# 8. REGULATIONS AND ADVISORIES

Available information on international, national, and state regulations and standards of pyrethrins and pyrethroids is presented in Table 8-1. Information concerning tolerances for residues of pyrethrins and selected pyrethroids is presented in Table 8-2.

ATSDR has not derived acute-, intermediate-, or chronic-duration inhalation MRLs for pyrethrins or pyrethroids because adequate data were not available for this route of exposure.

ATSDR derived an acute-duration oral MRL of 0.3 mg/kg/day for permethrin, based on a NOAEL of 25 mg/kg/day for neurological impairment in rats. An uncertainty factor of 100 was used (10 for animal to human extrapolation and 10 to account for intrahuman variation) to derive the MRL.

ATSDR derived an acute-duration oral MRL of 0.02 mg/kg/day for cypermethrin (97% purity; 50/50 cis/trans), based on a LOAEL of 20 mg/kg for neurological impairment in rats (McDaniel and Moser 1993). An uncertainty factor of 1,000 was used (10 for lack of a NOAEL, 10 for animal to human extrapolation, and 10 to account for intrahuman variation) to derive the MRL.

ATSDR derived an acute-duration oral MRL of 0.01 mg/kg/day for cyhalothrin, based on a NOAEL of 1 mg/kg/day for gastrointestinal effects in dogs. An uncertainty factor of 100 was used (10 for animal to human extrapolation and 10 to account for intrahuman variation) to derive the MRL.

ATSDR derived an intermediate-duration oral MRL of 0.2 mg/kg/day for permethrin, based on a NOAEL of 15.5 mg/kg/day for neurological impairment in rats. An uncertainty factor of 100 was used (10 for animal to human extrapolation and 10 to account for intrahuman variation) to derive the MRL.

ATSDR derived an intermediate-duration oral MRL of 0.01 mg/kg/day for cyhalothrin, based on a NOAEL of 1 mg/kg/day for gastrointestinal effects in dogs. An uncertainty factor of 100 was used (10 for animal to human extrapolation and 10 to account for intrahuman variation) to derive the MRL.

## Table 8-1. Regulations and Guidelines Applicable to Pyrethrins and Pyrethroids

| Agency | Description | Information | References |
|---|---|---|---|
| INTERNATIONAL | | | |
| Guidelines: | | | |
| IARC | Carcinogenic classification<br>Deltamethrin<br>Fenvalerate<br>Permethrin | <br>Group 3[a] | IARC 2001 |
| WHO | Drinking water guideline<br>Permethrin | <br>20 µg/L | WHO 2001 |
| NATIONAL | | | |
| Regulations and Guidelines: | | | |
| a. Air | | | |
| ACGIH | TLV-TWA—pyrethrum | 5 mg/m$^3$ | ACGIH 2000 |
| NIOSH | REL (TWA)—pyrethrum<br>IDLH—pyrethrum | 5 mg/m$^3$<br>5,000 mg/m$^3$ | NIOSH 2001 |
| OSHA | PEL (8-hour TWA)—pyrethrum<br>General industry (total dust) | <br>5 mg/m$^3$ | OSHA 2001a<br>29CFR1910.1000<br>Table Z-1 |
| | PEL (8-hour TWA)—pyrethrum<br>Construction industry (total dust) | <br>5 mg/m$^3$ | OSHA 2001c<br>29CFR1926.55<br>Appendix A |
| | PEL (8-hour TWA)—pyrethrum<br>Shipyard industry (total dust) | <br>5 mg/m$^3$ | OSHA 2001b<br>29CFR1915.1000<br>Table Z |
| b. Water | | | |
| EPA | Water pollution; determination of reportable quantity—pyrethrin | 1 pound | EPA 2001c<br>40CFR117.3 |
| | Water pollution; designation of hazardous substance—pyrethrin | | EPA 2001a<br>40CFR116.4 |
| | NPDES; toxic pollutants and hazardous substances required to be identified by existing dischargers if expected to be present—pyrethrins | | EPA 2001d<br>40CFR122<br>Appendix D |
| c. Food | | | |
| FDA | Pyrethrins in combination with piperonyl butoxide may be safely used for insect control on bags intended for use in contact with dried food | | FDA 2000a<br>21CFR178.3720 |

## Table 8-1. Regulations and Guidelines Applicable to Pyrethrins and Pyrethroids

| Agency | Description | Information | References |
|---|---|---|---|
| NATIONAL *(cont.)* | | | |
| USDA | Labeling of treated seed with pyrethrins—"don't use for food, feed, or oil purposes" | | USDA 2001b<br>7CFR201.31a(d) |
| | Oat | 1 ppm | |
| | Sorghum | 3 ppm | |
| d. Other | | | |
| ACGIH | Carcinogenicity classification —pyrethrum | A4[b] | ACGIH 2000 |
| DOT | Superfund—reportable quantity | | DOT 2001 |
| | Pyrethrins | 1 pound | 49CFR172.101 Appendix A |
| EPA | RfD (mg/kg/day) | | IRIS 2003e |
| | Type I Pyrethroids | | |
| | Biphenthrin | $1.5x10^{-2}$ | |
| | Permethrin | $5.0x10^{-2}$ | |
| | Resmethrin | $3.0x10^{-2}$ | |
| | Type II Pyrethroids | | |
| | Baythroid/Cyfluthrin | $2.5x10^{-2}$ | |
| | Cyhalothrin/Karate | $5.0x10^{-3}$ | |
| | Cypermethrin | $1.0x10^{-2}$ | |
| | Danitol/Fenpropathrin | $2.5x10^{-2}$ | |
| | Fluvalinate | $1.0x10^{-2}$ | |
| | Pydrin/Fenvalerate | $2.5x10^{-2}$ | |
| | Tralomethrin | $7.5x10^{-3}$ | |
| | Superfund—reportable quantity | | EPA 2001b |
| | Pyrethrins | 1 pound | 40CFR302.4 |
| | Toxic chemical release reporting; Community Right-to-Know—effective date | | EPA 2001e<br>40CFR372.65 |
| | Fenvalerate | 01/01/95 | |
| | Permethrin | 01/01/95 | |
| FDA | New animal drug—for use in the treatment of ear mites in dogs and cats | 0.05% pyrethrins | FDA 2000b<br>21CFR524.2140 |
| STATE | | | |
| Regulations and Guidelines: | | | |
| a. Air | | | |
| Alaska | Air contaminant standard (TWA)—pyrethrum | 5 $mg/m^3$ | BNA 2001 |
| California | Airborne contaminant —pyrethrum | | BNA 2001 |
| Connecticut | HAP—pyrethrum | | BNA 2001 |
| Hawaii | Air contaminant—pyrethrum | | BNA 2001 |
| | PEL | 5 $mg/m^3$ | |
| | STEL | 10 $mg/m^3$ | |

## Table 8-1. Regulations and Guidelines Applicable to Pyrethrins and Pyrethroids

| Agency | Description | Information | References |
|---|---|---|---|
| STATE *(cont.)* | | | |
| Idaho | Toxic air pollutants—pyrethrum | | BNA 2001 |
| | OEL | 5 $mg/m^3$ | |
| | EL | $3.33x10^{-1}$ pounds/hour | |
| | AAC | 0.25 $mg/m^3$ | |
| Kentucky | Air quality—pyrethrum | | BNA 2001 |
| | TAL | 20.0 $mg/m^3$ | |
| | Averaging time | 8 hours | |
| | Significant levels | $1.276x10^{-3}$ pounds/hour | |
| Michigan | Air contaminant—maximum allowable concentrations | | BNA 2001 |
| | Pyrethrum | 5 $mg/m^3$ | |
| | Air contaminant (PEL-TWA) | | BNA 2001 |
| | Pyrethrum | 5 $mg/m^3$ | |
| Montana | Occupational air contaminant (TLV) for pyrethrum | 5 $mg/m^3$ | BNA 2001 |
| New Hampshire | Toxic air pollutants—pyrethrum | 5 $mg/m^3$ | BNA 2001 |
| New Mexico | Toxic air pollutants—pyrethrum | | BNA 2001 |
| | OEL | 5.05 $mg/m^3$ | |
| | Emissions | $3.33x10^{-1}$ pounds/hour | |
| New York | Air contaminant (TLV) | | BNA 2001 |
| | Pyrethrum | 5 $mg/m^3$ | |
| Oregon | Air contaminant (TLV) | | BNA 2001 |
| | Pyrethrum | 5 $mg/m^3$ | |
| South Carolina | Toxic air emissions—pyrethrum | | BNA 2001 |
| | Maximum allowable concentration | 50 $\mu g/m^3$ | |
| Washington | Toxic air pollutants (ASIL 24-hour average) for pyrethrum | 1.7 $\mu g/m^3$ | BNA 2001 |
| Wisconsin | Emission limits—pyrethrum | | BNA 2001 |
| | <25 feet emission point | $4.176x10^{-1}$ pounds/hour | |
| | >25 feet emission point | 1.7520 pounds/hour | |
| b. Water | | | |
| Arizona | Drinking water guideline | | HSDB 2001 |
| | Fenvalerate | 180 µg/L | |
| Florida | Drinking water guideline | | HSDB 2001 |
| | Permethrin | 350 µg/L | |
| | Cypermethrin | 700 µg/L | |
| c. Food | | No data | |
| d. Other | | | |
| California | Pesticide registration—active ingredients | | BNA 2001 |
| | Fluvalinate | | |
| | Permethrin | | |
| | Pyrethrins | | |
| | Resmethrin | | |

## Table 8-1. Regulations and Guidelines Applicable to Pyrethrins and Pyrethroids

| Agency | Description | Information | References |
|---|---|---|---|
| STATE *(cont.)* | | | |
| | Hazardous substance<br>Pyrethrins<br>Pyrethrum | | BNA 2001 |
| Florida | Toxic substances in the workplace—pyrethrum | | BNA 2001 |
| Georgia | Regulated substances and soil concentrations that trigger notification<br>Pyrethrin I<br>Pyrethrin II<br>Pyrethrins and Pyrethroids<br>Pyrethrum<br>Pyrethrum I | | BNA 2001 |
| Massachusetts | Containers adequately labeled pursuant to federal law —pyrethrum | | BNA 2001 |
| | Oil and hazardous material<br>Pyrethrin 1<br>Pyrethrin 2<br>Pyrethrins<br>Pyrethroids<br>Pyrethrum | | BNA 2001 |
| Minnesota | Hazardous substance —pyrethrum | | BNA 2001 |
| New Jersey | Hazardous substance<br>Permethrin<br>Phenothrin<br>Pyrethrin I<br>Pyrethrin II<br>Pyrethrum<br>Resmethrin<br>Tetramethrin | | BNA 2001 |

[a]Group 3: not classifiable as to its carcinogenicity to humans
[b]A4: not classifiable as a human carcinogen

AAC = acceptable ambient concentrations; ACGIH = American Conference of Governmental Industrial Hygienists; ASIL = acceptable source impact levels; CFR = Code of Federal Regulations; DOT = Department of Transportation; EL = emissions levels; EPA = Environmental Protection Agency; FDA = Food and Drug Administration; HAP = hazardous air pollutant; HSDB = Hazardous Substances Data Bank; IARC = International Agency for Research on Cancer; IDLH = immediately dangerous to life and health; NIOSH = National Institute of Occupational Safety and Health; NPDES = National Pollutant Discharge Elimination System; OEL = occupational exposure limit; OSHA = Occupational Safety and Health Administration; PEL = permissible exposure limit; REL = recommended exposure limit; RfD = oral reference dose; STEL = short-term exposure limit; TAL = threshold ambient limits; TLV = threshold limit value; TWA = time-weighted average; USDA = United States Department of Agriculture; WHO = World Health Organization

## Table 8-2. Tolerances for Residues Applicable to Pyrethrins and Pyrethroids (ppm)

| | | Type I Pyrethroids | | Type II Pyrethroids | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pyrethrin | Allethrin | Per-methrin | Cyper-methrin | Delta-methrin | Fenprop-athrin | Fenval-erate | Fluvali-nate | Tralo-methrin |
| | 40CFR 180.128 | 40CFR 180.113 | 40CFR 180.378 | 40CFR 180.418 | 40CFR 180.435 | 40CFR 180.466 | 40CFR 180.379 | 40CFR 180.427 | 40CFR 180.422 |
| Alfalfa, fresh | — | — | 25.0 | — | — | — | — | — | — |
| Alfalfa, hay | — | — | 55.0 | — | — | — | — | — | — |
| Almond hulls | — | — | 0.05 | — | — | — | 15.0 | — | — |
| Almonds | 1.0 | — | 20.0 | — | — | — | 0.2 | — | — |
| Apples | 1.0 | 4.0 | 0.05 | — | — | — | 2.0 | — | — |
| Artichokes | — | — | 10.0 | — | — | — | 0.2 | — | — |
| Asparagus | — | — | 1.0 | — | — | — | — | — | — |
| Avocados | — | — | 1.0 | — | — | — | — | — | — |
| Barley | 3.0 | 2.0 | — | — | — | — | — | — | — |
| Beans | 1.0 | — | — | — | — | — | — | — | — |
| Beans, dried | — | — | — | — | — | — | 0.25 | — | — |
| Beans, snap | — | — | — | — | — | — | 2.0 | — | — |
| Birdseed mixtures | 3.0 | — | — | — | — | — | — | — | — |
| Blackberries | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Blueberries | 1.0 | 4.0 | — | — | — | — | 3.0 | — | — |
| Boysen-berries | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Brassica, head and stem | — | — | — | 2.0 | — | 3.0 | — | — | — |
| Brassica, leafy | — | — | — | 14.0 | — | — | — | — | — |
| Broccoli | — | — | 1.0 | — | — | — | 2.0 | — | 0.5 |
| Brussels sprouts | — | — | 1.0 | — | — | — | — | — | — |
| Buckwheat | 3.0 | — | — | — | — | — | — | — | — |
| Cabbage | — | — | 6.0 | — | — | — | 10.0 | — | — |
| Cranberries | — | — | — | — | — | — | 3.0 | — | — |
| Cantaloupes | — | — | — | — | — | — | 1.0 | — | — |
| Carrots | — | — | — | — | — | — | 0.5 | — | — |
| Cattle, fat | 0.1 | — | 3.0 | 0.05 | — | 1.0 | 1.5 | 0.01 | — |
| Cattle, meat | 0.1 | — | 0.25 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Cattle, meat byproducts | 0.1 | — | 2.0 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Cauliflower | — | — | 1.0 | — | — | — | 0.5 | — | — |
| Celery | — | — | 5.0 | — | — | — | — | — | — |
| Cherries | 1.0 | 4.0 | 3.0 | — | — | — | — | — | — |
| Citrus, dried | — | — | — | — | — | 4.0 | — | — | — |

## Table 8-2. Tolerances for Residues Applicable to Pyrethrins and Pyrethroids (ppm)

| | | Type I Pyrethroids | | Type II Pyrethroids | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pyrethrin | Allethrin | Per-methrin | Cyper-methrin | Delta-methrin | Fenprop-athrin | Fenval-erate | Fluvali-nate | Tralo-methrin |
| | 40CFR 180.128 | 40CFR 180.113 | 40CFR 180.378 | 40CFR 180.418 | 40CFR 180.435 | 40CFR 180.466 | 40CFR 180.379 | 40CFR 180.427 | 40CFR 180.422 |
| pulp | | | | | | | | | |
| Citrus, oil | — | — | — | — | — | 75.0 | — | — | — |
| Cocoa beans | 1.0 | — | — | — | — | — | — | — | — |
| Coffee | — | — | — | — | — | — | — | 0.01 | — |
| Collards | — | — | 20.0 | — | — | — | 10.0 | — | — |
| Copra | 1.0 | — | — | — | — | — | — | — | — |
| Corn, fodder | — | — | 60.0 | — | — | — | 50.0 | — | — |
| Corn, forage | — | — | 60.0 | — | — | — | 50.0 | — | — |
| Corn, grain | — | 2.0 | 0.05 | — | — | — | 0.02 | — | — |
| Corn, including popcorn | 3.0 | — | — | — | — | — | — | — | — |
| Corn, sweet, kernels and cobs | — | — | 0.1 | — | — | — | 0.1 | — | — |
| Cottonseed | 1.0 | — | 0.5 | 0.5 | 0.04 | 1.0 | 0.2 | 0.1 | 0.02 |
| Cottonseed, hulls | — | — | — | — | — | — | — | 0.3 | — |
| Cottonseed oil | — | — | — | — | 0.2 | 3.0 | — | 1.0 | 0.2 |
| Crabapples | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Cucumbers | — | — | — | — | — | — | 0.5 | — | — |
| Currants | 1.0 | 4.0 | — | — | — | — | 3.0 | — | — |
| Dewberries | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Eggplant | — | — | 1.0 | — | — | — | 1.0 | — | — |
| Eggs | 0.1 | — | 1.0 | — | — | 0.05 | — | 0.01 | — |
| Elderberries | — | — | — | — | — | — | 3.0 | — | — |
| English walnuts | — | — | — | — | — | — | 0.2 | — | — |
| Figs | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Filberts | — | — | 0.05 | — | — | — | 0.2 | — | — |
| Flaxseed | 1.0 | — | — | — | — | — | — | — | — |
| Fruits, citrus, crop group 10 | — | — | — | — | — | 2.0 | — | — | — |
| Fruits, pome, crop group 11 | — | — | — | — | — | 5.0 | — | — | — |
| Garlic | — | — | 0.1 | — | — | — | — | — | — |
| Goats, fat | 0.1 | — | 3.0 | 0.05 | — | 1.0 | 1.5 | 0.01 | — |

## Table 8-2. Tolerances for Residues Applicable to Pyrethrins and Pyrethroids (ppm)

| | | Type I Pyrethroids | | Type II Pyrethroids | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pyrethrin | Allethrin | Permethrin | Cypermethrin | Deltamethrin | Fenpropathrin | Fenvalerate | Fluvalinate | Tralomethrin |
| | 40CFR 180.128 | 40CFR 180.113 | 40CFR 180.378 | 40CFR 180.418 | 40CFR 180.435 | 40CFR 180.466 | 40CFR 180.379 | 40CFR 180.427 | 40CFR 180.422 |
| Goats, meat | 0.1 | — | 0.25 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Goats, meat byproducts | 0.1 | — | 2.0 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Gooseberries | 1.0 | 4.0 | — | — | — | — | 3.0 | — | — |
| Grain, sorghum | 1.0 | 2.0 | — | — | — | — | — | — | — |
| Grapes | — | 4.0 | — | — | — | 5.0 | — | — | — |
| Grasses, range | — | — | 15.0 | — | — | — | — | — | — |
| Guavas | — | 4.0 | — | — | — | — | — | — | — |
| Hogs, fat | 0.1 | — | 3.0 | 0.05 | — | 1.0 | 1.5 | 0.01 | — |
| Hogs, meat | 0.1 | — | 0.25 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Hogs, meat byproducts | 0.1 | — | 3.0 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Honey | — | — | — | — | — | — | — | 0.05 | — |
| Honeydew melons | — | — | — | — | — | — | 1.5 | — | — |
| Horseradish | — | — | 1.0 | — | — | — | — | — | — |
| Horses, fat | 0.1 | — | 3.0 | 0.05 | — | 1.0 | 1.5 | 0.01 | — |
| Horses, meat | 0.1 | — | 0.25 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Horses, meat byproducts | 0.1 | — | 2.0 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Huckleberries | — | 4.0 | — | — | — | — | 3.0 | — | — |
| Kiwifruit | — | — | 2.0 | — | — | — | — | — | — |
| Leafy vegetables, except Brassica | — | — | 20.0 | — | — | — | — | — | — |
| Lettuce, head | — | — | 20.0 | 10.0 | — | — | — | — | 1.0 |
| Lettuce, leaf | — | — | — | — | — | — | — | — | 3.0 |
| Loganberries | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Mangoes | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Milk | — | — | — | 0.05 | — | — | 0.3 | 0.01 | — |
| Milk, fat | 0.5 | — | 6.25 | — | — | 2.0 | 7.0 | — | — |
| Milo | — | 2.0 | — | — | — | — | — | — | — |
| Mushrooms | — | — | 6.0 | — | — | — | — | — | — |
| Muskmelons | 1.0 | 4.0 | — | — | — | — | 1.0 | — | — |

## Table 8-2. Tolerances for Residues Applicable to Pyrethrins and Pyrethroids (ppm)

| | | Type I Pyrethroids | | Type II Pyrethroids | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pyrethrin | Allethrin | Per-methrin | Cyper-methrin | Delta-methrin | Fenprop-athrin | Fenval-erate | Fluvali-nate | Tralo-methrin |
| | 40CFR 180.128 | 40CFR 180.113 | 40CFR 180.378 | 40CFR 180.418 | 40CFR 180.435 | 40CFR 180.466 | 40CFR 180.379 | 40CFR 180.427 | 40CFR 180.422 |
| Oats | 1.0 | 2.0 | — | — | — | — | — | — | — |
| Okra | — | — | — | — | — | — | 0.1 | — | — |
| Onion, bulb | — | — | 0.1 | 0.10 | — | — | — | — | — |
| Onions, green | — | — | — | 6.0 | — | — | — | — | — |
| Oranges | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Papayas | — | — | 1.0 | — | — | — | — | — | — |
| Peaches | 1.0 | 4.0 | 5.0 | — | — | — | — | — | — |
| Peanut, hay | — | — | — | — | — | 20.0 | — | — | — |
| Peanut, nutmeat | — | — | — | — | — | 0.01 | — | — | — |
| Peanuts | — | — | — | — | — | — | 0.02 | — | — |
| Peanuts, with shell removed | 1.0 | — | — | — | — | — | — | — | — |
| Pears | 1.0 | 4.0 | 3.0 | — | — | — | 2.0 | — | — |
| Peas | 1.0 | — | — | — | — | — | 1.0 | — | — |
| Peas, dried | — | — | — | — | — | — | 0.25 | — | — |
| Pecans | — | — | — | 0.05 | — | — | 0.2 | — | — |
| Peppers | — | — | — | — | — | — | 1.0 | — | — |
| Peppers, bell | — | — | 1.0 | — | — | — | — | — | — |
| Pineapples | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Pistachios | — | — | 0.1 | — | — | — | — | — | — |
| Plums | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Potatoes | 0.05 | — | 0.05 | — | — | — | 0.02 | — | — |
| Poultry, fat | 0.2 | — | 0.15 | — | — | 0.05 | — | 0.01 | — |
| Poultry, meat | 0.2 | — | 0.05 | — | — | 0.05 | — | 0.01 | — |
| Poultry, meat byproducts | 0.2 | — | 0.25 | — | — | 0.05 | — | 0.01 | — |
| Pumpkins | — | — | — | — | — | — | 1.0 | — | — |
| Radish, roots | — | — | — | — | — | — | 0.3 | — | — |
| Radish, tops | — | — | — | — | — | — | 8.0 | — | — |
| Raisins | — | — | — | — | — | 10.0 | — | — | — |
| Raspberries | 1.0 | 4.0 | — | — | — | — | — | — | — |
| Rice | 3.0 | — | — | — | — | — | — | — | — |
| Rye | 3.0 | 2.0 | — | — | — | — | — | — | — |
| Sheep, fat | 0.1 | — | 3.0 | 0.05 | — | 1.0 | .5 | 0.01 | — |
| Sheep, meat | 0.1 | — | 0.25 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |

## Table 8-2. Tolerances for Residues Applicable to Pyrethrins and Pyrethroids (ppm)

| | | Type I Pyrethroids | | Type II Pyrethroids | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Pyrethrin | Allethrin | Per-methrin | Cyper-methrin | Delta-methrin | Fenprop-athrin | Fenval-erate | Fluvali-nate | Tralo-methrin |
| | 40CFR 180.128 | 40CFR 180.113 | 40CFR 180.378 | 40CFR 180.418 | 40CFR 180.435 | 40CFR 180.466 | 40CFR 180.379 | 40CFR 180.427 | 40CFR 180.422 |
| Sheep, meat byproducts | 0.1 | — | 2.0 | 0.05 | — | 0.1 | 1.5 | 0.01 | — |
| Soybeans | — | — | — | — | — | — | 0.05 | — | 0.05 |
| Soybean hulls | — | — | 0.05 | — | — | — | 1.0 | — | — |
| Spinach | — | — | 20.0 | — | — | — | — | — | — |
| Squash/cucumber subgroup | — | — | — | — | — | 0.5 | — | — | — |
| Stone fruits | — | — | — | — | — | — | 10.0 | — | — |
| Strawberry | — | — | — | — | — | 2.0 | — | — | — |
| Sugarcane | — | — | — | — | — | — | 2.0 | — | — |
| Summer squash | — | — | — | — | — | — | 0.5 | — | — |
| Sunflower seed | — | — | — | — | — | — | 1.0 | — | 0.05 |
| Sweet potatoes | 0.05 | — | — | — | — | — | — | — | — |
| Tomatoes | 1.0 | 4.0 | 2.0 | — | 0.2 | 0.6 | 1.0 | — | — |
| Tomato (product) concentrated | — | — | — | — | 0.1 | — | — | — | — |
| Turnip greens | — | — | 20.0 | — | — | — | — | — | — |
| Turnip roots | — | — | 1.0 | — | — | — | 0.5 | — | — |
| Turnip tops | — | — | — | — | — | — | 20.0 | — | — |
| Vegetables, curcurbit | — | — | 3.0 | — | — | 0.5 | — | — | — |
| Walnuts | 1.0 | — | 0.05 | — | — | — | — | — | — |
| Watercress | — | — | 5.0 | — | — | — | — | — | — |
| Watermelons | — | — | — | — | — | — | 1.0 | — | — |
| Wheat | 3.0 | 2.0 | — | — | — | — | — | — | — |
| Winter squash | — | — | — | — | — | — | 1.0 | — | — |

Source: EPA 2001f