Proposed Maximum Residue Limit PMRL2023-17

Abamectin

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Purpose of consultation

Maximum residue limits (MRLs)[1] are being proposed for the pesticide abamectin, as part of the following application for Canadian use, under pesticide submission number 2020-1811.

Under the authority of the *Pest Control Products Act*, Health Canada's Pest Management Regulatory Agency (PMRA) is proposing acceptability of the requested application to add crop group 6 (legume vegetables) to the product label of Minecto Pro, containing technical grade abamectin and cyantraniliprole, to control various mites and insect pests. The specific uses approved in Canada are detailed on this product label, *Pest Control Products Act* Registration Number 33023.

The evaluation of this abamectin application 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 abamectin is used according to the supported label directions. Therefore, foods containing residues resulting from this use 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:

1) Identifying the toxicology hazards posed by the pesticide;

2) Determining the "acceptable dietary level" for Canadians (including all vulnerable populations), which is protective of adverse health effects;

3) Estimating human dietary exposure to the pesticide from all applicable sources (domestic and imported commodities); and

4) 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 above). If estimated human exposure is less than or equal to the acceptable level (developed in Step 2 above), 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.

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

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 abamectin is being conducted via this document. Consultation on the proposed cyantraniliprole MRLs is being conducted via a separate PMRL action. Health Canada invites the public to submit written comments on the proposed MRLs for abamectin in accordance with the process outlined in the Next steps 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 be added to the MRLs already established for abamectin, are summarized in Table 1.

Table 1 Proposed maximum residue limits for abamectin

Common name	Residue definition	MRL (ppm)[1]	Food commodity
Abamectin	5-O-demethylavermectin A1a	0.08	Edible-podded legume vegetables (crop subgroup 6A); edible-podded asparagus beans, edible-podded Chinese longbeans
		0.01	Dry shelled pea and bean, except soybean (crop subgroup 6C); succulent shelled pea and bean (crop subgroup 6B); dry asparagus beans, dry Chinese longbeans, dry crowder peas, dry field beans, dry soybeans, dry sweet lupins, dry white lupins, dry white sweet lupins, succulent shelled crowder peas, succulent shelled sweet lupins, succulent shelled white lupins, succulent shelled white sweet lupins

[1] ppm = parts per million

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

MRLs established in Canada may be found using the Maximum Residue Limit Database on the Maximum Residue Limits for Pesticides 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 abamectin in Canada with corresponding American tolerances and Codex MRLs.[2] American 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, American Tolerances and Codex MRLs

Food commodity	Canadian MRL (ppm)	American tolerance (ppm)	Codex MRL (ppm)
Edible-podded legume vegetable (crop subgroup 6A); Edible-podded asparagus beans, edible-podded Chinese longbeans	0.08	0.08	0.08 Beans with pods (*Phaseolus* spp.) immature pods and succulent seeds
Succulent shelled pea and bean (crop subgroup 6B); succulent shelled crowder peas, succulent shelled sweet lupins, succulent shelled white lupins, succulent shelled white sweet lupins	0.01	0.08	0.002 (Succulent beans without pods)
Dry shelled pea and bean (crop subgroup 6C); dry asparagus beans, dry Chinese longbeans, dry crowder peas, dry field beans, dry sweet lupins, dry white lupins, dry white sweet lupins	0.01	0.01	0.005 (dry beans)
Dry soybeans	0.01	0.01	0.002

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

Next steps

Health Canada invites the public to submit written comments on the proposed MRLs for abamectin up to 75 days from the date of publication of this document. Please forward your comments to Publications (see the contact information on the cover page of this document). 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 separate document linked to this PMRL. 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 abamectin from field trials conducted in the United States were submitted to support the domestic use of Minecto Pro on crop group 6. Abamectin was applied to beans and peas (edible-podded, succulent, dry) and to soybeans at exaggerated rates, and harvested according to label directions. In addition, a processing study in treated soybeans was reviewed to determine the potential for concentration of residues of abamectin into processed commodities.

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 31% of the acute reference dose, and therefore there are no health concerns.

Chronic dietary (food plus drinking water) intake estimates indicated that the general population and all population subgroups are exposed to less than 30% of the acceptable daily intake, and therefore there are no health concerns.

Maximum residue limits

The recommendation for maximum residue limits (MRLs) for abamectin was based upon the submitted field trial data, and the guidance provided in the OECD MRL Calculator. Table A1 summarizes the residue data used to calculate the proposed MRLs for crop group 6.

Table A1 Summary of field trial and processing 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)[2]	Highest average field trial residues (ppm)[2]	Experimental processing factor
Edible-podded beans	Foliar/108–157	6–7	<0.006	<0.018	Not applicable
Edible-podded peas	Foliar/148–174	7	<0.007	<0.013	Not applicable
Succulent shelled beans	Foliar/80–128	6–8	<0.006	<0.006	Not applicable
Succulent shelled peas	Foliar/116–399	6–7	<0.006	<0.006	Not applicable
Dried shelled beans (except soybeans)	Foliar/94–132	6–8	<0.006	<0.006	Not applicable

Commodity	Application method/Total application rate (g a.i./ha)[1]	Preharvest interval (days)	Lowest average field trial residues (ppm)[2]	Highest average field trial residues (ppm)[2]	Experimental processing factor
Dried shelled peas (except soybeans)	Foliar/193–269	7	<0.006	<0.006	Not applicable
Dry soybeans	Foliar/86-142	27–29	<0.006	<0.006	No concentration in processed fractions.

[1] g a.i./ha = grams of active ingredient per hectare
[2] Abamectin residues = Combined residues of avermectin B_{1a}, 8,9-Z avermectin B_{1a}, and avermectin B_{1b}.

Following the review of all available data, the MRLs proposed in Table 1 are recommended to cover residues of abamectin. Dietary risks from exposure to residues of abamectin 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
3120281	2020, Residue Data Summary for Legume Vegetables CG 6 Rationale for Aerial Application of Potato, DACO: 7.1
3120291	2013, Abamectin 500 FS (A14006B) and Abamectic SC (A15368D) - Magnitude of the Residues in or on Soybean Resulting from Seed Treatment Followed by Foliar Applications - USA, 2011, DACO: 7.4.1,7.4.2,7.4.5,7.4.6
3120292	2017, Abamectin FS (A14006B) and Abamectin SC (A15368D) - Magnitude of the Residues in or on Representative Crops of Crop Group 6 Legume Vegetables (except soybean) and Crop Group 7A Foliage of Legume Vegetables (except soybean) USA 2013, DACO: 7.4.1,7.4.2,7.4.5,7.4.6