Food and Drug Administration
Pesticide Program

Residue Monitoring 2000

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This document is the fourteenth annual report summarizing the results of the Food and Drug Administration's (FDA) pesticide residue monitoring program. Eight of the thirteen previous reports were published in the *Journal of the Association of Official Analytical Chemists/Journal of AOAC International*; these presented results from Fiscal Years (FY) 1987 through 1994. Results from FY 1995 through FY 1999 were published on FDA's World Wide Web site. This report, also published on FDA's website, includes findings obtained during FY 2000 (October 1, 1999 through September 30, 2000) under regulatory and incidence/level monitoring. Selected Total Diet Study findings for 2000 are also presented. Results in this and earlier reports continue to demonstrate that levels of pesticide residues in the U.S. food supply are well below established safety standards.

FDA Monitoring Program

Three federal government agencies share responsibility for the regulation of pesticides. The Environmental Protection Agency (EPA) registers (*i.e.,* approves) the use of pesticides and sets tolerances (the maximum amounts of residues that are permitted in or on a food) if use of a particular pesticide may result in residues in or on food (1). Except for meat, poultry, and certain egg products, for which the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA) is responsible, FDA is charged with enforcing tolerances in imported foods and in domestic foods shipped in interstate commerce. FDA also acquires incidence/level data on particular commodity/pesticide combinations and carries out its market basket survey, the Total Diet Study. Since 1991, USDA's Agricultural Marketing Service (AMS), through contracts with participating states, has carried out a residue testing program directed at raw agricultural products and various processed foods. FSIS and AMS report their pesticide residue data independently.

Regulatory Monitoring

FDA samples individual lots of domestically produced and imported foods and analyzes them for pesticide residues to enforce the tolerances set by EPA. Domestic samples are collected as close as possible to the point of production in the distribution system; import samples are collected at the point of entry into U.S. commerce. Emphasis is on the raw agricultural product, which is analyzed unwashed and whole (unpeeled). Processed foods are also included. If illegal residues (above EPA tolerance or no tolerance for a given food/pesticide combination) are found in domestic samples, FDA can invoke various sanctions, such as a seizure or injunction. For imports, shipments may be stopped at the port of entry when illegal residues are found. "Detention without physical examination" (previously called "automatic detention") may be invoked for imports based on the finding of one violative shipment if there is reason to believe that the same situation will exist in future lots during the same shipping season for a specific shipper, grower, geographic area, or country.

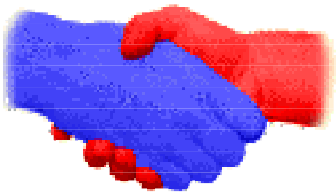
Factors considered by FDA in planning the types and numbers of samples to collect include review of recently generated state and FDA residue data, regional intelligence on pesticide use, dietary importance of the food, information on the amount of domestic food that enters interstate commerce and of imported food, chemical characteristics and toxicity of the pesticide, and production volume/pesticide usage patterns.

Analytical Methods

To analyze the large numbers of samples whose pesticide treatment history is usually unknown, FDA uses analytical methods capable of simultaneously determining a number of pesticide residues. These multiresidue methods (MRMs) can determine about half of the approximately 400 pesticides with EPA tolerances, and many others that have no tolerances. The most commonly used MRMs can also detect many metabolites, impurities, and alteration products of pesticides (2).

Single residue methods (SRMs) or selective MRMs are used to determine some pesticide residues in foods (2). An SRM usually determines one pesticide; a selective MRM measures a relatively small number of chemically related pesticides. This type of methods is usually more resource-intensive per residue. Therefore, SRMs are much less cost effective than MRMs.

The lower limit of residue measurement in FDA's determination of a specific pesticide is usually well below tolerance levels, which generally range from 0.1 to 50 parts per million (ppm). Residues present at 0.01 ppm and above are usually measurable; however, for individual pesticides, this limit may range from 0.005 to 1 ppm. In this report, the term "trace" is used to indicate residues detected, but at levels below the limit of quantitation (LOQ).



FDA/State Cooperation

FDA field offices interact with their counterparts in many states to increase FDA's effectiveness in pesticide residue monitoring. Memoranda of Understanding or more formal Partnership Agreements have been established between FDA and various state agencies. These agreements provide for more efficient monitoring by broadening coverage and eliminating duplication of effort, thereby maximizing federal and state resources allocated for pesticide activities. These arrangements vary from data sharing, joint planning, and state collection of samples for FDA examination, to FDA/State division of collection, analytical, and enforcement follow-up responsibilities for individual commodities or products of particular origin (*i.e.,* imported *vs.* domestic products).

Animal Feeds

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




International Activities

FDA participates in several international agreements in an effort to minimize incidents of violative residues and remove trade barriers. A standing request for information from foreign governments on pesticides used on their food exported to the U.S. exists, a provision of the Pesticide Monitoring Improvements Act.

Under the auspices of the North American Free Trade Agreement (NAFTA), the U.S., Mexico, and Canada have established a NAFTA Technical Working Group on Pesticides (TWG). The NAFTA Pesticide TWG now serves as the focal point for all pesticide issues that arise among the three NAFTA countries. The TWG reports directly to the NAFTA Sanitary and Phytosanitary Committee.

One of the major goals of the TWG is to ensure that pesticide registrations and tolerances/maximum residue limits in the three countries are harmonized to the extent practical, while strengthening protection of public health and the environment. A number of projects has been undertaken by the TWG to identify differing residue limits in the NAFTA countries and to determine what steps might be taken to harmonize the limits. While this process is difficult, the TWG envisions eventual movement toward a "North America" pesticide registration and tolerance system so that citizens of all three countries can be assured of the safety and legality of foods produced in any one of the NAFTA countries. FDA's activities on the TWG complement its ongoing trilateral cooperation with its counterparts in Mexico and Canada.

Beyond the North American agreements, FDA continues to collaborate with New Zealand to implement a "residue compliance assurance program." New Zealand, historically having excellent compliance with U.S. pesticide tolerances, is implementing a plan whereby its government would provide assurances that selected commodities exported to the U.S. would be in full compliance with U.S. tolerances.

Incidence/Level Monitoring

FDA's pesticide program includes incidence/level monitoring to complement regulatory monitoring. Incidence/level monitoring increases FDA's knowledge about particular pesticide/commodity combinations. Information is acquired by analyses of randomly selected samples to determine the presence and levels of selected pesticides. In 2000, FDA issued one special assignment, to determine incidences and levels of certain pesticides in canola entering the U.S. from Canada.

Total Diet Study

The Total Diet Study is the other major element of FDA's pesticide residue monitoring program (3). In its previous annual pesticide reports, FDA provided Total Diet Study findings for 1987-1999 (4a, 4b). More detailed information, including estimated dietary intakes of pesticide residues covering June 1984-April 1986 (5) and July 1986-April 1991 (6), has been published. In September 1991, FDA implemented revisions to the Total Diet Study that were formulated in 1990 (7). These revisions primarily consisted of collection and analysis of an updated and expanded number of food items, addition of six age/sex groups (for a total of 14), and revised analytical coverage. Details of that revision are published (8, 9).

In conducting the Total Diet Study, FDA personnel purchase foods from supermarkets or grocery stores four times per year, once from each of four geographic regions of the country. The 261 foods that comprise each of the 4 market baskets represent over 3,500 different foods reported in USDA food consumption surveys; for example, apple pie represents all fruit pies and fruit pastries. Each market basket is a composite of like foods purchased in three cities in a given region. The foods are prepared table-ready and then analyzed for pesticide residues (as well as radionuclides, industrial chemicals, toxic elements, trace and macro elements, and folic acid). The levels of pesticides found are used in conjunction with USDA food consumption data to estimate the dietary intakes of the pesticide residues.

Results and Discussion

Regulatory Monitoring

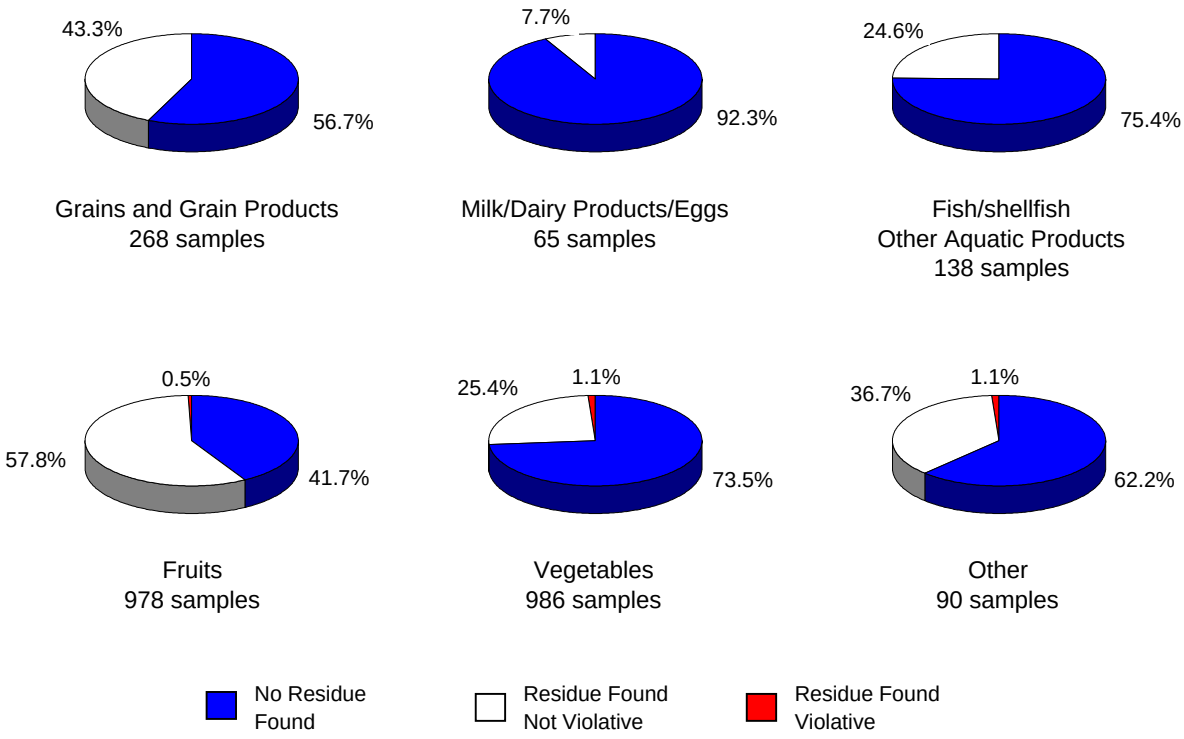
Under regulatory monitoring, 6,523 samples were analyzed. Of these 2,525 were domestic and 3,998 were imports.

Figure 1 shows the percentage of the 2,525 domestic samples by commodity group with no residues found, nonviolative residues found, and violative residues found. (A violative residue is defined in this report as a residue which exceeds a tolerance or a residue at a level of regulatory significance for which no tolerance has been established in the sampled food.)

As in earlier years, fruits and vegetables accounted for the largest proportion of the commodities analyzed in 2000; those two commodity groups comprised 77.8% of the total number of domestic samples. In 2000, no violative residues were found in 99.3% of all domestic samples (99.1% in 1996, 98.8% in 1997, 99.2% in 1998, 99.2% in 1999).

Appendix A contains more detailed data on domestic monitoring findings by commodity, including the total number of samples analyzed, the percent samples with no residues found, and the percent violative samples. Of the 2,525 domestic samples, 59.6% had no detectable residues and 0.7% had violative residues. In the largest commodity groups, fruits and vegetables, 41.7% and 73.5% of the samples, respectively, had no residues detected; 0.5% of the fruit samples and 1.1% of the vegetable samples contained violative residues (Figure 1). In the grains and grain products group, 56.7% of the samples had no residues detected, and none had violative residues. In the fish/shellfish/other aquatic products group, 75.4% had no detectable residues, and no violative residues were found. In the milk/dairy products/eggs group, 92.3% of the samples had no residues detected, and no violative residues were found. A total of 26 samples of baby foods or formula was analyzed (see category Other). This total included 4 fruit (no vegetable), 2 cereal, and 8 fruit juice samples. None of the samples had violative residues.

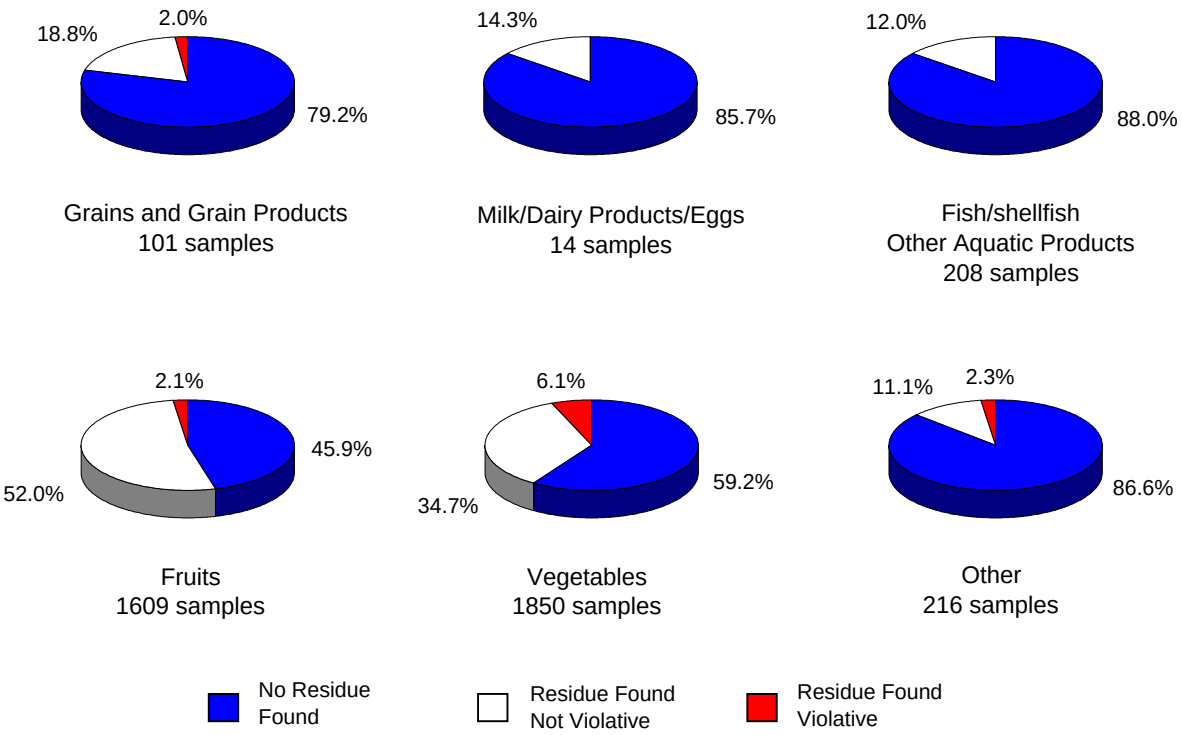
Figure 1. Summary of Results of Domestic Samples by Commodity



Findings by commodity group for the 3,998 import samples are shown in Figure 2. Fruits and vegetables accounted for 86.5% of these samples. Overall, no violative residues were found in 96.2% of the import samples (97.4% in 1996, 98.4% in 1997, 97.0% in 1998, 96.9% in 1999).

Appendix B contains detailed data on the import samples. Of the 3,998 samples analyzed, 57.5% had no residues detected, and 3.8% had violative residues. Fruits and vegetables had 45.9% and 59.2%, respectively, with no residues detected. The fruit group and the vegetable group had 2.1% and 6.1%, respectively, with violative residues. No residues were found in 85.7% of the milk/dairy products/eggs group and in 88.0% of the fish/shellfish group, and no violative residues were found in either of those groups. In the grains and grain products group, 79.2% had no detectable residues, and 2.0% had violative residues.

Figure 2. Summary of Results of Import Samples by Commodity



Pesticide monitoring data collected under FDA's regulatory monitoring in 2000 are available to the public as a computer database. This database summarizes FDA 2000 regulatory monitoring coverage and findings by country/commodity/pesticide combination. The database also includes the monitoring data by individual sample from which the summary information was compiled. Information on how to obtain this database as well as those for 1992–1999 is provided at the end of this report.

Geographic Coverage

Domestic. A total of 2,525 domestic samples was collected in 2000 from 43 states and Puerto Rico. (No samples were collected from Arkansas, Connecticut, Maine, Nevada, Oklahoma, Vermont, and West Virginia.) The largest numbers of samples were collected from those states that are the largest producers of fruits and vegetables. Table 1 lists numbers of domestic samples from each location, in order of descending numbers of samples.

Import. A total of 3,998 samples representing food shipments from 82 countries was collected. (The origin of some additional samples was unspecified.) Table 2 lists numbers of samples collected from each country. Mexico, as usual, was the source of the largest number of samples, reflecting the volume and diversity of commodities imported from that country, especially during the winter months.

Table 1. Domestic Samples Collected and Analyzed, by State[a], in 2000

Washington	463	Texas	52	North Dakota	26	Alaska	13
California	418	Arizona	50	Pennsylvania	24	South Carolina	12
Louisiana	166	Georgia	47	Tennessee	24	New Jersey	8
New York	127	Michigan	45	Indiana	20	South Dakota	8
Wisconsin	124	Virginia	43	Utah	20	Mississippi	7
Idaho	102	Iowa	41	Kansas	19	New Hampshire	5
Missouri	97	Ohio	36	Kentucky	18	Rhode Island	5
Oregon	90	North Carolina	32	Nebraska	17	Alabama	3
Illinois	75	Montana	31	New Mexico	17	Delaware	2
Minnesota	74	Maryland	29	Massachusetts	16	Hawaii	1
Florida	69	Colorado	26	Wyoming	16		

[a]Other domestic samples: Puerto Rico, 7 samples.

Domestic/Import Violation Rate Comparison

In 2000, a total of 2,525 domestic and 3,998 import samples was collected and analyzed. Pesticide residues were detected in 40.4% of the domestic samples and in 42.5% of the import samples. Only 0.7% of the domestic samples and only 3.8% of the import samples were violative. Among grains and grain products, the violation rate was 0.0% domestic *vs.* 2.0% import. No violations were found in the milk/dairy products/eggs group or the fish/shellfish/other aquatic products group among either domestic or import samples. Of domestic fruits, 0.5% were violative; of import fruits, the violation rate was 2.1%. Of vegetables, 1.1% of domestic samples and 6.1% of import samples were violative. In the category "Other" the rates for domestic and import samples were, respectively, 1.1% and 2.3%. Of the violative samples, two of the domestic ones and seven of the import ones contained pesticide residues at levels which exceeded the tolerance for the given chemical in the given commodity. The remainder of the violative samples contained pesticide residues which were not registered in the U.S. for use in the commodities in which they were found; 15 domestic samples and 146 import samples fell into this category.

Pesticide Coverage

Table 3 lists the 396 pesticides that were detectable by the methods used; each of the 117 pesticides that were actually found is indicated by an asterisk.

FDA conducts ongoing research to expand the pesticide coverage of its monitoring program. This research includes testing the behavior of new or previously untested pesticides through existing analytical methods, and development of new methods to cover pesticides that cannot be determined by methods currently used by FDA. The research encompasses both U.S.-registered pesticides and foreign-use pesticides that are not registered in the U.S. The list of pesticides detectable for 2000 (Table 3) reflects the addition of a number of pesticides whose recovery through the analytical methods used was demonstrated as a result of ongoing research.

Table 2. Foreign Countries and Number of Samples Collected and Analyzed in 2000

Mexico	1,719	Honduras	42
Chile	483	South Africa	36
Ecuador	206	Poland	35
Netherlands	115	Taiwan, Republic Of	31
China (Mainland)	103	Brazil	27
Guatemala	99	Israel	27
India	92	Italy	26
Spain	89	Belgium	25
Canada	69	Greece	21
Costa Rica	69	Jamaica	21
Dominican Republic	68	Korea, Republic Of (South)	20
Colombia	53	Pakistan	17
New Zealand	51	Egypt	16
Vietnam	51	Unspecified	15
Turkey	46	France	12
Peru	45	Philippines	12
Thailand	45	Australia	11
Argentina	42	Trinidad & Tobago	11

Ten or fewer samples collected from the following:

Austria	Haiti	Panama
Belize	Hong Kong	Papua New Guinea
Bolivia	Hungary	Russia
Bosnia-Hercegovina	Indonesia	Saudi Arabia
Bulgaria	Iran	Sweden
Croatia	Ireland	Syrian Arab Republic
Cyprus	Japan	Tanzania, United Rep
Czech Republic	Lebanon	Tokelau Islands
Denmark	Macedonia	Ukraine
El Salvador	Malaysia	United Arab Emirates
Estonia	Mauritius	United Kingdom
Fiji	Morocco	Uruguay
Finland	Mozambique	Venezuela
Germany, Federal Rep	Nicaragua	Western Samoa
Ghana	Nigeria	Zimbabwe
Grenada	Norway	

Table 3. Pesticides Detectable and Found (*) by Methods Used in 2000 Regulatory Monitoring[a,b]

acephate*
acetochlor
acibenzolar-S-methyl
acrinathrin
alachlor
aldicarb*
aldrin
allethrin
allidochlor
alpha-cypermethrin*
ametryn
aminocarb
amitraz*
anilazine
Aramite
atrazine*
azinphos-ethyl
azinphos-methyl*
benalaxyl*
bendiocarb
benfluralin
benodanil
benomyl/carbendazim[c]
benoxacor
bensulide
benzoylprop-ethyl
6-benzyladenine
BHC*
bifenox
bifenthrin*
binapacryl
biphenyl*
bitertanol
bromacil
bromophos
bromophos-ethyl
bromopropylate*
bromoxynil
bromuconazole
bufencarb
Bulan
bupirimate*
buprofezin
butachlor
butralin
butyl benzyl phthalate
butylate
cadusafos
captafol
captan*
carbaryl*
carbofuran*
carbophenothion
carbosulfan
carboxin
carfentrazone ethyl ester
chlorbenside
chlorbromuron
chlorbufam
chlordane*
chlordecone
chlordimeform*
chlorethoxyfos
chlorfenapyr
chlorfenvinphos
chlorflurecol methyl ester
chlorimuron ethyl ester
chlornitrofen
chlorobenzilate
3-chloro-5-methyl-4-nitro-1H-pyrazole
5-chloro-3-methyl-4-nitro-1H-pyrazole
chloroneb*
chloropicrin
chloropropylate
chlorothalonil*
chloroxuron
chlorpropham*
chlorpyrifos*
chlorpyrifos-methyl*
chlorthiophos
clodinafop-propargyl
clomazone
cloquintocet-mexyl
coumaphos
crotoxyphos
crufomate
cyanazine
cyanofenphos
cyanophos
cycloate
4-cyclohexene-1,2-dicarboximide, cis-*
cycluron
cyfluthrin
cymoxanil
cypermethrin*
cyprazine
cyproconazole
cyprodinil*
DCPA*
DDT*
DEF
deltamethrin
deltamethrin, trans-
demeton*
desmetryn
dialifor
di-allate
N,N-diallyl-dichloro=acetamide
diazinon*
dibutyl phthalate
dichlobenil*
dichlofenthion
dichlofluanid*
dichlone
4-(dichloroacetyl)-1-oxa-4-azaspiro[4.5]decane
2,6-dichlorobenzamide*
2,4-dichloro-6-nitro benzenamine
dichlorvos
diclobutrazol
diclofop-methyl
dicloran*
dicofol*
dicrotophos*
dieldrin*
diethatyl-ethyl
Dilan
dimethachlor
dimethametryn
dimethipin
dimethoate*
dinitramine
dinobuton
dinocap
dioxabenzofos
dioxacarb
dioxathion
diphenamid
diphenylamine*
dipropetryn
disulfoton
diuron
DPX-MP062
edifenphos
endosulfan*
endrin*
EPN*
epoxiconazole
EPTC*
esfenvalerate*
etaconazole
ethalfluralin
ethephon
ethiofencarb
ethiolate
ethion*
ethion oxygen analog*
ethofumesate
ethoprop
ethoxyquin*
ethylenebisdithio=carbamates[d]
ethylene glycol*
etridiazole
etrimfos
famphur
fenamiphos
fenarimol*
fenbuconazole*
fenfuram
fenhexamid*
fenitrothion*
fenoxaprop ethyl ester
fenoxycarb
fenpropathrin*
fenpropimorph
fenson
fensulfothion
fenthion
fenvalerate*
fipronil
flamprop-M-isopropyl
flamprop-methyl
fluazifop butyl ester
fluazinam
fluchloralin

[a] The list of pesticides detectable is expressed in terms of the parent pesticide. However, monitoring coverage and findings may have included metabolites, impurities, and alteration products.
[b] Some of these pesticides are no longer manufactured or registered for use in the United States.
[c] The analytical methodology determines carbendazim, which may result from use of benomyl or carbendazim.
[d] Such as maneb.

Table 3 (continued)

flucythrinate
fludioxinil*
flufenacet
flusilazole
fluvalinate*
folpet*
fonofos
formothion
fosthiazate
fuberidazole
furilazole
Gardona
heptachlor*
heptenophos
hexachlorobenzene*
hexaconazole*
hexazinone
hexythiazox
imazalil*
imazamethabenz methyl ester
iprobenfos
iprodione*
iprodione metabolite isomer*
isazofos
isocarbamid
isofenphos
isoprocarb
isopropalin
isoprothiolane
isoxaben
isoxaflutole
kresoxim-methyl
lactofen
lambda-cyhalothrin
lenacil
leptophos
lindane*
linuron*
malathion*
mecarbam
mephosfolan
merphos
metalaxyl*
metaldehyde*
metasystox thiol
metazachlor
methabenzthiazuron
methaldehyde
methamidophos*
methidathion*
methiocarb*
methomyl*
methoprotryne
methoxychlor*
2-methoxy-5,6-trichloropyridine
methyl chloride
3-methyl-4-nitrophenol
metobromuron
metolachlor
metolcarb
metribuzin
mevinphos*
MGK 264*
mirex
molinate
monocrotophos*
monolinuron
monuron
myclobutanil*
naled
napropamide
naptalam*
neburon
nitralin
nitrapyrin
nitrofen
nitrofluorfen
nitrothal-isopropyl
norea
norflurazon*
nuarimol
octhilinone
ofurace
omethoate*
ovex
oxadiazon
oxadixyl*
oxamyl*
oxydemeton-methyl*
oxyfluorfen
oxythioquinox
paclobutrazol
paraquat
parathion*
parathion-methyl*
pebulate*
penconazole
pendimethalin
pentachlorobenzene*
pentachlorobenzonitrile*
pentachlorophenyl methyl ether
permethrin*
Perthane
phenmedipham*
phenothrin
phenthoate
4-(phenylamino)phenol*
phenylphenol, ortho-*
phorate*
phosalone*
phosmet*
phosphamidon
phoxim oxygen analog
piperonyl butoxide*
piperophos
pirimicarb*
pirimiphos-ethyl
pirimiphos-methyl*
pretilachlor
primisulfuron-methyl
probenazole
prochloraz*
procyazine
procymidone*
prodiamine
profenofos*
profluralin
Prolan
promecarb
prometryn
pronamide*
propachlor
propanil
propargite*
propazine
propetamphos
propham
propiconazole*
propoxur
prothiofos
prothoate
pyracarbolid
pyrazon
pyrazophos
pyrethrins
pyridaphenthion
pyrimethanil
pyriproxyfen
quinalphos*
quintozene*
quizalofop ethyl ester
resmethrin*
ronnel
S-bioallethrin
salithion
schradan
secbumeton
simazine
simetryn
Strobane
sulfallate
sulfotepp
Sulphenone
sulprofos
TCMTB
tebuconazole*
tebupirimfos
tecnazene*
tefluthrin
TEPP
terbacil
terbufos
terbumeton
terbuthylazine
terbutryn
tetradifon*
2,3,5,6-tetrachloroaniline*
tetraiodoethylene
tetrasul
thiabendazole*
thiamethoxam
thiazopyr
thiobencarb
thiodicarb
thiometon
thionazin
thiophanate-methyl
THPI
tolylfluanid*
toxaphene*
tralomethrin
traloxydim
triadimefon*
triadimenol*
tri-allate
triazamate
1,2,4-triazole
triazophos
tribufos
trichlorfon
tricyclazole
tridiphane
trietazine
triflumizole
trifluralin*
triflusulfuron methyl ester
trimethacarb
vamidothion sulfone
vernolate
vinclozolin*
XMC
zoxamide

Animal Feeds

In 2000, a total of 455 domestic and 58 import feed samples was collected and analyzed for residues. Of the 455 domestic samples, 260 (56.1%) contained no detectable pesticide residues, and 9 (2.0%) contained residues which exceeded regulatory guidance (Table 4). Of the 58 import samples, 35 (60.3%) contained no detectable pesticide residues, and 5 (8.6%) contained residues which exceeded regulatory guidance.

The following 6 residues in domestic samples were considered to have exceeded regulatory guidance because there is no tolerance or action level established for the pesticide-commodity combination: 0.039 ppm of vinclozolin on a sample of canola meal from Canada (collected in South Dakota by the Minneapolis district); 0.085 ppm of methamidophos on a citrus pulp sample from Georgia (collected by the Atlanta district); 0.169 ppm of chlorpyrifos-methyl on a corn sample from Missouri (collected by the Kansas City district); 0.030 ppm of chlorpyrifos-methyl on a corn sample from North Dakota (collected by the Minneapolis district); 0.052 ppm chlorpyrifos-methyl on a corn sample from North Carolina (collected by the Atlanta district); 0.092 ppm of pirimiphos-methyl on a cottonseed meal sample from Texas (collected by the Dallas district); 0.050 ppm of chlorpyrifos on one sample of grass seed screenings and 0.171 ppm of chlorothalonil on another sample of grass seed screenings, both from Oregon (collected by the Seattle district).

Two domestic samples had residues that exceeded an EPA tolerance or a FDA requested maximum level. One of the samples of grass seed screenings from Oregon and collected by the Seattle district also contained 1.282 ppm of DDT + DDE. A sample of soybeans from Oregon and collected by the Seattle district contained 1.700 ppm of DDT + DDE. These residues exceeded the 0.5 ppm action level for DDT + DDE in processed animal feed and most grains in the Federal Register; April 17, 1990; pages 14359-63.

The following 4 residues in 5 import samples were found to have exceeded regulatory guidance because there is no tolerance or action level established for the pesticide-commodity combination: 3.770 ppm of Gardona on a cane molasses sample from Mexico (collected by the Los Angeles district); 0.070 ppm and 0.030 ppm of chlorpyrifos on two samples of canola seed fines from Canada (collected by the Seattle district); 0.192 ppm of biphenyl on a sample of dried marigold pellets from Thailand (collected by the Dallas district); and 0.040 ppm of methamidophos on a Sudan grass hay sample from Mexico (collected by the Los Angeles district).

Table 4. Summary of 2000 Domestic Feed Samples

Type of Feed	Total # Samples	Without residues #	Without residues %	Exceeding Guidance #	Exceeding Guidance %
Whole/Ground Grains	217	139	64.1	4	1.8
Plant By-products	105	63	60.0	5	4.8
Mixed Feed Rations	94	33	35.1	0	0.0
Animal By-products	31	20	64.5	0	0.0
Supplements	6	4	66.7	0	0.0
Hay & Hay Products	2	1	50.0	0	0.0
Total	**455**	**260**	**56.1**	**9**	**2.0**

In the 195 domestic samples of feed in which one or more pesticides were detected, there were 317 residues (216 quantifiable and 101 trace). Malathion, chlorpyrifos-methyl, methoxychlor, and pirimiphos-methyl were the most frequently found and accounted for 75.4% of all residues detected (Table 5).

Table 5. Residues Found in Domestic Feeds in 2000

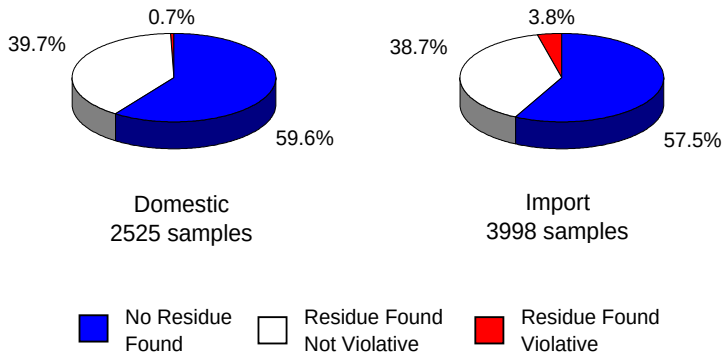
Pesticide	# of Samples with Trace Amount[a]	# of Samples with Quantifiable Levels	Range[b] (ppm)	Median[b] (ppm)
malathion	29	91	0.006 - 5.230	0.090
chlorpyrifos-methyl	22	45	0.016 - 1.680	0.122
pirimiphos-methyl	12	14	0.024 - 6.410	0.512
chlorpyrifos	6	9	0.005 - 0.600	0.050
diazinon	1	10	0.010 - 0.158	0.031
methoxychlor (p,p' + o,p')	16	10	0.032 - 0.990	0.173
ethion	1	2	0.043 - 0.070	N/A
iprodione + metabolite	0	3	0.120 - 2.600	0.190
DDT + DDE + TDE (p,p' + o,p')	3	7	0.024 - 1.700	0.069
tribufos (DEF)	0	3	0.042 - 0.095	0.057
dicofol	0	5	0.190 - 1.000	0.360
benomyl	3	0	N/A	N/A
permethrin	0	3	0.070 - 0.400	0.150
all others[c]	8	14	0.039 - 1.950	0.177

[a] Residue found is below that normally quantifiable, but its presence and identity are known.
[b] In samples containing quantifiable levels.
[c] n=2 for carbaryl, endosulfan (I + II + sulfate), Gardona, methamidophos, parathion or its methyl homolog, and vinclozolin; n=1 for Aroclor 1254, chlorothalonil, chlorpropham, dieldrin, ethoxyquin, imazalil, phosmet, o-phenylphenol, propiconazole, and tebuconazole.

Summary: Regulatory Monitoring

No residues were found in 59.6% of domestic and in 57.5% of import samples (Figure 3) analyzed under FDA's regulatory monitoring in 2000. Only 0.7% of domestic and 3.8% of import samples had residue levels that were violative. The findings for 2000 demonstrate that pesticide residue levels in foods are generally well below EPA tolerances, corroborating results presented in earlier reports (4a, 4b). Animal feed samples (455 domestic, 58 import) were analyzed. No residues were found in 56.1% of the domestic samples and in 60.3% of the import samples.

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



Incidence/Level Monitoring

Special Surveys

Canola. In 2000, FDA issued a special assignment to determine incidences and levels of certain pesticides in domestic and Canadian canola. Specifically, a total of 25 samples of canola entering the U.S. from Canada (6 seed, 5 oil, and 14 meal) and 12 domestic canola samples (3 seed, 1 oil, and 8 meal) was analyzed. The seed and oil samples were analyzed for 21 pesticide chemicals; the meal samples were analyzed for 22 pesticide chemicals.

Canadian samples were collected from several consignee locations that represented as many different Provinces as possible. All samples collected from the various FDA districts were sent to the FDA's Southeast Regional Laboratory for the analysis for the 21 pesticides; all canola meal samples were additionally analyzed for the pesticide benomyl.

No pesticide residues were detected in any of the domestic samples. Trace amounts of the residues of vinclozolin, endosulfan and/or malathion were found in four Canadian samples of canola seed. U.S. tolerances for endosulfan and vinclozolin on canola seed are 0.2 ppm and 1.0 ppm, respectively; there is no U.S. tolerance for malathion on canola. Residues of chlorpyrifos were found in two samples of canola meal; the levels detected were 0.029 ppm and 0.061 ppm. The former sample also contained a trace amount of lindane. A third sample contained a trace amount of lindane only. No U.S. tolerances have been established for chlorpyrifos and lindane in canola. No residues were detected in Canadian samples of canola oil.

Summary: Incidence/Level Monitoring

Results of the survey of canola show that, as in FDA's regulatory monitoring, the levels of most pesticide residues found in this commodity are generally well below U.S. tolerances, and only three violative residues were found.

Total Diet Study

The Total Diet Study (TDS) is distinct from regulatory monitoring in that it determines pesticide residues in foods prepared for consumption (3). To measure the low levels of residues found in the TDS foods, the analytical methods used are modified to permit measurement at levels 5-10 times lower than those normally used in regulatory monitoring. In general, residues present at or above 1 part per billion can be measured. Of the almost 400 chemicals that can be determined for the analytical methods used, 107 individual residues were found in the foods analyzed in the four market baskets reported here (Market Baskets 99-3, 00-1, 00-2, and 00-3). Among these were 55 pesticides, including 14 which represent more than one related compound counted as a "total", 22 volatile organic compounds for which 70 TDS foods per basket are now being examined, and 9 other organic compounds.

Table 6 lists the 16 most frequently found residues (those found in >2% of the samples), the total number of findings, and the percent occurrence in the four market baskets analyzed in 2000 (1035 food items). The five most frequently observed chemicals, DDT, malathion, chlorpyrifos-methyl, endosulfan, and dieldrin, are the same as those observed for the past several years. The levels of these residues, as well as the others listed in Table 6, are well below regulatory limits.

Table 6. Frequency of Occurrence of Pesticide Residues Found in Total Diet Study Foods in 2000[a]

Pesticide[b]	Total No. of Findings	Occurrence, %	Range, ppm
DDT	220	21	0.0001-0.062
malathion	188	18	0.0003-0.078
chlorpyrifos-methyl	184	18	0.0002-0.086
endosulfan	154	15	0.0001-0.060
dieldrin	118	11	0.0001-0.014
chlorpyrifos	66	6	0.0003-0.106
permethrin	56	5	0.0008-2.450
chlorpropham	55	5	0.0009-1.393
iprodione	54	5	0.0008-5.103
carbaryl[c]	43	4	0.001-1.190
lindane	30	3	0.0001-0.003
thiabendazole[d]	29	3	0.018-0.525
dicloran	27	3	0.0003-0.657
heptachlor	23	2	0.0001-0.001
dicofol	22	2	0.001-0.312
methoxychlor	21	2	0.0003-0.031

[a]Based on 4 market baskets analyzed in 2000 consisting of 1035 items total.
[b]Isomers, metabolites, and related compounds are included with the "parent" pesticide from which they arise.
[c]Reflects overall incidence; however, only 95-96 selected foods per market basket (*i.e.,* 383 items total) were analyzedfor N-methylcarbamates.
[d]Reflects overall incidence; however, only 67 selected foods per market basket (*i.e.,* 268 items total) were analyzed for the benzimidazole fungicides thiabendazole and benomyl.

Information obtained through the TDS is used to estimate dietary intakes of pesticides; these intakes are then compared with established standards. Dietary intakes based on TDS samples collected through mid-1991 have been published previously. (5, 6).

For several years, FDA has collected and analyzed a number of baby foods in addition to those covered under TDS. This adjunct to the TDS included 20 different food items in three baskets (00-1, 00-2, and 00-3; 99-3 included 19 food items) represented here (7 fruit juices, 5 fruits, 4 fruit desserts, and 4 grain products). Table 7 lists the18 pesticide residues found in four collections of these foods (78 samples total) in 2000, the percentage occurrence, and ranges of levels found.

Summary: Total Diet Study

In 2000, the types of pesticide residues found and their frequency of occurrence in TDS were generally consistent with those given in previous FDA reports (4a, 4b). The pesticide residue levels found were well below regulatory standards. An adjunct survey of baby foods also provided evidence of only small amounts of pesticide residues in those foods.

Table 7. Frequency of Occurrence of Pesticide Residues Found in Selected Baby Foods in 2000[a]

Pesticide[b]	Total No. of Findings	Occurrence, %	Range, ppm
carbaryl[c]	14	18	0.002-0.015
endosulfan	13	17	0.0002-0.0025
iprodione	9	12	0.0007-0.096
malathion	9	12	0.0008-0.024
chlorpyrifos-methyl	8	10	0.001-0.007
ethylenethiourea[d]	7	9	0.004-0.011
chlorpyrifos	6	8	0.0006-0.002
thiabendazole[e]	6	8	0.018-0.94
permethrin	5	6	0.0012-0.025
benomyl[e]	4	5	0.041-0.065
dimethoate	2	3	0.001-0.008
hexachlorobenzene	2	3	0.0002-0.0002
propiconazole	2	3	0.005-0.007
parathion-methyl	1	1	0.003
dicloran	1	1	0.008
omethoate	1	1	0.004
fenvalerate	1	1	0.003
phosmet	1	1	0.015

[a]Based on 4 collections consisting of 78 total items.
[b]Isomers, metabolites, and related compounds are included with the "parent" pesticide from which they arise.
[c]Reflects overall incidence; however, only 13-14 selected foods per collection (*i.e.,* 54 items total) were analyzed for N-methylcarbamates.
[d]Reflects overall incidence; however, only 11-12 selected foods per collection (*i.e.,* 46 items total) were analyzed for ethylenethiourea.
[e]Reflects overall incidence; however, only 13-14 selected foods per collection (*i.e.,* 54 items total) were analyzed for the benzimidazole fungicides (thiabendazole and benomyl).

Summary

A total of 6,523 samples of domestically produced food and imported food from 82 countries was analyzed for pesticide residues in 2000. FDA collected and analyzed animal feed samples (455 domestic, 58 import) for pesticides. No residues were found in 56.1% of the domestic samples and in 60.3% of the import samples. Total Diet Study findings for 2000 were generally similar to those found in earlier periods; details of findings will be published separately.

This report was compiled through the efforts of the following FDA personnel: Center for Food Safety and Applied Nutrition, College Park, MD: Office of Plant and Dairy Foods and Beverages: Carolyn M. Makovi, Mark S. Wirtz, and Marion Clower, Jr., Division of Pesticides and Industrial Chemicals; Young H. Lee, Division of Programs and Enforcement Policy; S. Kathleen Egan, Division of Risk Assessment; Office of Management Systems: Sharon A. Macuci, Division of Information Resources Management; Center for Veterinary Medicine, Rockville, MD: Randall Lovell; Kansas City District, Lenexa, KS: Sheila K. Egan and Chris A. Sack.

The database containing the data from which this report was derived is also available from FDA's World Wide Web site, at http://www.cfsan.fda.gov. The 1996 through 1999 reports and databases are available at the same site. FDA pesticide monitoring data collected under the regulatory monitoring approach in 1992, 1993, 1994, and 1995 are available for purchase on personal computer diskettes from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (telephone 1-800-553-6847); or from NTIS's website at http://www.ntis.gov. Order numbers are: 1992, PB94-500899; 1993, PB94-501681; 1994, PB95-503132; and 1995, PB96-503156.

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Appendix A. Analysis of Domestic Samples by Commodity Group in 2000

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
A. Grains and Grain Products					
Barley & barley products	9	88.9	0.0		
Corn & corn products	38	79.0	0.0		
Oats & oat products	10	40.0	0.0		
Rice & rice products	23	87.0	0.0		
Soybeans & soybean products	10	80.0	0.0		
Wheat & wheat products	140	40.0	0.0		
Other grains & grain products	2	0.0	0.0		
Breakfast cereals	25	88.0	0.0		
Bakery products, crackers, etc.	11	36.4	0.0		
Total	**268**	**56.7**	**0.0**		
B. Milk/Dairy Products/Eggs					
Cheese & cheese products	7	85.7	0.0		
Eggs	16	87.5	0.0		
Milk/cream & milk products	42	95.2	0.0		
Total	**65**	**92.3**	**0.0**		
C. Fish/Shellfish/Other Aquatic Products					
Fish and Fish Products	113	73.5	0.0		
Shellfish & Crustaceans	23	82.6	0.0		
Other Aquatic Animals & Products	2	100.0	0.0		
Total	**138**	**75.4**	**0.0**		
D. Fruits					
Blackberries	11	27.3	0.0		
Blueberries	31	58.1	0.0		
Cranberries	13	69.2	0.0		
Grapes, raisins	29	62.1	0.0		
Raspberries	18	33.3	5.6		1
Strawberries	47	46.8	0.0		
Grapefruit	16	25.0	0.0		
Lemons	26	7.7	0.0		
Limes	2	100.0	0.0		
Oranges	90	43.3	0.0		
Apples	214	45.3	0.5	0	1
Pears	72	36.1	0.0		
Other pome fruit	9	11.1	0.0		

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix A. (continued)

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
Apricots	10	10.0	0.0		
Avocados	4	100.0	0.0		
Cherries	58	27.6	3.4	0	2
Dates	2	100.0	0.0		
Nectarines	22	27.3	0.0		
Peaches	116	30.2	0.9		
Plums	18	61.1	0.0		
Other pit fruit	3	100.0	0.0		
Bananas, plantains	2	50.0	0.0		
Mangoes	4	100.0	0.0		
Cantaloupe	18	66.7	0.0		
Honeydew	2	100.0	0.0		
Watermelon	9	77.8	0.0		
Other melons	6	16.7	0.0		
Apple juice	53	52.8	0.0		
Citrus juice	3	100.0	0.0		
Other fruit juices	18	83.3	0.0		
Fruit jams/jellies/pastes/toppings	52	19.2	0.0		
Total	**978**	**41.7**	**0.5**	**1**	**4**
E. Vegetables					
Corn	54	94.4	0.0		
Peas (green/snow/sugar/sweet)	37	94.6	0.0		
String beans (green/snap/pole/long)	118	73.7	0.0		
Other beans & peas & products	86	89.5	1.2	0	1
Cucumbers	43	81.4	0.0		
Eggplant	6	83.3	16.7	0	1
Okra	2	100.0	0.0		
Peppers, hot	15	73.3	0.0		
Peppers, sweet	22	63.6	0.0		
Squash/pumpkins	46	67.4	2.2	0	1
Tomatoes	65	73.8	6.2	0	4
Artichokes	3	100.0	0.0		
Asparagus	22	86.4	0.0		
Bok choy & Chinese cabbage	1	100.0	0.0		
Broccoli	14	71.4	0.0		
Cabbage	32	96.9	0.0		
Cauliflower	18	83.3	0.0		

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix A. (continued)

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
Celery	12	33.3	0.0		
Collards	11	81.8	0.0		
Kale	2	50.0	0.0		
Lettuce, head	21	47.6	0.0		
Lettuce, leaf	34	41.2	0.0		
Mustard greens	5	80.0	0.0		
Spinach	26	42.3	0.0		
Other leaf & stem vegetables	14	64.3	7.1	0	1
Mushrooms and Truffles	3	100.0	0.0		
Carrots	96	62.5	0.0		
Onions/leeks/scallions/shallots	29	82.8	3.4		
Potatoes	102	59.8	2.0	0	2
Radishes	2	100.0	0.0		
Red beets	4	100.0	0.0		
Sweet potatoes	19	73.7	0.0		
Turnips	2	100.0	0.0		
Other root & tuber vegetables	1	0.0	0.0		
Vegetables with sauce	2	100.0	0.0		
Vegetables, dried or paste	1	100.0	0.0		
Other vegetables/vegetable products	16	93.8	0.0		
Total	**986**	**73.5**	**1.0**	**1**	**10**
F. Other					
Peanuts & peanut products	16	93.8	0.0		
Edible seeds	4	25.0	25.0	0	1
Vegetable oil, crude	3	100.0	0.0		
Vegetable oil, refined	1	100.0	0.0		
Spices & condiments & flavors	8	37.5	0.0		
Beverages & water	3	100.0	0.0		
Coffee/tea/wine	25	0.0	0.0		
Honey & other sweeteners	4	100.0	0.0		
Baby foods/formula	26	100.0	0.0		
Total	**90**	**62.2**	**1.1**	**0**	**1**
Total A-F	**2,525**	**59.6**	**0.7**	**2**	**15**

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix B. Analysis of Import Samples by Commodity Group in 2000

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
A. Grains and Grain Products					
Barley & barley products	5	100.0	0.0		
Corn & corn products	5	80.0	20.0	0	1
Oats & oat products	5	100.0	0.0		
Rice & rice products	29	96.5	0.0		
Soybeans & soybean products	3	100.0	0.0		
Wheat & wheat products	3	66.7	0.0		
Other grains & grain products	8	87.5	0.0		
Breakfast cereals	3	100.0	0.0		
Bakery products, crackers, etc.	12	91.7	8.3	0	1
Pasta and noodles	28	42.9	0.0		
Total	**101**	**79.2**	**2.0**	**0**	**2**
B. Milk/Dairy Products/Eggs					
Cheese & cheese products	8	75.0	0.0		
Eggs	3	100.0	0.0		
Milk/cream & milk products	3	100.0	0.0		
Total	**14**	**85.7**	**0.0**		
C. Fish/Shellfish/Other Aquatic Products					
Fish and Fish Products	189	88.9	0.0		
Shellfish & Crustaceans	18	83.3	0.0		
Other Aquatic Animals & Products	1	0.0	0.0		
Total	**208**	**88.0**	**0.0**		
D. Fruits					
Blackberries	51	43.1	7.8	0	4
Blueberries	21	47.6	0.0		
Cranberries	2	50.0	0.0		
Grapes, raisins	201	24.4	1.0	0	2
Raspberries	46	52.2	2.2	0	1
Strawberries	91	15.4	9.9	0	9
Other berries	13	38.5	7.7	0	1
Clementines	14	7.1	0.0		
Grapefruit	1	100.0	0.0		
Lemons	6	50.0	0.0		
Limes	16	81.2	0.0		
Oranges	27	70.4	3.7	0	1
Other citrus fruit	3	33.3	0.0		

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix B. (continued)

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
Apples	50	58.0	2.0	0	1
Pears	63	54.0	0.0		
Other pome fruit	4	100.0	0.0		
Apricots	3	100.0	0.0		
Avocados	39	100.0	0.0		
Cherries	16	50.0	0.0		
Dates	2	100.0	0.0		
Nectarines	36	11.1	0.0		
Olives	10	100.0	0.0		
Peaches	44	31.8	4.5	0	2
Plums	45	20.0	0.0		
Bananas, plantains	314	22.3	0.3	0	1
Guavas	5	60.0	20.0	0	1
Kiwi fruit	12	75.0	0.0		
Mangoes	52	98.1	0.0		
Papaya	57	82.5	1.8	0	1
Pineapple	44	54.5	0.0		
Other sub-tropical fruit	35	77.1	11.4	0	4
Bitter melon	18	33.3	5.6	0	1
Cantaloupe	44	36.4	0.0		
Honeydew	26	26.9	3.8	0	1
Watermelon	20	55.0	5.0	0	1
Other melons	12	58.3	0.0		
Other fruits	5	80.0	0.0		
Apple juice	22	95.5	0.0		
Citrus juice	6	100.0	0.0		
Other fruit juices	47	83.0	2.1	0	1
Fruit jams/jellies/pastes/toppings	86	83.7	1.2	0	1
Total	**1,609**	**45.9**	**2.0**	**0**	**33**
E. Vegetables					
Corn	14	100.0	0.0		
Mung beans and bean sprouts	8	100.0	0.0		
Peas (green/snow/sugar/sweet)	47	68.1	12.8	0	6
String beans (green/snap/pole/long)	70	42.9	14.3	0	10
Other beans & peas & products	76	68.4	9.2	0	7
Cucumbers	86	31.4	1.2	0	1
Eggplant	24	75.0	0.0		

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix B. (continued)

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
Okra	18	72.2	11.1	0	2
Peppers, hot	248	25.4	9.3	5	18
Peppers, sweet	151	47.0	3.3	0	5
Squash/pumpkins	162	46.3	5.6	0	9
Tomatoes	167	55.7	3.0	1	4
Other fruiting vegetables	42	73.8	0.0		
Artichokes	8	87.5	0.0		
Asparagus	60	95.0	1.7	0	1
Bamboo shoots	5	100.0	0.0		
Bok choy & Chinese cabbage	15	60.0	20.0	0	3
Broccoli	36	77.8	0.0		
Cabbage	19	63.2	21.0	0	4
Cauliflower	13	92.3	7.7	0	1
Celery	18	55.6	0.0		
Endive	14	78.6	0.0		
Kale	14	92.9	0.0		
Lettuce, head	16	43.8	0.0		
Lettuce, leaf	17	52.9	0.0		
Mustard greens	5	100.0	0.0		
Radicchio	7	85.7	0.0		
Spinach	31	25.8	22.6	1	6
Other leaf & stem vegetables	83	65.1	9.6	0	8
Mushrooms and Truffles	27	100.0	0.0		
Carrots	13	84.6	7.7	0	1
Cassava	10	100.0	0.0		
Onions/leeks/scallions/shallots	98	86.7	3.1	0	3
Potatoes	15	93.3	0.0		
Radishes	28	85.7	0.0		
Red beets	8	37.5	25.0	0	2
Sweet potatoes	15	86.7	13.3	0	2
Turnips	1	100.0	0.0		
Water chestnuts	11	72.7	27.3	0	3
Other root & tuber vegetables	29	89.7	10.3	0	3
Vegetables with sauce	3	100.0	0.0		
Vegetables, dried or paste	71	77.5	5.6	0	4
Other vegetables/vegetable products	47	76.6	4.2	0	2
Total	**1,850**	**59.2**	**6.0**	**7**	**105**

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.

Appendix B. (continued)

Commodity Group	Total Samples	Samples without Residues, %	Samples Violative[a], %	# over tolerance	# no tolerance
F. Other					
Cashews	53	86.8	0.0		
Coconut & coconut products	5	100.0	0.0		
Peanuts & peanut products	8	87.5	12.5	0	1
Other nuts & nut products	21	95.2	0.0		
Edible seeds	17	88.2	5.9	0	1
Vegetable oil, crude	6	33.3	0.0		
Vegetable oil, refined	8	100.0	0.0		
Spices & condiments & flavors	33	69.7	3.0	0	1
Beverages & water	7	100.0	0.0		
Beverage bases	9	100.0	0.0		
Coffee/tea/wine	9	100.0	0.0		
Honey & other sweeteners	20	100.0	0.0		
Baby foods/formula	3	100.0	0.0		
Other food products, incl. prepared foods	12	75.0	0.0		
Nonfood items	5	80.0	60.0	0	3
Total	**216**	**86.6**	**2.8**	**0**	**6**
Total A-F	**3,998**	**57.5**	**3.6**	**7**	**146**

[a] Includes samples with residues over tolerance or action level and samples with residues with no tolerance.
[b] Residue in one or more samples exceeded an action level rather than a tolerance.