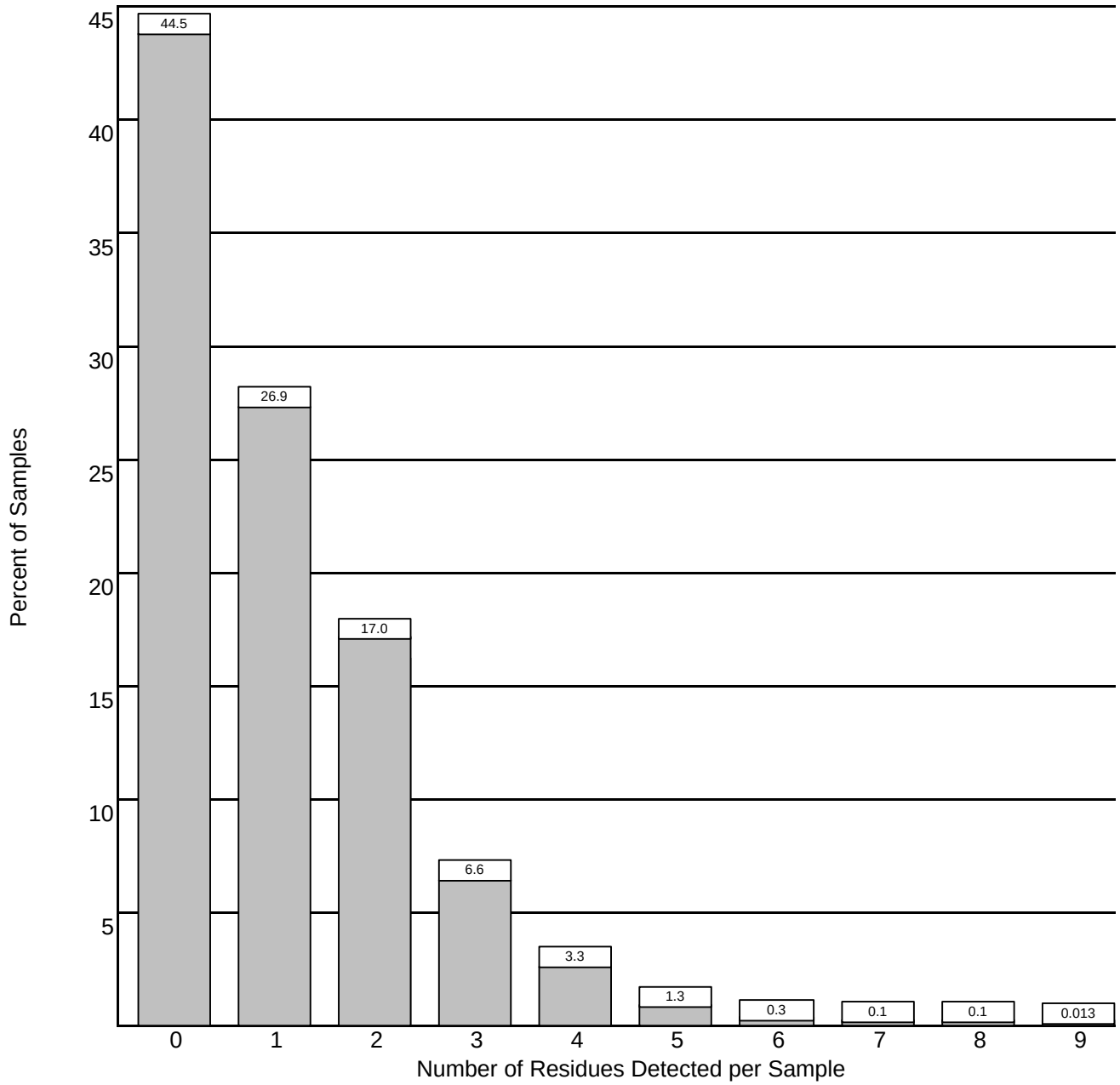
Percentage of Samples vs. Number of Residues Detected per Sample

(Fresh and Processed Products)

Appendix K shows the percentage of samples versus the number of residues detected per sample. Page 1 shows the overall number of samples and percentages (of total number of samples analyzed) for each detection group across all commodities. Page 2 shows the number of residues detected by individual commodity. For the 7,835 samples tested, 44.5 percent of the samples had no detectable residues, 26.9 percent had one residue, and 28.6 percent of the samples had more than one residue.

More than one residue was found on approximately 30 percent of the fruit and vegetables (38% fresh and 22% processed), half of the wheat, 30 percent of the soybeans,and 0.2 percent of the milk samples.

APPENDIX K. PERCENTAGE OF SAMPLES vs. NUMBER OF RESIDUES DETECTED PER SAMPLE



Number of Residues Detected per Sample

	0	1	2	3	4	5	6	7	8	9
Number of Samples	3486	2106	1329	516	257	99	27	10	4	1
Percent of Total Samples	44.5	26.9	17.0	6.6	3.3	1.3	0.3	0.1	0.1	0.013

TOTAL NUMBER OF SAMPLES = 7,835

APPENDIX K. PERCENTAGE OF SAMPLES vs. NUMBER OF RESIDUES DETECTED PER SAMPLE

	Number of Residues Detected per Sample									
	0	1	2	3	4	5	6	7	8	9
Fresh Fruit and Vegetables:	Percent									
Pears (708 Samples)	5.1	26.0	29.7	19.2	12.0	4.8	1.7	0.8	0.6	0.1
Spinach, Fresh (512 Samples)	20.7	31.6	23.6	14.8	6.6	2.1	0.2	0.2	--	--
Sweet Potatoes (696 Samples)	35.9	49.9	11.6	1.9	0.6	0.1	--	--	--	--
Tomatoes (724 Samples)	37.0	27.3	14.4	7.6	7.0	4.8	1.7	0.1	--	--
Winter Squash, Fresh (440 Samples)	60.0	24.3	8.2	3.0	3.9	0.5	--	0.2	--	--
Processed Fruit and Vegetables										
Apple Juice (689 Samples)	32.8	35.4	16.5	10.9	3.3	0.9	--	0.1	--	--
Green Beans (707 Samples)	35.8	14.0	35.6	9.3	3.7	1.3	0.3	--	--	--
Orange Juice (698 Samples)	81.1	12.3	5.2	1.0	0.4	--	--	--	--	--
Peaches (758 Samples)	83.1	15.0	1.7	--	0.1	--	--	--	--	--
Spinach, Canned (168 Samples)	10.7	64.9	24.4	--	--	--	--	--	--	--
Winter Squash, Frozen (221 Samples)	47.1	34.4	13.6	2.7	2.3	--	--	--	--	--
Number of Samples	2721	1726	1038	447	249	98	27	10	4	1
Percent of Total Samples	43.0	27.3	16.4	7.1	3.9	1.6	0.4	0.2	0.1	0.02
TOTAL NUMBER OF FRUIT & VEGETABLE SAMPLES = 6,321										
Grain:										
Wheat (623 Samples)	19.7	29.1	39.6	10.1	1.3	0.2	--	--	--	--
Soybeans (159 Samples)	13.2	56.0	27.0	3.8	--	--	--	--	--	--
Number of Samples	144	270	290	69	8	1	--	--	--	--
Percent	18.4	34.5	37.1	8.8	1	0.1	--	--	--	--
Dairy: Milk (732 Samples)										
Number of Samples	621	110	1	--	--	--	--	--	--	--
Percent	84.8	15.0	0.2	--	--	--	--	--	--	--

Appendix L

Distribution of Presumptive Tolerance Violations
(Across All Commodities)

Appendix L shows the distribution of presumptive tolerance violations reported in 1997 samples across all commodities. In 1997, the following commodities were analyzed:

- 6,321 fruit and vegetable samples were analyzed. A total of 383 samples (6%) were reported as presumptive tolerance violations.
- 623 wheat samples were analyzed. A total of 23 samples (3.7%) were reported as a presumptive tolerance violations.
- 159 soybean samples were analyzed. No presumptive tolerance violations were reported.
- 732 domestic milk samples were analyzed. Six samples (0.82%) were reported as a presumptive tolerance violation.

Four samples were reported which contained residues that exceeded the established EPA tolerances including:

In sweet potatoes (1)
1 sample with Carbaryl

In winter squash (2)
2 samples with Heptachlor epoxide

In spinach (1)
1 sample with Dimethoate

Pesticide residue established tolerances for pesticide/commodity pairs in PDP span several orders of magnitude--from 0.01 ppm for fonofos in green beans, to 100 ppm for captan in spinach. Of the 412 reported samples (383 fruit & vegetable + 23 wheat + 6 milk) containing violations (455 violations), 371 samples contained a single residue, 39 samples contained two residues and 2 samples contained three residues.

APPENDIX L. DISTRIBUTION OF PRESUMPTIVE TOLERANCE VIOLATIONS

	Pesticide	Samples Screened	Samples Reported as PTV	% of Samples with PTV	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
1	**Apple Juice**						
	Acephate	683	11	1.6	0.003 - 0.008	0.002 - 0.006	NT
	Methamidophos	683	14	2.0	0.002 - 0.005	0.001 - 0.006	NT
	Total Samples Analyzed		*689*				
	Total Samples with PTV		*25*				
	Estimated % of Samples with PTV		3.6%				
2	**Green Beans**						
	Carbofuran	703	2	0.3	0.034 - 0.051	0.006 - 0.025	NT
	Demeton S sulfone	108	10	9.3	0.005 - 0.015	0.003 ^	NT
	Diphenylamine	693	6	0.9	0.013 - 0.25	0.008 - 0.030	NT
	Doramectin	2	2	100	0.005 ^	0.003 ^	NT
	Methamidophos	679	1	0.1	0.002 - 0.17	0.001 - 0.006	NT @
	o-Phenylphenol	612	5	0.8	0.005 - 0.025	0.003 - 0.015	NT
	Thiabendazole	707	1	0.1	0.015 ^	0.009 - 0.045	NT
	Total Samples Analyzed		*707*				
	Total Samples with PTV		*26*				
	Estimated % of Samples with PTV		*3.7%*				
3	**Milk**						
	Diphenylamine	665	1	0.2	0.010 ^	0.006 - 0.020	NT
	o- Phenylphenol	273	5	1.8	0.010 - 0.017	0.006 - 0.010	NT
	Total Samples Analyzed		*732*				
	Total Samples with PTV		*6*				
	Estimated % of Samples with PTV		*0.8%*				
4	**Orange Juice**						
	Diphenylamine	678	2	0.3	0.050 ^	0.008 - 0.152	NT
	Total Samples Analyzed		*698*				
	Total Samples with PTV		*2*				
	Estimated % of Samples with PTV		*0.3%*				
5	**Peaches**						
	Acephate	754	3	0.4	0.007 - 0.023	0.002 - 0.012	NT
	Dimethoate	752	1	0.1	0.051 ^	0.002 - 0.011	NT
	Diphenylamine	735	1	0.1	0.14 ^	0.008 - 0.152	NT
	Methamidophos	756	7	0.9	0.005 - 0.027	0.001 - 0.015	NT
	Thiabendazole	754	2	0.3	0.042 ^	0.025 - 0.076	NT
	Total Samples Analyzed		*758*				
	Total Samples with PTV		*12*				
	Estimated % of Samples with PTV		*1.6%*				

	Pesticide	Samples Screened	Samples Reported as PTV	% of Samples with PTV	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
6	**Pears**						
	Bifenthrin	1	1	100	0.032 ^	0.010 ^	NT
	Diphenylamine *	693	158	22.8	0.013 - 1.8	0.008 - 0.030	NT
	Imazalil	660	1	0.2	0.017 ^	0.010 - 0.070	NT
	Iprodione	693	23	3.3	0.013 - 0.38	0.008 - 0.031	NT
	Total Samples Analyzed		*708*				
	Total Samples with PTV		*169*				
	Estimated % of Samples with PTV		*23.9%*				
7	**Spinach, Fresh**						
	Acephate	512	13	2.5	0.003 - 0.10	0.002 - 0.012	NT
	Chlorothalonil	455	1	0.2	0.007 ^	0.003 - 0.008	NT
	Chlorpyrifos	512	11	2.1	0.005 - 0.026	0.003 - 0.009	NT
	DCPA	512	15	2.9	0.005 - 0.045	0.003 - 0.008	NT
	Dicloran	512	8	1.6	0.022 - 0.022	0.001 - 0.009	NT
	Dimethoate	501	1	0.2	0.003 - 1.9	0.002 - 0.011	2 ct
	Omethoate	512	1	0.2	0.007 - 0.076	0.004 - 0.016	2 ct
	Diphenylamine	498	1	0.2	0.050 ^	0.008 - 0.152	NT
	Iprodione	512	1	0.2	0.030 ^	0.015 - 0.045	NT
	Lambda cyhalothrin	1	1	100	0.039 ^	0.005 ^	NT
	Methamidophos	512	11	2.1	0.002 - 0.072	0.001 - 0.015	NT
	o-Phenylphenol	444	10	2.3	0.017 ^	0.010 - 0.021	NT
	Quintozene (PCNB)	512	3	0.6	0.002 ^	0.001 - 0.006	NT
	Pentachloroaniline	104	2	1.9	0.002 ^	0.001 ^	NT
	Vinclozolin	512	1	0.2	0.014 ^	0.002 - 0 .010	NT
	Total Samples Analyzed		*512*				
	Total Samples with PTV		*64*				
	Estimated % of Samples with PTV		*12.5%*				
8	**Spinach, Canned**						
	Diphenylamine	168	2	1.2	0.017 - 0.20	0.008 - 0.152	NT
	Lambda cyhalothrin	1	1	100	1.4 ^	0.002 ^	NT
	Total Samples Analyzed		*168*				
	Total Samples with PTV		*3*				
	Estimated % of Samples with PTV		*1.8%*				
9	**Sweet Potatoes**						
	Acephate	680	1	0.1	0.007 ^	0.002 - 0.006	NT
	Carbaryl	695	1	0.1	0.010 - 0.29	0.004 - 0.025	0.2
	Diphenylamine	695	1	0.1	0.017 ^	0.008 - 0.030	NT
	Fenvalerate	680	1	0.1	0.050 ^	0.030 - 0.33	NT
	Methamidophos	695	1	0.1	0.005 ^	0.001 - 0.006	NT
	Permethrins	695	3	0.4	0.021 ^	0.005 - 0.040	NT
	Thiabendazole	695	2	0.3	0.015 - 0.042	0.009 - 0.045	NT
	Total Samples Analyzed		*696*				
	Total Samples with PTV		*9*				
	Estimated % of Samples with PTV		*1.3%*				

	Pesticide	Samples Screened	Samples Reported as PTV	% of Samples with PTV	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
10	**Tomatoes**						
	Acephate	707	4	0.6	0.003 - 0.015	0.002 - 0.009	NT
	Cypermethrins	287	2	0.7	0.033 - 0.067	0.020 - 0.045	NT
	Diphenylamine	707	4	0.6	0.013 - 0.025	0.008 - 0.152	NT
	Fenamiphos	722	1	0.1	0.007 ^	0.002 - 0.013	NT
	Fenamiphos sulfoxide	345	2	0.6	0.013 - 0.028	0.005 - 0.022	NT
	Fenamiphos sulfone	662	3	0.5	0.013 ^	0.005 - 0.080	NT
	Iprodione	707	6	0.8	0.025 - 0.10	0.015 - 0.045	NT
	Myclobutanil	722	1	0.1	0.040 ^	0.010 - 0.076	NT
	Vinclozolin	707	6	0.8	0.010 - 0.25	0.004 - 0.010	NT
	Total Samples Analyzed		*724*				
	Total Samples with PTV		*25*				
	Estimated % of Samples with PTV		*3.5%*				
11	**Wheat**						
	Pirimiphos methyl	623	23	3.7	0.003 ^	0.002 ^	NT
	Total Samples Analyzed		623				
	Total Samples with PTV		*23*				
	Estimated % of Samples with PTV		*3.7%*				
12	**Winter Squash, Fresh**						
	Acephate	440	7	1.6	0.003 - 0.083	0.002 - 0.006	NT
	Bifenthrin	2	2	100	0.017 - 0.021	0.010 ^	NT
	Chlorpropham	440	1	0.2	0.017 ^	0.008 - 0.020	NT
	Diphenylamine	426	1	0.2	0.050 ^	0.008 - 0.030	NT
	Heptachlor epoxide	74	1	1.4	0.002 - 0.015	0.001 - 0.003	0.01 #
	Methamidophos	440	16	3.6	0.002 - 0.039	0.001 - 0.006	NT
	o-Phenylphenol	399	1	0.3	0.017 ^	0.003 - 0.015	NT
	Piperonyl butoxide	55	2	3.6	0.067 ^	0.040 ^	NT
	Quintozene (PCNB)	440	1	0.2	0.010 ^	0.003 - 0.006	NT
	Hexachlorobenzene	440	2	0.5	0.005 - 0.007	0.002 - 0.004	NT
	Pentachloroaniline	1	1	100	0.005 ^	0.003 ^	NT
	Thiabendazole	425	3	0.7	0.015 - 0.42	0.009 - 0.045	NT
	Total Samples Analyzed		*440*				
	Total Samples with PTV		*33*				
	Estimated % of Samples with PTV		*7.5%*				
13	**Winter Squash, Frozen**						
	Acephate	221	1	0.5	0.043 ^	0.002 - 0.006	NT
	Chlorpyrifos	221	4	1.8	0.005 ^	0.003 - 0.011	NT
	Diphenylamine	221	1	0.5	0.025 ^	0.008 - 0.030	NT
	Ethion	221	3	1.4	0.005 ^	0.001 - 0.006	NT
	Heptachlor epoxide	79	1	1.3	0.002 - 0.025	0.001 - 0.003	0.01 #
	Methamidophos	221	1	0.5	0.015 ^	0.001 - 0.006	NT
	o-Phenylphenol	177	1	0.6	0.005 ^	0.001 - 0.015	NT
	Thiabendazole	221	4	1.8	0.015 ^	0.009 - 0.045	NT
	Total Samples Analyzed		*221*				
	Total Samples with PTV		*15*				
	Estimated % of Samples with PTV		*6.8%*				

KEY

^ Only one distinct detected concentration or LOD value was reported for the pair.
NT No tolerance level was set for that pesticide / commodity pair.
@ All other residues were detected in combination with acephate, for which a tolerance exists.
# Numbers shown are Action Levels established by FDA. Under FQPA, responsibility for establishing tolerances in lieu of action levels has been transferred to EPA. In the interim, action levels are used.
* A tolerance application for diphenylamine as a post-harvest fungicide was submitted to EPA in 1998.
ct Combined total of both dimethoate and omethoate. One sample exceeded this combined tolerance.

Total Samples Analyzed reflects table 3 figures. In some cases, not all pesticides were screened due to multiple labs reporting.
Total Samples with PTV represents total number of samples (including multiple PTV hits) reported with PTV.
Estimated % of samples with PTV. Total Samples with PTV divided by the Total Samples Analyzed.

Note:
For those pesticide/commodity pairs where the minimum detected value is less than the limit of quantitation (3 times the limit of detection), the reported values are estimates. In a few cases, this may apply to the maximum detected value.

Appendix M

Import vs. Domestic Pesticide Residue Comparisons

PDP was designed to provide a comprehensive statistical picture of pesticide residues in the U.S. food supply, representing all sources including imports. Most commodities consumed are generally produced in the United States with a minor import component. However, several commodities tested over the past several years were cyclical; part of the year domestic and part import.

Appendix M compares residue data reported in 1994-1996 for grapes and peaches from the United States and Chile, and data for 1996-1997 for tomatoes from the United States and Mexico. Only residues detected in more than 10 percent of the samples are included in this section of the appendix. All residues detected were registered in the United States, however, the prevalence of residue findings was markedly different in the United States samples versus samples from Chile and Mexico. The national differences in residue findings were due to the pesticides used to sustain crop protection based on the environment, climate, and growing conditions.

Appendix M also includes presumptive tolerance violations for grapes and peaches (1994-1996) and tomatoes (1996-1997). As seen on page 4 of this appendix, there were four samples from Chile with residues exceeding the tolerance for 3-hydroxycarbofuran. All other presumptive violations were for pesticide residues for which there were no U.S. established tolerances (pages 4 and 7).

1994-1996 Distribution of Residues for Grapes and Peaches
United States Samples vs. Samples Originating in Chile

Origin	Year	# of Samples Analyzed	# of Samples w/ Detections	% of Samples w/ Detections	# of Residues Detected
			GRAPES		
United States	1994	391	262	67	531
	1995	382	271	71	587
	1996	211	145	69	295
	1994-1996	**984**	**678**	**69**	**1,413**
Chile	1994	258	237	92	589
	1995	257	243	95	669
	1996	279	251	90	734
	1994-1996	**794**	**731**	**92**	**1,992**
			PEACHES		
United States	1994	281	257	92	773
	1995	256	233	91	772
	1996	199	187	94	591
	1994-1996	**736**	**677**	**92**	**2,136**
Chile	1994	126	120	95	360
	1995	118	111	94	298
	1996	130	129	99	447
	1994-1996	**374**	**360**	**96**	**1,105**

NOTE: The Limit of Detections (LODs) for peaches (1994-1996) are comparable to the levels found for canned peaches published in Appendix E of this summary. The range for LODs in grapes (1994-1996) are found in the individual summaries.

1994-1996 Distribution of Residues for Grape Samples
Originating in Chile vs. United States
(Only Pesticides with Residue Detections in at Least 10% of Samples)

Pesticide	Origin	# of Samples Analyzed	# of Samples with Detections	% of Samples with Detections
Captan	Chile	789	615	78
	U.S.	961	53	6
Dimethoate	Chile	789	193	25
	U.S.	969	49	5
Omethoate	Chile	644	174	27
(Dimethoate metabolite)	U.S.	810	53	7
Iprodione	Chile	789	465	59
	U.S.	969	268	28
Myclobutanil	Chile	790	40	5
	U.S.	968	351	36
Vinclozolin	Chile	789	193	25
	U.S.	967	3	0.3

1994-1996 Distribution of Residues for Peach Samples Originating in Chile vs. United States

(Only Pesticides with Residue Detections in at Least 10% of Samples)

Pesticide	Origin	# of Samples Analyzed	# of Samples with Detections	% of Samples with Detections
Azinphos methyl	Chile	364	218	60
	U.S.	719	70	10
Benomyl	Chile	369	155	42
	U.S.	727	34	5
Chlorpyrifos	Chile	364	86	24
	U.S.	719	44	6
Dicloran	Chile	364	11	3
	U.S.	719	401	56
Fenbutatin oxide	Chile	130	2	2
(1995-1996)	U.S.	310	55	18
Iprodione	Chile	364	276	76
	U.S.	719	502	70
Parathion methyl	Chile*	364	0	0
	U.S.	719	303	42
Phosmet	Chile	331	74	22
	U.S.	655	120	18
Propargite	Chile	364	33	9
	U.S.	719	184	26

** The Chilean government stated that parathion methyl was not registered.*

1994-1996 Summary of Presumptive Tolerance Violations for Grapes and Peaches United States / Chile

Pesticide	Origin	# of Samples Analyzed	Presumptive Tolerance Violations: # of Residues Above Tolerance	Presumptive Tolerance Violations: # of Residues with NO Tolerance
GRAPES				
Acephate	U.S.	969	0	2
	Chile	790	0	0
3-Hydroxycarbofuran	U.S.	964	0	0
	Chile	703	4	0
Chlorothalonil	U.S.	764	0	0
	Chile	667	0	1
Chlorpropham	U.S.	969	0	0
	Chile	790	0	1
Diphenylamine (DPA)	U.S.	880	0	1
	Chile	757	0	1
Fenvalerate	U.S.	938	0	0
	Chile	630	0	1
Hexachlorobenzene	U.S.	969	0	0
(Impurity of Quintozene)	Chile	790	0	1
	TOTALS	**U.S.**	**0**	**3**
		Chile	**4**	**5**
PEACHES				
Chlorpropham	U.S.	719	0	1
	Chile	364	0	0
DCPA (Dacthal)	U.S.	719	0	1
	Chile	364	0	0
Dimethoate	U.S.	719	0	2
	Chile	364	0	3
Diphenylamine (DPA)	U.S.	587	0	0
	Chile	294	0	6
Imazalil	U.S.	719	0	3
	Chile	364	0	1
Methamidophos	U.S.	719	0	0
	Chile	364	0	1
Thiabendazole	U.S.	719	0	6
	Chile	364	0	6
	TOTALS	**U.S.**	**0**	**13**
		Chile	**0**	**17**

1996-1997 Distribution of Residues for Tomatoes
United States Samples vs. Samples Originating in Mexico

Origin	Year	# of Samples Analyzed	# of Samples w/ Detections	% of Samples w/ Detections	# of Residues Detected
United States	1996 *	135	82	61	170
	1997	498	292	59	565
	1996-1997	**633**	**374**	**59**	**735**
Mexico	1996 *	34	28	82	86
	1997	222	156	70	442
	1996-1997	**256**	**184**	**72**	**528**

** Samples collected for only 3 months in 1996 (July, August and December).*

NOTE: The Limit of Detections (LODs) for pesticide detections in tomatoes are listed in Appendix E.

1996-1997 Distribution of Residues for Tomato Samples Originating in Mexico vs. United States

(Only Pesticides with Residue Detections in at Least 10% of Samples)

Pesticide	Origin	# of Samples Analyzed	# of Samples w/ Detections	% of Samples w/ Detections
Chlorpyrifos	Mexico	222	83	37
	U.S.	617	24	4
Chlorothalonil	Mexico	222	3	1
	U.S.	618	71	11
Endosulfans				
Endosulfan I	Mexico	223	75	34
	U.S.	618	67	11
Endosulfan II	Mexico	223	97	43
	U.S.	631	90	14
Endosulfan sulfate	Mexico	223	81	36
	U.S.	631	83	13
Methamidophos	Mexico	222	86	39
	U.S.	620	194	31
Permethrins	Mexico	222	38	17
	U.S.	617	60	10
o-Phenylphenol	Mexico	206	2	1
	U.S.	535	52	10

1996-1997 Summary of Presumptive Tolerance Violations for Tomatoes
United States / Mexico

			Presumptive Tolerance Violations	
Pesticide	**Country of Origin**	**# of Samples Analyzed**	**# of Residues Above Tolerance**	**# of Residues with NO Tolerance**
Acephate	U.S.	617	0	5
	Mexico	222	0	0
3-Hydroxycarbofuran	U.S.	631	0	1
	Mexico	223	0	0
Cypermethrin	U.S.	277	0	0
	Mexico	72	0	2
Diphenylamine (DPA)	U.S.	616	0	3
	Mexico	217	0	1
Fenamiphos and metabolites	U.S.	631	0	0
	Mexico	223	0	3
Iprodione	U.S.	617	0	3
	Mexico	222	0	3
Myclobutanil	U.S.	631	0	0
	Mexico	223	0	1
Vinclozolin	U.S.	589	0	2
	Mexico	218	0	4
	TOTALS	**U.S.**	**0**	**14**
		Mexico	**0**	**14**

PESTICIDE DATA PROGRAM

Annual Summary Calendar Year 1997

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