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Proposed Maximum Residue Limit

PMRL2025-25

Pyrethrins

(publié aussi en français)

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Purpose of consultation

Maximum residue limits (MRLs)¹ are being proposed for the pesticide pyrethrins, as part of the following applications for Canadian use, under submission numbers 2015-5225, 2016-8091, 2017-1790, 2017-1791, 2017-7841, 2017-8039, 2018-1980, 2018-1981, 2020-5039, 2021-1358, 2021-1527, 2022-2125, 2022-2127 and 2023-0049.

Under the authority of the *Pest Control Products Act*, Health Canada's Pest Management Regulatory Agency (PMRA) is proposing acceptability of the requested applications to add various commodities (please refer to Table 1) to the product label of PyGanic Crop Protection EC 1.4 II containing technical grade pyrethrins, to control or suppress certain insects, as postemergent foliar uses. The specific uses approved in Canada are detailed on this product label, *Pest Control Products Act* Registration Number 30164.

The evaluation of these pyrethrins applications indicated that the end-use product has value, and the human health and environmental risks associated with the new uses are acceptable. Dietary risks from the consumption of foods listed in Table 1 were shown to be acceptable when pyrethrins is used according to the supported label directions. Therefore, foods containing residues resulting from these uses are safe to eat, and MRLs are being proposed as a result of this assessment. A summary of the field trial data used to support the proposed MRLs can be found in Appendix I.

Dietary health assessment

In assessing the risk of a pesticide, Health Canada combines information on pesticide toxicity with information on the degree and duration of dietary exposure to the pesticide residue from food. The risk assessment process involves four distinct steps:

- a) Identifying the toxicology hazards posed by the pesticide;
- b) Determining the “acceptable dietary level” for Canadians (including all vulnerable populations), which is protective of adverse health effects;
- c) Estimating human dietary exposure to the pesticide from all applicable sources (domestic and imported commodities); and
- d) Characterizing health risk by comparing the estimated human dietary exposure to the acceptable dietary level.

Before registering a pesticide for food use in Canada, Health Canada must determine the quantity of residues that could remain in or on the food when the pesticide is used according to label directions and that such residues will not be a concern to human health (Steps 3 and 4). If estimated human exposure is less than or equal to the acceptable level (developed in Step 2),

¹ A maximum residue limit (MRL) is the maximum amount of residue that may remain in or on food when a pesticide is used according to label directions.

Health Canada concludes that consuming residues resulting from use according to approved label directions is not a health concern. The proposed MRL is then subject to consultation to legally specify it as an MRL. An MRL applies to the identified raw agricultural food commodity as well as to any processed food product that contains it, except for certain instances where different MRLs are specified for the raw agricultural commodity and its processed product(s).

Consultation on the proposed MRLs for pyrethrins is being conducted via this document. Health Canada invites the public to submit written comments on the proposed MRLs for pyrethrins in accordance with the process outlined in the How to get involved section of this document.

To comply with Canada's international trade obligations, consultation on the proposed MRLs is also being conducted internationally by notifying the World Trade Organization, as coordinated by the Canada's Notification Authority and Enquiry Point.

Proposed MRLs

The proposed MRLs, to replace or be added to the MRLs already established for pyrethrins, are summarized in Table 1.

Table 1 Proposed maximum residue limits for pyrethrins

Common name	Residue definition ¹	MRL (ppm) ²	Food commodity
Pyrethrins	The sum of (1 <i>S</i>)-2-methyl-4-oxo-3-(2 <i>Z</i>)-2,4-pentadien-1-yl-2-cyclopenten-1-yl (1 <i>R</i> ,3 <i>R</i>)-2,2-dimethyl-3-(2-methyl-1-propen-1-yl)cyclopropanecarboxylate, (1 <i>S</i>)-3-(2 <i>Z</i>)-2-buten-1-yl-2-methyl-4-oxo-2-cyclopenten-1-yl (1 <i>R</i> ,3 <i>R</i>)-2,2-dimethyl-3-(2-methyl-1-propen-1-yl)cyclopropanecarboxylate, and (1 <i>S</i>)-2-methyl-4-oxo-3-(2 <i>Z</i>)-2-penten-1-yl-2-cyclopenten-1-yl (1 <i>R</i> ,3 <i>R</i>)-2,2-dimethyl-3-(2-methyl-1-propen-1-yl)cyclopropanecarboxylate	20	Dried angelica leaves, dried balm leaves, dried basil leaves, dried borage leaves, dried burnet leaves, dried chamomile leaves, dried chervil leaves, dried Chinese chive leaves, dried chive leaves, dried cilantro leaves, dried clary leaves, dried costmary leaves, dried curry leaves, dried dillweed leaves, dried horehound leaves, dried hyssop leaves, dried lavender leaves, dried lemongrass leaves, dried lovage leaves, dried marigold leaves, dried marjoram leaves, dried parsley leaves, dried rosemary leaves, rue, dried sage leaves, dried summer savory leaves, dried bay leaves, dried tansy leaves, dried tarragon leaves, dried thyme leaves, dried winter savory leaves, dried wintergreen leaves, dried woodruff leaves,

Common name	Residue definition ¹	MRL (ppm) ²	Food commodity
			dried wormwood leaves, dried pennyroyal leaves
		5.0	Fresh angelica leaves, fresh balm leaves, fresh basil leaves, fresh borage leaves, fresh burnet leaves, fresh cilantro leaves, fresh clary leaves, fresh costmary leaves, fresh culantro leaves, fresh curry leaves, fresh dillweed leaves, fresh horehound leaves, fresh hyssop tops, fresh lavender, fresh lemongrass leaves, fresh lovage leaves, fresh marigold, fresh marjoram, fresh nasturtium leaves and flowers, fresh rosemary leaves, fresh sage leaves, fresh summer savory leaves, fresh sweet bay leaves, fresh tansy leaves, fresh tarragon leaves, fresh thyme leaves, fresh winter savory leaves, fresh wintergreen leaves, fresh woodruff leaves, fresh wormwood leaves
		3.0	<i>Brassica</i> leafy greens (crop subgroup 4-13B)
		1.0	Leafy greens (crop subgroup 4-13A, except fresh cilantro leaves); spices (crop subgroup 19B)
		0.4	Hops (dried cones)
		0.15	Bushberries (crop subgroup 13-07B) ³ ; cherries (crop subgroup 12-09A) ⁴ ; broccoli
		0.05	Cucurbit vegetables (crop group 9) ⁵ ; carrot roots
		0.02	Bulb onions (crop subgroup 3-07A)

¹ The residue definition for enforcement purposes was reassessed and has been revised to pyrethrin 1, cinerin 1 and jasmolin 1 under submission number 2015-5225.

² ppm = parts per million

³ The MRL is proposed to replace the currently established MRL of 1.0 ppm for currants, gooseberries, highbush blueberries, huckleberries and lowbush blueberries with a single crop subgroup 13-07B MRL at a lower value. This will result in a single MRL that will be applicable to all commodities within crop subgroup 13-07B.

⁴ The MRL is proposed to replace the currently established MRL of 1.0 ppm for cherries with a single crop subgroup 12-09A

MRL at a lower value. This will result in a single MRL that will be applicable to all commodities within crop subgroup 12-09A.

⁵ The MRL is proposed to replace the currently established MRL of 1.0 ppm for muskmelons with a single crop group 9 MRL at a lower value. This will result in a single MRL that will be applicable to all commodities within crop group 9.

The commodities included in the listed crop groups/subgroups can be found on the Residue Chemistry Crop Groups webpage in the Pesticides and pest management section of Canada.ca.

MRLs established in Canada may be found using the Maximum Residue Limit Database on the Maximum residue limits, human health, and food safety webpage. The database allows users to search for established MRLs, regulated under the *Pest Control Products Act*, both for pesticides or for food commodities.

International situation and trade implications

MRLs may vary from one country to another for a number of reasons, including differences in pesticide use patterns and the geographic locations of the crop field trials used to generate residue chemistry data.

Table 2 compares the MRLs proposed for pyrethrins in Canada with corresponding tolerances in the United States (U.S.) and Codex MRLs.² U.S. tolerances are listed in the Electronic Code of Federal Regulations, 40 CFR Part 180, by pesticide. A listing of established Codex MRLs is available on the Codex Alimentarius Pesticide Index webpage, by pesticide or commodity.

Table 2 Comparison of proposed Canadian MRLs, U.S. tolerances and Codex MRLs

Food commodity	Proposed Canadian MRL (ppm)	Established U.S. tolerance (ppm)	Established Codex MRL (ppm)
Dried angelica leaves, dried balm leaves, dried basil leaves, dried borage leaves, dried burnet leaves, dried chamomile leaves, dried chervil leaves, dried Chinese chive leaves, dried chive leaves, dried cilantro leaves, dried clary leaves, dried costmary leaves, dried curry leaves, dried dillweed leaves, dried horehound leaves, dried hyssop leaves, dried lavender leaves, dried lemongrass leaves, dried lovage leaves, dried marigold leaves, dried marjoram leaves, dried parsley leaves, dried rosemary leaves, rue, dried sage	20	Not established	Not established

² The Codex Alimentarius Commission is an international organization under the auspices of the United Nations that develops international food standards, including MRLs.

Food commodity	Proposed Canadian MRL (ppm)	Established U.S. tolerance (ppm)	Established Codex MRL (ppm)
leaves, dried summer savory leaves, dried bay leaves, dried tansy leaves, dried tarragon leaves, dried thyme leaves, dried winter savory leaves, dried wintergreen leaves, dried woodruff leaves, dried wormwood leaves, dried pennyroyal leaves			
Fresh angelica leaves, fresh balm leaves, fresh basil leaves, fresh borage leaves, fresh burnet leaves, fresh cilantro leaves, fresh clary leaves, fresh costmary leaves, fresh culantro leaves, fresh curry leaves, fresh dillweed leaves, fresh horehound leaves, fresh hyssop leaves, fresh lavender leaves, fresh lemongrass leaves, fresh lovage leaves, fresh marigold leaves, fresh marjoram leaves, fresh nasturtium leaves, fresh rosemary leaves, fresh sage leaves, fresh summer savory leaves, fresh bay leaves, fresh tansy leaves, fresh tarragon leaves, fresh thyme leaves, fresh winter savory leaves, fresh wintergreen leaves, fresh woodruff leaves, fresh wormwood leaves	5.0	Not established	Not established
<i>Brassica</i> leafy greens (crop subgroup 4-13B)	3.0	Not established	Not established
Leafy greens (crop subgroup 4-13A, except fresh cilantro leaves)	1.0	Not established	Not established
Spices (crop subgroup 19B)	1.0	Not established	Not established
Hops (dried cones)	0.4	Not established	Not established
Bushberries (crop subgroup 13-07B)	0.15	1.0 ppm (blueberry, postharvest; currant, postharvest; gooseberry, postharvest)	Not established

Food commodity	Proposed Canadian MRL (ppm)	Established U.S. tolerance (ppm)	Established Codex MRL (ppm)
Cherries (crop subgroup 12-09A)	0.15	1.0 ppm (cherry, sweet, postharvest; cherry tart, postharvest)	Not established
Broccoli	0.15	Not established	Not established
Cucurbit vegetables (crop group 9)	0.05	1.0 ppm (muskmelon, postharvest)	0.05 ppm (fruiting vegetables, cucurbits (group))
Carrot roots	0.05	Not established	0.05 ppm (root and tuber vegetables (group))
Bulb onions (crop subgroup 3-07A)	0.02	Not established	Not established

How to get involved

Health Canada invites the public to submit written comments on the proposed MRLs for pyrethrins up to 75 days from the date of publication of this document (by 26 January 2026). Please forward your comments to the Pest Management Regulatory Agency Publications Section. Health Canada will consider all comments received and a science-based approach will be applied in making a final decision on the proposed MRLs. Comments received will be addressed in a response to comments document found in Pesticides and pest management consultations. The established MRLs will be legally in effect as of the date that they are entered into the Maximum Residue Limit Database.

Appendix I

Summary of field trial data used to support the proposed maximum residue limits

Residue data for pyrethrins were submitted to support the use of PyGanic Crop Protection EC 1.4 II on carrots, dry bulb onions, head lettuce, leaf lettuce, spinach, mustard greens, broccoli, cucumbers, cantaloupes, summer squash, cherries (sweet and tart), basil, chives, dill, fennel and hops. Previously reviewed residue data from field trials conducted in/on blueberries and cucumbers were reassessed in the framework of this petition.

Dietary risk assessment results

Acute dietary (food plus drinking water) intake estimates indicated that the general population and all population subgroups are exposed to less than 50% of the acute reference dose, and therefore there are no health concerns.

Chronic (non-cancer and cancer) dietary (food plus drinking water) intake estimates indicated that the general population and all population subgroups are exposed to less than 75% of the acceptable daily intake, and therefore there are no health concerns.

Maximum residue limits

The recommendation for maximum residue limits (MRLs) for pyrethrins was based upon the submitted field trial data, and the guidance provided in the OECD MRL Calculator. Table A1 summarizes the residue data for pyrethrins used to calculate the proposed MRLs.

Table A1 Summary of field trial data used to support the MRLs

Commodity	Application method/Total application rate (g a.i./ha) ¹	Preharvest interval (days)	Lowest average field trial residues (ppm)	Highest average field trial residues (ppm)
Basil, fresh	Foliar application/ 696–705	0	0.904	2.14
Basil, dried	Foliar application/ 696–705	0	1.55	9.78
Blueberries	Foliar application/ 562–570	0–2	<0.02	0.065
Broccoli	Foliar application/ 599–812	0	<0.02	0.062
Cantaloupes	Foliar application/ 557–709	0	<0.02	<0.021

Commodity	Application method/Total application rate (g a.i./ha)¹	Preharvest interval (days)	Lowest average field trial residues (ppm)	Highest average field trial residues (ppm)
Carrot roots	Foliar application/ 602–619	0	<0.02	<0.02
Cherries (sweet and tart)	Foliar application/ 589–702	0-1	<0.02	0.08
Chives, fresh	Foliar application/ 703–705	0	0.285	0.523
Chives, dried	Foliar application/ 703–705	0	1.1	1.79
Cucumbers	Foliar application/ 300–616	0	<0.02	<0.02
Dill, seed	Foliar application/ 723	0	0.524	0.524
Dry bulb onions	Foliar application/ 602–672	0	<0.02	<0.02
Fennel, seed	Foliar application/ 1004–1430	0	0.187	0.244
Head lettuce	Foliar application/ 600–611	0	0.045	0.190
Hops, dried cones	Foliar application/ 605–619	0	0.037	0.090
Leaf lettuce	Foliar application/ 594–626	0	0.055	0.520
Mustard greens	Foliar application/ 586–701	0	0.402	1.13

Commodity	Application method/Total application rate (g a.i./ha)¹	Preharvest interval (days)	Lowest average field trial residues (ppm)	Highest average field trial residues (ppm)
Spinach	Foliar application/ 602–605	0	0.20	0.50
Summer squash	Foliar application/ 559–617	0	<0.02	<0.02

¹ g a.i./ha = grams of active ingredient per hectare

Following the review of all available data, the MRLs proposed in Table 1 are recommended, in order to cover residues of pyrethrins. Dietary risks from exposure to residues of pyrethrins in these crop commodities at the proposed MRLs were shown to be acceptable for the general population and all subpopulations, including infants, children, adults and seniors. Thus, the foods that contain residues as listed in Table 1 are considered safe to eat

References

PMRA#	Citation
2132200	1994, Field Phase for LX1180-02 (Pyrethrin + Piperonyl Butoxide) Raw Agricultural Commodity Trials on Brassica in Arkansas, California, Oregon, New York, Florida, Texas, and Georgia, DACO: 7.4.1
2567917	2015, Pyrethrins + PBO: Magnitude of the Residue on Cucumber, DACO: 7.4.1,7.4.2
2711706	2015, Pyrethrins + PBO: Magnitude of the Residue on Crop Group 19 (Herbs and Spices), DACO: 7.4.1
2713697	2013, Magnitude of Pyrethrins and Piperonyl Butoxide Residues in/on Berry and Small Fruit Raw Agricultural and Processed (Raisin) Commodities Following Ten Foliar Applications of EVERGREEN(R) Crop Protection EC 60-6 with a 3-day Retreatment Interval and a 0-day PHI--2012: Amended Final Study Report, DACO: 7.4.1,7.4.5
2713698	2013, Magnitude of Pyrethrins and Piperonyl Butoxide Residues in/on Brassica Leafy Vegetables Raw Agricultural Commodities Following Ten Foliar Applications of EVERGREEN® Crop Protection EC 60-6 with a 3-day Retreatment Interval and a 0-day PHI—2011/2012: Amended Final Study Report., DACO: 7.4.1
2713713	2014, Pyrethrins+PBO: Magnitude of the Residue on Cabbage and Mustard Greens, DACO: 7.4.1
2751113	2016, Final report - Pyrethrins + PBO: Magnitude of the Residue on Carrot, DACO: 7.4.1,7.4.2
2751122	2016, Final report - Pyrethrins + PBO: Magnitude of the Residue on Onion, Dry Bulb, DACO: 7.4.1,7.4.2
2833483	2017, Final report - Pyrethrins: Magnitude of the Residue on Hops, DACO: 7.4.1,7.4.2
2834946	2017, Final report - Pyrethrins: Magnitude of the Residue on Broccoli, DACO: 7.4.1,7.4.2
2883713	2016, Residue report - Pyrethrins + PBO: Magnitude of the Residue on Cantaloupe, DACO: 7.4.1,7.4.2
2883728	2018, Residue report - Pyrethrins + PBO: Magnitude of the Residue on Summer Squash, DACO: 7.4.1,7.4.2
3167739	2020, Pyrethrins + PBO: Magnitude of the Residue on Mustard Greens, DACO: 7.4.1,7.4.2
3215716	2021, Pyrethrins + PBO: Magnitude of the Residue on Spinach, DACO: 7.4.1,7.4.2
3357095	2021, Pyrethrins + PBO: Magnitude of the Residue on Head Lettuce, DACO: 7.4.1,7.4.2
3357106	2021, Pyrethrins + PBO: Magnitude of the Residue on Leaf Lettuce, DACO 7.4.1,7.4.2
3422938	2022, Pyrethrins + PBO: Magnitude of the Residue on Cherry, DACO: 7.4.1,7.4.2