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Proposed Maximum Residue Limit PMRL2024-24

Flonicamid

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Health Canada is consulting the public and seeking your feedback on:

- Proposed maximum residue limit (MRL) increases for the use of flonicamid on bok choy Chinese cabbages, watercress, leaf lettuce, dried peppermint leaves and dried spearmint leaves.
- Setting new MRLs on herbs fresh leaves (crop subgroup 25A), herbs dried leaves (crop subgroup 25B), sweet corn (crop subgroup 15-21D), maca, turnip greens, and bushberries (except lingonberries and lowbush blueberries) (crop subgroup 13-07B).

1.0 Pesticides in Canada

Pesticides provide both organic and conventional growers in Canada with a variety of options to help minimize damage from pests to their crops and livestock. Pesticides help protect crops from pests such as weeds, fungi, and insects. This allows people in Canada to access high-quality nutritious foods all year long.

All pesticides, for both organic and conventionally grown crops, that are **approved for use in Canada** are regulated by Health Canada's Pest Management Regulatory Agency (PMRA). This includes regulating pesticide residues that may be present on food commodities imported into Canada. Health Canada reviews all new pesticide applications and re-evaluates existing pesticides on a regular basis to help ensure the protection of human health.

Maximum residue limits

A maximum residue limit (MRL) is the highest amount of a specific pesticide residue allowed on a particular food commodity when a pesticide is used according to label directions.

Health Canada scientists set (or specify) MRLs after a robust scientific review of the pesticide, provided that the risks meet Health Canada's requirements for the protection of human health. This means that the scientists first make sure the amount of pesticide residue on or in food commodities is low enough that there are no effects on human health. Health Canada is responsible for setting MRLs on food commodities grown domestically or imported into Canada. Different food commodities can have different MRLs for the same pesticide due to differences in how the pesticide is used for each crop or food commodity.

An MRL is a scientific calculation that estimates the maximum potential concentration of residues on food commodities. It is **not** a measurement of pesticide toxicity or safety. It accounts for the highest potential amount of residue that may remain on a food commodity when label directions are followed. More information about these calculations is in Section 5.0 on Calculating the proposed MRL. Often, the residues that remain are much lower than the MRL under typical use conditions. If the use directions change for a given pesticide, the MRL can also change. However, before any change to an MRL is proposed, the risks must meet Health Canada's requirements for the protection of human health.

MRLs are legal limits that are enforced by the Canadian Food Inspection Agency (CFIA). The latest National Chemical Residue Monitoring Program and Chemistry Food Safety report that uses MRLs to determine compliance rates can be requested on the Food safety testing reports and journal articles page on Canada.ca.

When setting MRLs on related food commodities, Health Canada uses crop groups. Individual crops can be allocated to a crop group based on botanical or taxonomic criteria as well as on cultivation practices. Crop groups simplify the establishment of MRLs by using residue data for crops that are representative of the whole group to extend to all crops within the crop group. Crop groups can also contain smaller and more closely related crop subgroups.

Food commodities grown in Canada

Before making any registration decision for a pesticide in Canada, Health Canada must evaluate the chemistry of a pesticide, how well a pesticide works, and the pesticide's potential impact on human health and the environment. This is the full pesticide assessment process as directed in the *Pest Control Products Act*. This is to ensure there are no health or environmental concerns from the potential pesticide exposure to Canadians through this use, and that the pesticide has value.

2.0 Purpose of this consultation

Health Canada is consulting the public and seeking your feedback on proposed new and revised MRLs to address potential flonicamid residues on various food commodities grown in Canada.

Flonicamid is an insecticide currently registered for use in Canada on non-grass animal feeds, mint, hops, flax, and various field-grown and greenhouse-grown fruit and vegetable commodities.

Proposals were submitted by the Pest Management Centre of Agriculture and Agri-Food Canada, and supported by the registrant ISK BioSciences Corp., to register the postemergent foliar use of flonicamid on herbs (crop group 25), greenhouse-grown watercress, greenhouse-grown bok choy Chinese cabbages, greenhouse-grown leaf lettuce, sweet corn (crop subgroup 15-21D), and bushberries (crop subgroup 13-07B) on the Beleaf 50 SG Insecticide label (*Pest Control Products Act* Registration Number 29796). The PMRA is also proposing acceptability to set MRLs on field-grown turnip greens and field-grown maca, for which the postemergent foliar uses were previously registered on the Beleaf 50 SG Insecticide label (*Pest Control Products Act* Registration Number 29796), but the MRLs were not specified. These MRL changes, including new MRLs, would allow these treated field-grown or greenhouse-grown commodities, or any of their derived processed commodities that may contain flonicamid residues, to be sold in Canada.

Health Canada is proposing to accept these MRL changes (including new MRLs). This is because Health Canada conducted a thorough scientific assessment and found that the health risk from eating food commodities treated with flonicamid meets Health Canada’s requirements for the protection of human health. The main health assessment required for this consultation was the dietary risk assessment, which was conducted in accordance with Sections 10 and 11 of the *Pest Control Products Act*. This assessment involves a thorough evaluation of health risks that considered the toxicity and dietary exposure of flonicamid, and follows strict regulatory standards. Further details on the dietary risk assessment can be found in section 3.0 on Dietary risk assessment.

Proposed Canadian MRLs for flonicamid

Table 1 summarizes the proposed new and revised MRLs for flonicamid, and the reason for each proposed MRLs.

MRLs are based on a residue definition that typically includes the pesticide itself and may also include one or more degradation products referred to as metabolites. A searchable residue definition table is available on the Residue Definitions for Chemicals with Maximum Residue Limits Regulated Under the Pest Control Products Act page on Canada.ca.

The following MRLs are based on the following residue definition: *N*-(cyanomethyl)-4-(trifluoromethyl)-3-pyridinecarboxamide, including the metabolites 4-trifluoromethylnicotinic acid, *N*-(4-trifluoromethylnicotinoyl)glycine and 4-trifluoromethylnicotinamide

Table 1 Current and proposed maximum residue limits (MRLs) for flonicamid

Food commodity	Current MRL (ppm)[1]	Proposed MRL (ppm)[1]	Reason for the proposed MRL
Bok choy Chinese cabbages, watercress	16	50	**Increased MRL** on bok choy Chinese cabbages and watercress, because of new data on **greenhouse-grown** mustard greens (which is the representative commodity for crop subgroup 4-13B *Brassica* leafy greens, in which watercress and bok choy Chinese cabbages are included)[2]
Herbs dried leaves (crop subgroup 25B)	7.0 (dried peppermint leaves and dried spearmint leaves) None (all other commodities in crop subgroup 25B)	40	**New MRL** on herbs dried leaves (crop subgroup 25B) and **Increased MRL** on dried peppermint leaves and dried spearmint leaves, because of new field trial data on dried basil leaves and re-assessed field trial data on mint leaves
Maca, turnip greens	none	16	**Add MRL** for which the uses were previously registered (based on data on **field-grown** mustard greens)[3]

Food commodity	Current MRL (ppm)[1]	Proposed MRL (ppm)[1]	Reason for the proposed MRL
Leaf lettuce	4.0	8.0	**Increased MRL** on leaf lettuce, because of new data on greenhouse-grown leaf lettuce
Herbs fresh leaves (crop subgroup 25A)	none	7.0	**New MRL** on herbs fresh leaves (crop subgroup 25A), because of new field trial data on fresh basil leaves and re-assessed field trial data on fresh mint leaves
Bushberries (crop subgroup 13-07B)	1.5 (lowbush blueberries and lingonberries only)	1.5	**New MRL** on bushberries (crop subgroup 13-07B) because of new field trial data on highbush blueberries (which is the representative crop for crop subgroup 13-07B)[4]
Sweet corn (crop subgroup 15-21D)	none	0.4	**New MRL** on sweet corn (crop subgroup 15-21D) because of new field trial data on sweet corn (which is the representative crop for crop subgroup 15-21D).

[1] ppm = parts per million
[2] The proposed 50 ppm MRL only applies to bok choy Chinese cabbages and watercress, as they are the only greenhouse-grown commodities within crop subgroup 4-13B. All other crops within crop subgroup 4-13B are field-grown, and thus are covered by the already established MRL of 16 ppm.
[3] Maca and turnip greens are included in Crop Subgroup 4-13B and were previously registered under submission 2018-1792, but the MRLs were not specified in PMRL2021-30 with the rest of the Crop Subgroup 4-13B commodities.
[4] The established 1.5 ppm MRLs for lowbush blueberries and lingonberries remain the same but the individual MRLs will be replaced by a single crop subgroup MRL of 1.5 ppm for bushberries (crop subgroup 13-07B).

Based on the results from the dietary risk assessment, Health Canada **is proposing to accept** the new and revised MRL requests for flonicamid. This is because these new and revised MRLs **meet Health Canada's requirements** for the protection of human health.

3.0 Dietary risk assessment

Before an MRL can be set, Health Canada scientists make sure the amount of pesticide residue on or in food commodities is low enough that there are no effects on human health. They evaluate the relevant scientific information on the toxicity and dietary exposure of the pesticide. This process is called a dietary risk assessment.

Overview of the dietary risk assessment process

The **dietary risk assessment** process involves four distinct steps:

1. Evaluate the relevant scientific data and information and then identify the toxicology hazards of the pesticide;

2. Determine the **acute reference dose (ARfD)** and the **acceptable daily intake (ADI)**, where applicable.

   ARfD: the amount of a specific pesticide residue that a person can eat and drink **on any given day** without any negative health effects. The ARfD is used to estimate acute dietary risk, which considers the potential for health effects after a single day of exposure to the pesticide.

   ADI: the amount of a specific pesticide residue a person could eat and drink **every** day over their entire lifetime without any negative health effects. The ADI is used to estimate chronic dietary risk, which considers the potential for health effects after a lifetime of exposure to the pesticide.

   Health Canada scientists estimate both acute (single day) and chronic (lifetime) dietary intakes, where applicable, for the general population and several sub-populations such as pregnant people, infants, children and seniors.

3. Estimate the **potential daily intake (PDI)**.

   PDI: the total amount of a specific pesticide residue that might be eaten. When determining the PDI for a pesticide, scientists consider **all** food commodities (both registered (domestic) and imported), drinking water (where applicable), and how diets can vary between people in Canada. The PDI is the potential dietary exposure to a specific pesticide.

4. Characterize the **acute dietary risk** by comparing the PDI with the ARfD, and characterize the **chronic dietary risk** by comparing the PDI with the ADI, where applicable.

If the PDI is lower than both the ARfD and the ADI (where applicable), Health Canada scientists conclude that all food commodities that could be treated with this pesticide are safe to eat.

Summary of the dietary risk assessment results for flonicamid

This summary is focussed on key aspects of the dietary risk assessment that are potentially of greatest interest to people in Canada. It is written to help improve the understanding of Health Canada's pesticide decisions. Further technical details and how to request additional information about the dietary risk assessment can be found in section 7.0 on How to get involved and in Appendix I.

The results from the dietary risk assessment show that when flonicamid is used according to the Canadian label directions for the various proposed uses, the dietary risks from flonicamid on food commodities continue to meet Health Canada's requirements for the protection of human health.

There were no acute or short-term health effects observed in the flonicamid toxicology data relevant to acute dietary exposure and an ARfD was not necessary. This means that acute exposure to flonicamid will not affect your health. The toxicology information for flonicamid relevant to the dietary risk assessment is reported in Appendix I, Table A1-1.

The chronic dietary risk assessment results showed that exposure to flonicamid is **less than 37%** of the ADI. **This means that chronic exposure to flonicamid will not affect your health**. The dietary risk for each subpopulation is reported in Appendix I, Table A1-2.

- Health Canada considers that chronic risk may be of concern when exposure is greater than 100% of the ADI. When the chronic dietary risk assessment is lower than 100% of the ADI, it means that there are no human health concerns from eating foods treated with flonicamid every day over a person's lifetime.

For more information on how Health Canada assesses and manages risk from pesticides, refer to this guidance document:

- PMRA Guidance Document, A framework for risk assessment and risk management of pest control products

For more information on the MRL process, refer to Section 19 *Maximum Residue Limits* found within this guideline:

- PMRA Guidance Document, Updated Residue Chemistry Guidelines - Canada.ca

4.0 Summary of residue data to support the proposed maximum residue limits (MRLs)

Health Canada scientists reviewed the residue data for flonicamid on the following:

- trial studies on field-grown mint that were re-assessed and trial studies on field-grown basil that were submitted and reviewed to support the proposed MRLs on herbs fresh leaves (crop subgroup 25A); and herbs dried leaves (crop subgroup 25B), including dried peppermint and spearmint leaves.

- trial studies on **greenhouse-grown** mustard greens that were submitted and reviewed to support the proposed MRLs on bok choy Chinese cabbages and watercress.
- trial studies on **field-grown** mustard greens that were submitted and reviewed to support the proposed MRLs on maca and turnip greens
- trial studies on **greenhouse-grown** leaf lettuce that were submitted and reviewed to support the proposed MRL on leaf lettuce.
- trial studies on field-grown sweet corn that were submitted and reviewed to support the proposed MRLs on sweet corn (crop subgroup 15-21D).
- trial studies on field-grown highbush blueberries that were submitted and reviewed to support the proposed MRLs on bushberries (crop subgroup 13-07B).

Table 2 summarizes the residue data used to calculate the proposed MRLs for the various commodities.

Table 2 Summary of field and greenhouse 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)[2,3]	Highest average field trial residues (ppm)[2,3]	Experimental processing factor	Proposed MRL (ppm)[2]
Greenhouse-grown mustard greens	Foliar application	288–296	0	<6.67	<21.39	Not applicable	50 (Bok choy Chinese cabbages, watercress)[4]
Field-grown mustard greens	Foliar application	293–305	0	<2.269	9.855	Not applicable	16 ppm (Maca, turnip greens)[5]
Field-grown Fresh basil leaves and stems	Foliar application	275–308	6-8	0.396	1.209	Not applicable	40 (Herbs dried leaves, crop subgroup 25B), including dried peppermint and spearmint leaves; 7.0 (Herbs fresh leaves, crop subgroup 25A)
Field-grown Dried basil leaves and stems	Foliar application	275–308	6-8	1.217	8.492	Not applicable	
Field-grown Mint leaves and stems	Foliar application	301–306	6-8	0.93	3.00	Oil: <0.11-fold [0.11 (processing factor) × 3.00 ppm (HAFT concentration of residues in treated fresh mint leaves) = 0.33 ppm]	
Greenhouse-grown leaf lettuce	Foliar application	102–107	0	<1.89	<3.99	Not applicable	8.0 (Leaf lettuce)

Commodity	Application method	Total application rate (g a.i./ha)[1]	Preharvest interval (days)	Lowest average field trial residues (ppm)[2,3]	Highest average field trial residues (ppm)[2,3]	Experimental processing factor	Proposed MRL (ppm)[2]
Sweet corn kernel+cob	Foliar application	298–322	0–8[6]	<0.04	<0.188	Not applicable	0.4 (Sweet corn, crop subgroup 15-21D)
Highbush blueberries	Foliar application	299–312	0–1[7]	<0.1539	<0.6269	Not applicable	1.5 (Bushberries, crop subgroup 13-07B)

[1] g a.i./ha = grams of active ingredient per hectare
[2] ppm = parts per million
[3] Total residues of flonicamid (combined residues of flonicamid and the metabolites TFNG, TFNA and TFNA-AM, expressed in parent equivalents)
[4] Mustard greens are the representative crop commodity for *Brassica* leafy greens (crop subgroup 4-13B). Bok choy Chinese cabbages and watercress are the only crop commodities in crop subgroup 4-13B that are grown in greenhouses in Canada. Thus the MRL increase from greenhouse uses applies only to these 2 commodities, and not the entire crop subgroup.
[5] Maca and turnip greens are included in Crop Subgroup 4-13B and were previously registered under submission 2018-1792, but the MRLs were not specified in PMRL2021-30 with the rest of the Crop Subgroup 4-13B commodities.
[6] For the residue decline trial in kernels+cob, maximum combined residues were observed at a PHI of 8 days, and HAFT combined residues were observed at a PHI of 4 days. Therefore, these residue values were used instead of those observed at the 0-day PHI.
[7] For one trial, residues at the PHI of 1 day were used since residues were higher than at the 0 day PHI.

5.0 Calculating the proposed MRLs

Health Canada scientists calculated the proposed MRLs for flonicamid using the residues observed in the residue trials, and the guidance provided in the OECD MRL Calculator. Many international regulatory authorities use this statistical calculator to set MRLs on food commodities that are either grown domestically or imported from different countries. Full residue datasets are required to run the OECD MRL calculator, not just the highest and lowest residues reported in Table 2.

Pesticide MRLs established for each food commodity may be found using the Maximum Residue Limit Database. The database allows users to search for established MRLs, regulated under the *Pest Control Products Act*, for pesticides or food commodities.

6.0 International considerations

Internationally, MRLs are used to facilitate trade of food commodities between countries. Canadian MRLs are established or amended based on a robust scientific risk assessment that demonstrates safety for people in Canada. Table 3 compares the MRLs proposed for flonicamid in Canada with the corresponding tolerances in the United States (U.S.) and international Codex

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

The U.S. tolerance is listed by pesticide in the Electronic Code of Federal Regulations, 40 CFR Part 180. The term **"tolerance"** is used in the U.S. as another name for MRLs.

The Codex MRL is listed by pesticide or commodity on the Codex Alimentarius Pesticide Index webpage.

The U.S. tolerances and Codex MRLs for flonicamid are listed in Table 3.

Table 3 Comparison of proposed Canadian MRLs, U.S. tolerances and Codex MRLs

Food commodity	Proposed Canadian MRL (ppm)[1]	Established U.S. tolerance (ppm)[1]	Established Codex MRL (ppm)[1]
Bok choy Chinese cabbages, watercress	**50**	16 (*Brassica*, leafy greens, subgroup 4–16B, except radish, tops)	15 (leaves of Brassicaceae (subgroup))
Herbs dried leaves (crop subgroup 25B); dried peppermint leaves, dried spearmint leaves	**40**	Not established	Not established
Maca, turnip greens	**16**	16 (*Brassica*, leafy greens, subgroup 4–16B, except radish, tops)	15 (leaves of Brassicaceae (subgroup))
Leaf lettuce	**8.0**	8 (Leafy greens subgroup 4–16A, except spinach)	8 (lettuce, leaf)
Herbs fresh leaves (crop subgroup 25A)	**7.0**	7.0 (peppermint, tops; spearmint, tops)	6 (mints)
Bushberries (crop subgroup 13-07B)	**1.5**	1.5	Not established
Sweet corn (crop subgroup 15-21D)	**0.4**	0.4 (Corn, sweet, kernel plus cob with husks removed)	Not established

[1] ppm = parts per million

International consultation on the proposed MRLs also occurs as a result of Canada notifying the World Trade Organization. This is coordinated by Canada's Notification Authority and Enquiry Point in order to comply with Canada's international trade obligations.

7.0 How to get involved

Health Canada invites the public to submit written comments on the proposed MRL changes (including new MRLs) for flonicamid up to 75 days from the date of publication of this document

Please submit your comments to the PMRA Publications Section.

Health Canada considers all comments received up to 75 days from the date of publication of this document (by 28 January 2025) before making a final science-based decision about the proposed MRLs. Comments received within this 75 day period will be addressed in a response to comments document found in Pesticides and pest management consultations. If no comments are received, or the comments do not result in a change to the proposed MRLs, the MRLs will be set and legally in effect on the date they are entered into the Maximum Residue Limit Database.

If you would like to request additional information on the supporting scientific documents for these proposed MRLs, here is the information you will need to identify the request:

Active ingredient:	flonicamid
Published document number:	PMRL2024-24
Submission number:	2018-1640, 2019-4399, 2022-1093, 2021-6617, 2022-1706, 2018-1792
Related registration decisions:	PRD2010-25, RD2011-01

Appendix I Excerpt of the dietary risk assessment

Table A1-1 Summary of toxicology information for flonicamid for use in the dietary exposure assessment

Exposure scenario	Toxicology reference value used in risk assessment	Study	Toxicological endpoint
Acute Dietary	No ARfD[1] required	Not applicable	None
Chronic Dietary **All populations**	NOAEL[1] = 4.4 mg/kg bw/day CAF[1] = 100[2] ADI[1] = 0.04 mg/kg bw/day	2 generation reproductive toxicity study in the rat	LOAEL[1] = 27 mg/kg bw/day (females) based on increased blood serum LH concentrations in F1 females

[1] ARfD = Acute Reference Dose; NOAEL = No Observed Adverse Effect Level; LOAEL = Lowest Observed Adverse Effect Level; CAF = Composite Assessment Factor; ADI = Acceptable Daily Intake. bw = body weight. PCPA = *Pest Control Products Act*. Reference values and endpoints cited in PRD2010-25 and finalized via decision document RD2011-01.

[2] To account for uncertainties including inter- and intra-species variations, a CAF of 100-fold (10-fold for differences between animals and humans, 10-fold for variation between humans, and a onefold PCPA factor) was applied to the NOAEL for increased blood serum LH concentrations in F1 females, in order to calculate the ADI. Therefore, NOAEL÷CAF = 4.4 mg/kg bw/day ÷100 = 0.04 mg/kg bw/day (rounded value). This is 675-fold (LOAEL÷ADI) lower than the lowest dose where toxicological effects were observed in animals (at the LOAEL = 27 mg/kg bw/day).

Dietary exposure assessments are conducted using a database called the Dietary Exposure Evaluation Model - Food Commodity Intake Database (DEEM-FCID) which is explained in Science Policy Note SPN2014-01, General Exposure Factor Inputs for Dietary, Occupational, and Residential Exposure Assessments. This is a food recipe and consumption database used by Canada and the U.S. for dietary exposure modelling for pesticides that incorporates food consumption data from the U.S. National Health and Nutritional Examination Survey, What We Eat in America (NHANES/ WWEIA) dietary survey. This survey is made available through the National Center for Health Statistics (NCHS), which is part of the Centers for Disease Control and Prevention (CDC). The NHANES survey, which uses interviews and physical examinations to assess the health and nutritional status of adults and children in the United States, is updated periodically and is also reflective of the large variety of food consumption patterns in the Canadian population (Information Note – Comparing food and drink consumption data from Canada and the United States).

Results of the acute dietary risk assessment

An acute dietary exposure assessment was not required as there were no acute health effects of concern observed in the oral toxicity studies relevant to dietary exposure. **This means that acute exposure to flonicamid will not affect your health.**

Results of the chronic dietary risk assessment

Table A1-2 shows that the PDI is less than 100% of the ADI (see Section 3.0), therefore there are no chronic dietary risks of concern. The DEEM-FCID (NHANES) analyses estimate the dietary exposure of the general population and various population subgroups. The DEEM-FCID (NHANES) analyses estimate the dietary exposure of the general population and various population subgroups. The results reported in Table A1-2 are for the general population (all ages), all infants (<1 year old), children 1–2 years old, children 3–5 years old, children 6–12 years old, youth 13–19 years old, adults 20–49 years old, females 13–49 years old and adults 50+ years old. When including the use of flonicamid on the various food commodities, the estimated dietary exposure to flonicamid for all population subgroups is less than 37% of the ADI. **This means that potential chronic exposure to flonicamid will not affect your health.**

Table A1-2 Summary of chronic dietary risk for flonicamid

Population Subgroup	Refined assessment food and drinking water [1,2] – Previous assessment	Refined assessment food and drinking water [1,2] – Updated to include the proposed MRLs
	% ADI[3,4]	% ADI[3]
General Population	8.2	**9.4**
All Infants	13.3	**14.0**
Children 1–2 years old	33.6	**36.2**
Children 3–5 years old	21.5	**24.0**
Children 6–12 years old	11.5	**12.9**
Youth 13–19 years old	6.0	**6.9**
Adults 20–49 years old	6.0	**7.1**
Adults 50+ years old	6.4	**7.5**
Females 13–49 years old	6.2	**7.3**

Bolded values indicate updated risk assessments.

[1] "Food and Drinking Water" represents all Canadian-grown and imported foods that could be treated with flonicamid, as well as the dietary contribution from consuming water that may be impacted by Canadian agricultural uses of flonicamid.

[2] Estimated Environmental Concentrations (EECs) of flonicamid have been calculated for drinking water at 0.77 µg a.i./L from ground water.

[3] Values are below 100% (PDI ÷ADI × 100), therefore, there are no dietary concerns for any segment of the population.

[4] Previous assessment from 2016-8110. Published documents can be accessed in the link by choosing "Application Number" in the "Filter" field, and entering the submission number in the "Value" field.

For more information

PRD2010-25, *Flonicamid* – available through this publication request page
RD2011-01, *Flonicamid* – available through this publication request page
PMRL2021-30, *Flonicamid*– available through this publication request page