Pesticide Data Program 2017 Honey Data Overview

Pesticide Data Program (PDP) State samplers collected 315 honey samples between April and August 2017. Twelve to 32-ounce containers of 100-percent pure honey were collected from routine PDP sampling sites that included chain-store distribution centers and terminal markets. Approximately 68 percent of the samples were collected at proxy (retail) sites. In addition to the commonly available clover honey, other blossom-flavored honey (such as alfalfa, orange blossom, tupelo, lavender, rosemary, etc.), creamed honey, and honey with honeycombs in the jar were randomly collected when available. Imitation honey (made from rice or corn syrup), solid comb honey, and honey with added flavors were not included in the collection scheme.

The Agricultural Marketing Service (AMS) National Science Laboratory (NSL) in Gastonia, NC, tested honey samples for 199 parent pesticides, metabolites, degradates, and/or isomers. The analytes of interest were extracted from the samples using a variation of the QuEChERS[1] method followed by a cleanup to remove some matrix components and filtration to remove particulates. Separate aliquots of extract were then analyzed using gas chromatography (GC) and/or liquid chromatography (LC) techniques utilizing tandem mass selective detection systems (MS/MS).

The data table presented on the following 5 pages shows residue detections for all compounds tested in honey, including range of values detected, range of Limits of Detection (LODs), and U.S. Environmental Protection Agency (EPA) tolerance references for each pair. The EPA tolerances cited in these data apply to 2017 and not the current year. There may be instances where tolerances may have been recently set or revoked that would have an effect on whether a residue is violative or not. PDP also reports tolerance violations to the U.S. Food and Drug Administration (FDA) as part of an interagency Memorandum of Understanding between the U.S. Department of Agriculture and FDA.

[1] M. Anastassiades, S.J. Lehotay, D. Stajnbaher and F.J. Schenck, "Quick, Easy, Cheap, Effective, Rugged and Safe (QuEChERS) Method", J AOAC Int 86 (2003) 412.

PDP 2017 Summary of Residue Findings for HONEY

Pesticide	Pest. Type	Number of Samples	Samples with Detections	% of Samples with Detects	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
1-Naphthol	IM	315				0.2 ^	NT
2,4-dimethylphenyl formamide (2,4-DMPF)	I	315	238	75.6	0.003 - 0.082	0.003 ^	0.2
2,6-dichlorobenzamide	HM	315	2	0.6	0.02 - 0.074	0.008 ^	NT
3-Hydroxycarbofuran	IM	315				0.005 ^	NT
4-Hydroxychlorothalonil	FM	315				0.005 ^	NT
Acephate	I	315				0.05 ^	NT
Acetamiprid	I	315				0.005 ^	NT
Acetochlor	H	315				0.2 ^	NT
Acrinathrin	I	315				0.2 ^	NT
Alachlor	H	315	3	1	0.46 - 1.07	0.4 ^	NT
Aldicarb	I	315				0.015 ^	NT
Aldicarb sulfone	IM	315				0.003 ^	NT
Aldicarb sulfoxide	IM	315				0.008 ^	NT
Ametoctradin	F	315				0.003 ^	NT
Atrazine	H	315				0.008 ^	NT
Avermectin	I	315				0.1 ^	NT
Azinphos methyl	I	315				0.5 ^	NT
Azoxystrobin	F	315				0.003 ^	NT
Bensulide	H	315				0.008 ^	NT
Bentazon	H	315				0.06 ^	NT
Bifenazate	A	254				0.007 ^	NT
Bifenthrin	I	315				0.02 ^	NT
Boscalid	F	315				0.01 ^	NT
Bromacil	H	315				0.02 ^	NT
Bromopropylate	A	315				0.05 ^	NT
Bromuconazole	F	315				0.02 ^	NT
Buprofezin	I	315				0.004 ^	NT
Captan	F	315				0.5 ^	NT
Carbaryl	I	315				0.01 ^	NT
Carbendazim (MBC)	F	315	3	1	0.005 ^	0.005 ^	NT
Carbofuran	I	315				0.003 ^	NT
Carfentrazone ethyl	H	315				0.01 ^	NT
Chlorantraniliprole	I	315				0.03 ^	NT
Chlorfenapyr	I	315				0.5 ^	NT
Chlorfenvinphos total	I	315				0.1 ^	NT
Chlorothalonil	F	252				0.5 ^	NT
Chlorpropham	H	315				0.03 ^	NT
Chlorpyrifos	I	315				0.01 ^	NT
Chlorpyrifos methyl	I	315				0.02 ^	NT
Clofentezine	I	315				0.05 ^	NT
Clothianidin	I	315				0.015 ^	NT
Coumaphos	I	315	1	0.3	0.013 ^	0.008 ^	0.15
Coumaphos oxygen analog	IM	315				0.001 ^	0.15
Cyantraniliprole	I	315				0.03 ^	NT
Cyazofamid	F	315				0.004 ^	NT

Pesticide	Pest. Type	Number of Samples	Samples with Detections	% of Samples with Detects	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
Cyflufenamid	F	315				0.003 ^	NT
Cyflumetofen	A	315				0.025 ^	NT
Cyfluthrin	I	315				0.05 ^	NT
Cyhalothrin, Lambda	I	315				0.2 ^	NT
Cymiazole	A	315				0.008 ^	NT
Cymoxanil	F	315				0.008 ^	NT
Cypermethrin	I	315				0.05 ^	NT
Cyphenothrin	I	315				2 ^	NT
Cyprodinil	F	315				0.004 ^	NT
Cyromazine	R	315				0.01 ^	NT
DCPA	H	315				0.005 ^	NT
DDE p,p'	IM	315				0.005 ^	NT
DEET (N,N-diethyl-m-toluamide)	X	315				0.006 ^	NT
DEF (Tribufos)	H	315				0.2 ^	NT
Deltamethrin [1]	I	315				0.2 ^	NT
Diazinon	I	315				0.05 ^	NT
Diazinon oxygen analog	IM	259				0.008 ^	NT
Dichlorvos (DDVP)	I	315				0.006 ^	NT
Dicloran	F	315				0.05 ^	NT
Dicofol p,p'	I	315				0.5 ^	NT
Difenoconazole	F	315				0.008 ^	NT
Diflubenzuron	I	315				0.005 ^	NT
Dimethenamid	H	315				0.01 ^	NT
Dimethoate	I	315				0.005 ^	NT
Dimethomorph	F	315				0.05 ^	NT
Dinotefuran	I	315				0.01 ^	NT
Diphenamid	H	315				0.01 ^	NT
Diphenylamine (DPA)	F	315				0.005 ^	NT
Diuron	H	315				0.002 ^	NT
Emamectin benzoate	I	315				0.004 ^	NT
Endosulfan I	IM	315				0.02 ^	NT
Endosulfan II	IM	315				0.02 ^	NT
Endosulfan sulfate	IM	315				0.02 ^	NT
Epoxiconazole	F	315				0.004 ^	NT
Esfenvalerate+Fenvalerate Total	I	315				0.05 ^	NT
Ethion	I	315				0.05 ^	NT
Ethofumesate	H	315				0.03 ^	NT
Etofenprox	I	315				0.05 ^	NT
Etoxazole	A	315				0.001 ^	NT
Famoxadone	F	315				0.01 ^	NT
Fenamidone	F	315				0.003 ^	NT
Fenarimol	F	315				0.025 ^	NT
Fenazaquin	I	315				0.005 ^	NT
Fenbuconazole	F	315				0.006 ^	NT
Fenhexamid	F	315				0.009 ^	NT
Fenoxaprop ethyl	H	315				0.004 ^	NT
Fenpropathrin	I	315				0.05 ^	NT

Pesticide	Pest. Type	Number of Samples	Samples with Detections	% of Samples with Detects	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
Fenpyroximate	A	315				0.006 ^	0.10
Fipronil	I	315				0.05 ^	NT
Fipronil sulfide (MB45950)	IM	315				0.01 ^	NT
Fipronil sulfone (MB46136)	IM	315				0.05 ^	NT
Flonicamid	I	315				0.015 ^	NT
Fludioxonil	F	315				0.02 ^	NT
Fluometuron	H	315				0.003 ^	NT
Fluopicolide	F	315				0.006 ^	NT
Fluopyram	F	315				0.002 ^	NT
Fluoxastrobin	F	315				0.005 ^	NT
Flupyradifurone	I	315				0.015 ^	NT
Fluridone	H	315				0.002 ^	NT
Flutriafol	F	315				0.02 ^	NT
Fluvalinate	I	315				0.05 ^	0.02
Fluxapyroxad	F	315				0.004 ^	NT
Hexazinone	H	315				0.002 ^	NT
Hexythiazox	I	315				0.005 ^	NT
Imazalil	F	315				0.025 ^	NT
Imidacloprid	I	315				0.01 ^	NT
Indoxacarb	I	315				0.015 ^	NT
Iprodione	F	315				0.2 ^	NT
Kresoxim-methyl	F	315				0.005 ^	NT
Linuron	H	315				0.03 ^	NT
Malathion	I	315				0.05 ^	NT
Mandipropamid	F	315				0.004 ^	NT
Metalaxyl/Mefenoxam [2]	F	315				0.003 ^	NT
Metconazole	F	315				0.01 ^	NT
Methamidophos	I	315				0.15 ^	NT
Methidathion	I	315				0.004 ^	NT
Methomyl	I	315				0.007 ^	NT
Methoprene	R	315				0.01 ^	NT
Methoxyfenozide	I	315				0.002 ^	NT
Metolachlor	H	315				0.05 ^	NT
Metribuzin	H	315				0.05 ^	NT
MGK-264	I	315				0.015 ^	NT
Momfluorothrin	I	315				0.05 ^	NT
Myclobutanil	F	315				0.015 ^	NT
Norflurazon	H	315				0.015 ^	NT
Norflurazon desmethyl	HM	315				0.01 ^	NT
Novaluron	I	315				0.01 ^	NT
Omethoate	IM	252				0.025 ^	NT
Oxamyl	I	315				0.02 ^	NT
Oxyfluorfen	H	315				0.2 ^	NT
Parathion ethyl	I	315				0.1 ^	NT
Parathion methyl	I	315				0.05 ^	NT
Penconazole	F	315				0.004 ^	NT
Pendimethalin	H	315				0.04 ^	NT

Pesticide	Pest. Type	Number of Samples	Samples with Detections	% of Samples with Detects	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
Penthiopyrad	F	315				0.002 ^	NT
Permethrin Total	I	315				0.2 ^	NT
Phenothrin	I	315				0.2 ^	NT
Phorate	I	315				0.02 ^	NT
Phosalone	I	315				0.01 ^	NT
Phosmet	I	315				0.2 ^	NT
Phosmet oxygen analog	IM	315				0.002 ^	NT
Picoxystrobin	F	315				0.006 ^	NT
Piperonyl butoxide	I	315				0.025 ^	NT
Prallethrin	I	315				0.5 ^	NT
Prodiamine	H	315				0.02 ^	NT
Profenofos	I	315				0.005 ^	NT
Prometon	H	315				0.002 ^	NT
Prometryn	H	315				0.008 ^	NT
Pronamide	H	315				0.05 ^	NT
Propachlor	H	315				0.005 ^	NT
Propamocarb hydrochloride	F	315				0.005 ^	NT
Propanil	H	315				0.01 ^	NT
Propargite	I	315				0.005 ^	NT
Propazine	H	315				0.005 ^	NT
Propetamphos	I	315				0.005 ^	NT
Propiconazole	F	315				0.005 ^	NT
Pymetrozine	I	315				0.05 ^	NT
Pyraclostrobin	F	315				0.005 ^	NT
Pyridaben	I	315				0.005 ^	NT
Pyrimethanil	F	315				0.01 ^	NT
Pyriproxyfen	I	315				0.003 ^	NT
Quinoxyfen	F	315				0.004 ^	NT
Quintozene (PCNB)	F	315				0.01 ^	NT
Resmethrin cis	IM	315				0.5 ^	NT
Resmethrin trans	IM	315				0.5 ^	NT
Sethoxydim	H	315				0.005 ^	NT
Simazine	H	315				0.04 ^	NT
Spinetoram	I	315				0.03 ^	NT
Spinosad	I	315				0.015 ^	NT
Spirodiclofen	A	315				0.008 ^	NT
Spiromesifen	I	315				0.05 ^	NT
Spirotetramat	I	315				0.005 ^	NT
Sulfoxaflor	I	315				0.02 ^	NT
Tebuconazole	F	315				0.01 ^	NT
Tebufenozide	I	315				0.001 ^	NT
Tebuthiuron	H	315				0.005 ^	NT
Tefluthrin	I	315				0.005 ^	NT
Tetraconazole	F	315				0.005 ^	NT
Tetradifon	I	315				0.02 ^	NT
Tetrahydrophthalimide (THPI)	FM	315				0.25 ^	NT
Tetramethrin	I	315				0.2 ^	NT

Pesticide	Pest. Type	Number of Samples	Samples with Detections	% of Samples with Detects	Range of Values Detected, ppm	Range of LODs, ppm	EPA Tolerance Level, ppm
Thiabendazole	F	315				0.01 ^	NT
Thiacloprid	I	315				0.005 ^	NT
Thiamethoxam	I	315				0.005 ^	NT
Thymol	F	315	43	13.7	0.007 - 0.212	0.005 ^	EX
Tolfenpyrad	I	315				0.008 ^	NT
Triadimefon	F	315				0.015 ^	NT
Triadimenol	F	315				0.025 ^	NT
Triazophos	I	315				0.003 ^	NT
Trifloxystrobin	F	315				0.002 ^	NT
Triflumizole	F	315				0.002 ^	NT
Trifluralin	H	315				0.02 ^	NT
Triticonazole	F	315				0.01 ^	NT
Vinclozolin	F	315				0.05 ^	NT

Many of the listed tolerances are the sum of a parent compound and metabolite(s)/isomer(s). The reader is advised to refer to EPA for the complete listing of compounds in tolerance expressions. The cited tolerances apply to 2017 and not to the current year. There may be instances where a tolerance was recently set or revoked that would have an effect on whether a residue is violative or not.

NOTES

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

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

EX = Exempt from the requirement of a tolerance in or on all food commodities.

1 = Deltamethrin includes parent Tralomethrin.

2 = Metalaxyl and mefenoxam have separate registrations. Mefenoxam is also known as Metalaxyl-M, which is one of the spatial isomers comprising metalaxyl. The spatial isomers of metalaxyl are analytically indistinguishable via multiresidue methods.

Pesticide Types:

A = Acaricide
F = Fungicide, FM = Fungicide Metabolite
H = Herbicide, HM = Herbicide Metabolite
I = Insecticide, IM = Insecticide Metabolite
R = Insect Growth Regulator
X = Insect Repellent