Mitsui Chemicals Agro, Inc.
Comments on
Penthiopyrad Preliminary Work Plan

Registration Review: Initial Docket
Case Number 7063

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17

Executive Summary

On October 25, 2022, EPA published the following documents for the Registration Review of Penthiopyrad:

- Penthiopyrad Preliminary Work Plan (hereafter, PWP)
  Registration Review: Initial Docket, Case Number 7063, September 2022
  Docket No. EPA-HQ-OPP-2022-0362-0002
- Penthiopyrad: Tier I Scoping Review of Human Health Incidents and Epidemiology,
  DP Barcode: D465312, June 13, 2022
  Docket No. EPA-HQ-OPP-2022-0362-0003
- Penthiopyrad: Problem Formulation for Registration Review (hereafter, PFRR)
  DP Barcode: D464702, September 26, 2022
  Docket No. EPA-HQ-OPP-2022-0362-0004
- Human Health Scoping Document in Support of Registration Review
  DP Barcode: D464703, September 21, 2022
  Docket No. EPA-HQ-OPP-2022-0362-0005

Mitsui Chemicals Agro, Inc. (hereafter, MCAG) is the owner and registrant of the active ingredient Penthiopyrad Technical (EPA Reg. No. 86203-1) and the end use product Penthiopyrad 40SC (EPA Reg. No. 86203-26). Table 1 contains a list of EPA penthiopyrad registrations from all registrants:

Table 1. List of EPA Penthiopyrad Registrations

Registrant	Registered Product	EPA Registration No.
Mitsui Chemicals Agro, Inc.	Penthiopyrad Technical	86203-1
	Penthiopyrad 40SC (ABN KABINA)	86203-26
Corteva Agriscience LLC.	TREORIS™	352-833
	FONTELIS®	352-834
	VERTISAN®	352-836
	DPX-LEM17 250FS Seed Treatment	352-878
	VERTISAN™ ST Seed Treatment (ABN DPX-LEM17 20SC Seed Treatment)	352-882
Syngenta Crop Protection, LLC.	VELISTA® Fungicide	100-1534

MCAG appreciates the opportunity to comment on the above-mentioned documents within the Penthiopyrad Registration Review Docket (EPA-HQ-OPP-2022-0362). MCAG has identified some discussion points and minor errors we respectfully would like to bring the Agency's attention for future discussion during the registration review process. Initial discussion items are detailed below and a summary list of comments is included in Appendix A.

Penthiopyrad is a broad-spectrum fungicide, recommended for control of foliar and soil-borne plant diseases and has preventative, curative, and locally systemic activity. Penthiopyrad stops spore germination, inhibits mycelium growth and has significant antisporulant activity. It is effective in controlling a range of plant diseases including: gray mold, powdery mildew, leaf mold, leaf spot, rust, blight, scab, brown rot and black Sigatoka (*Mycosphaerella fijiensis*). Penthiopyrad is a FRAC Group 7 fungicide with no cross resistance to non-carboxamide fungicides.

Penthiopyrad is currently registered for use on lawns, golf courses, sod farms, recreational turf, ornamentals, and numerous agricultural crops including tree fruit, tree nuts, potatoes, peanuts, various vegetable crops, and cereals. Penthiopyrad has been classified as a reduced risk compound on the following crops: alfalfa, bulb vegetables, brassica leafy vegetables, canola, cereal grains, corn (field, pop, sweet), cotton, cucurbits, fruiting vegetables, leafy vegetables, legumes, low-growing berry, peanut, pome fruit, root & tuber vegetables, soybean, stone fruit, succulent beans and peas, sunflower, tree nuts, turf and ornamentals (EPA letter dated November 23, 2011 to L. Setliff). Penthiopyrad has recently been granted Reduced Risk status for greenhouse lettuce and bananas (EPA letter dated December 19, 2022 to L. Setliff). IR-4 has developed data for various minor use crops with penthiopyrad and continues to support new minor use crops for penthiopyrad. Penthiopyrad provides a valuable tool to growers as a reduced risk pesticide for broadening the adoption of integrated pest management (IPM) strategies.

Discussion Items

1. **Formulation Types and Application Methods**

    a. PWP (page 6 of 14) Table 2: Penthiopyrad Use and Usage Information lists only two formulation types, liquid soluble concentrate or water dispersible granules. Table 2 needs to be corrected to include the following formulation types:
        - Liquid suspension concentrates
        - Water dispersible granules
        - Emulsifiable concentrates
        - Flowable concentrates

    b. PWP (page 6 of 14) Table 2: Penthiopyrad Use and Usage Information lists aerial, chemigation, ground, airblast, and hand-held equipment; however, seed treatment needs to be added to the list.

2. **Use/Usage Information for Turf, Ornamental Plants and Seed Treatments**

    In both the PWP Docket No. EPA-HQ-OPP-2022-0362-0002 and the Penthiopyrad: PFRR Docket No. EPA-HQ-OPP-2022-0362-0004, EPA requested additional information regarding the use/usage information for turf, ornamental plants and seed treatments.

    MCAG Comment: MCAG does not have any turf or ornamental plant end use products registered. MCAG does have one seed treatment end use product registered (Penthiopyrad 40SC, EPA Reg. No. 86203-26); therefore, our comments pertain to the Penthiopyrad 40SC formulation only. MCAG welcomes further discussion with the EPA regarding seed treatment use/use information.

    a. PWP (page 6 of 14): EPA requests the following:
        - *For seed treatment labels (EPA Reg. #s 352-882, 352-878, and 86203-26), clarification on the maximum total amount of active ingredient applied per acre and direct seeding depths.*

MCAG Comment: MCAG welcomes further discussion with EPA regarding application rate and seed depth uncertainties. Currently, the maximum total amount of active ingredient applied per acre/year and the maximum seeding depths are included on the Penthiopyrad 40SC label for each specific crop.

- On page 4 of 6 of the label, the Use Restrictions for Sugar Beet state: "Do not apply more than 0.8 lbs ai/acre/year to sugar beets in total from any combination of seed, in-furrow, and foliar treatments."
- On page 5 of 6 of the label, the Use Restrictions for Cotton state: "Do not apply more than 0.94 lbs ai/acre/year to crop in total from any combination of seed, in-furrow, and foliar treatments.
- Page 3 of 6 of the label provides seeding depth information: "Treated seed must be planted at a minimum depth of 0.75 inches (3/4 inch)." The label provides a "minimum depth" because direct seeding depths may vary depending on many factors such as type of seed, variety, soil type, soil moisture, soil temperature, planting equipment, and to other factors. The minimum depth allows the grower to plant the seed depending on the many factors listed above. Typical seed planting depths including those for sugar beets and cotton can be found in Table 2 below:

Table 2. Typical Seed Planting Depths

Crop	Planting Depth	Resource
Potatoes	6-8"	Stark, J.C., Thornton, M. and Nolte, P. (ed) (2020) *Potato Production Systems*. Springer.
Canola	0.75-1"	https://www.ag.ndsu.edu/broadleaf/canola
Corn	1.5 – 2"	https://www.pioneer.com/us/agronomy/planting_depth_and_spacing_cropfocus.html
Soybeans	1 - 2"	https://crops.extension.iastate.edu/cropnews/2014/05/soybean-planting-depth-considerations-iowa
Sugar beets	1" 1"-1.25"	https://www.canr.msu.edu/news/proper_planter_adjustment_can_improve_sugarbeet_stands https://www.ndsu.edu/agriculture/sites/default/files/2022-01/a1698.pdf
Cotton	0.5-1" 0.5-1.5"	https://phytogencottonseed.com/agronomy/april-10-2020-cotton-planter-setup-planting-fore https://www.agfax.com/2022/03/17/texas-field-reports-good-cotton-stands-critical-during-drought/

b. PFRR (page 4 of 102): EPA stated the following regarding use patterns and label uncertainties:
"*There are several questions regarding penthiopyrad use patterns based on label uncertainties that should be addressed prior to conduct of the registration review risk assessments. These label uncertainties are detailed in Section 3 and Appendix C."*

MCAG Comment: MCAG welcomes further discussion with EPA regarding the label uncertainties and how we can clarify the label to satisfy the EPA. Since

MCAG is the registrant for Penthiopyrad 40SC which is limited to sugar beet and cotton seed treatments; therefore, our responses will focus on Penthiopyrad 40SC.

c. PFRR Appendix C Summary of Product Label Issues (pages 67-71 of 102): EPA stated the Environmental Hazard Statements, Ground Water Advisories, and the Surface Water Advisories need to be harmonized within the penthiopyrad end use product labels and adhere to EPA Label Review Manual guidelines.

MCAG Comment: MCAG agrees there needs to be harmonization within the labels and the labels need to follow the EPA Label Review Manual. MCAG welcomes discussion with the EPA to clarify the Environmental Hazard Statements, Ground Water Advisories, and the Surface Water Advisories.

d. PFRR Appendix C Summary of Product Label Issues Soil Borne Disease Control Label Comments Section (pages 71-72 of 102): EPA stated there is uncertainty regarding the total amount of active ingredient applied per acre and inconsistency of direct seeding depths.

MCAG Comment: MCAG welcomes further discussion with EPA regarding application rate and seed depth uncertainties. Please see Section 2a above for additional information.

e. PFRR Appendix D Use Summary Information for Penthiopyrad (page 77 of 102) the maximum seed treatment application rate for sugar beet and cotton needs to be corrected to 1.4 lb ai/100 lb seed and 0.05 lb ai/100 lb seed, respectively.

3. Foreign Technical Registrants

a. PWP (page 6 of 14): EPA requested information regarding the following:
   - *Foreign technical registrants not listed above who supply technical penthiopyrad to the U.S. market.*

MCAG Comment: MCAG is the developer of Penthiopyrad Technical. MCAG is not aware of any foreign technical registrants who supply technical penthiopyrad to the U.S. market.

4. Anticipated Data Needs

PWP Table 3 (pages 7-8 of 14) and PFRR (pages 3-4 and 22 of 102): EPA listed the following anticipated data needs (Table 3 below):

Table 3: EPA Anticipated Data Needs for the Penthiopyrad Registration Review

Guideline Number	Study Title	Test Material	Estimated Timeframe (Months from receipt of DCI)
Anticipated Ecological Data			
850.2100	Passerine Oral Toxicity; testing with a passerine species other than zebra finch.	TGAI	12
850.2100	Avian acute oral toxicity, bobwhite quail (metabolite – PAM)	Metabolite – PAM[2]	12
850.2300	Avian reproduction, mallard[3]	Metabolite - PAM	12
850.1710	Oyster Bioconcentration Factor (BCF) study	TGAI	12
850.4150	Terrestrial Plant Toxicity, Vegetative Vigor, wheat only	TEP	12
Anticipated Human Health Data			
875.2100	Turf Transferrable Residue (TTR)	~~TGAI~~ TEP	24
Pollinator Data Requirements			
Non-guideline (OECD ~~237~~ 245)	Tier I: Honey bee adult chronic toxicity (Tier 1)	TGAI	12
Non-guideline (OECD ~~239~~ 237)	Tier I: Honey bee larvae acute toxicity (Tier 1)	TGAI	12
Non-guideline (OECD Guidance Document ~~245~~ 239)	Tier I: Honey bee larvae chronic toxicity (Tier 1)	TGAI	12
Non-guideline	Tier II: Semi-field (tunnel) testing for pollinators[4]	TEP	~~12~~ 30
Non-guideline	Tier II: Colony feeding study for pollinators[4]	TGAI	~~12~~ 30
Non-guideline	Tier II: Field Trial of Residues in Pollen and Nectar[4]	TEP	~~12~~ 30
850.3040	Tier III: Full Field Testing for Pollinators[4]	TEP	~~12~~ 30

[2] PAM: 1-methyl-3-trifluoromethyl-1H-pyrazole-4-carboxamide
[3] If the avian acute oral study (850.2100) with the PAM degrade shows greater toxicity than the parent (penthiopyrad), an avian reproduction study (850.2300) with the PAM degradates will be needed.
[4] Tier II and Tier III pollinator studies are triggered by the results of the Tier I studies.
TGAI = Technical Grade Active Ingredient, TEP = Typical End Use Product

MCAG Comment: MCAG welcomes further discussion with EPA regarding the various anticipated data needs.

a. **850.2100 Passerine Oral Toxicity; Testing with a Passerine Species other than Zebra Finch.**
PFRR (page 22 of 102) EPA stated: *"Penthiopyrad is classified as practically non-toxic to avian species on an acute oral and subacute dietary-exposure basis; however, significant treatment-related regurgitation (>30% birds) was observed in zebra finch dosed with technical penthiopyrad. Regurgitation was observed even in the lowest concentration tested (93 mg/kg-bw, 1 bird regurgitated), and although, no mortalities were observed in any test concentration for the duration of the study, it was determined that the observed regurgitation was an adverse effect of penthiopyrad. Therefore, additional data is needed to evaluate acute risk of penthiopyrad to passerine birds on an acute basis.*

MCAG Comment: MCAG does not agree with EPA's conclusion that regurgitation is an adverse effect of penthiopyrad. Regurgitation is a mechanism by which passerines feed their young and is frequently seen in laboratory studies with passerine during gavage treatment (personal communication, Eurofins 12/20/2022). Regurgitation in the zebra finch acute oral toxicity study with penthiopyrad was more likely a physiological response rather than an adverse effect of penthiopyrad. Given the previous efforts regarding conducting a successful acute oral toxicity study with passerine species with penthiopyrad, EPA's "Guidance for Use When Regurgitation is Observed in Avian Acute Toxicity Studies with Passerine Species" (US EPA, 2012), and consultation with the laboratory that conducted the zebra finch acute oral study with penthiopyrad, we respectfully request a meeting with the Agency to discuss the best steps forward.

b. **850.2100 Avian Acute Oral toxicity, Bobwhite Quail (metabolite – PAM)** (PWP Table 3, page 7 of 14 and PFRR page 3 of 102)

MCAG Comment: MCAG respectfully disagrees with EPA's request for an avian acute oral toxicity study with the metabolite PAM in bobwhite quail. MCAG believes that the acute oral toxicity study is unnecessary because exposure to PAM would be covered by the studies that were conducted for the parent, penthiopyrad.

Sufficient data currently exists to evaluate the toxicity of PAM to avian species. In a penthiopyrad ADME study on hen (MRID 47614951), PAM was found to be the major metabolite in tissues, and excreta. Residue levels of PAM in liver and muscle (7.9% and 45.4% TRR) exceeded parent penthiopyrad residues (<LOQ in both). In a metabolism study in laying hens (MRID 4764952), PAM was detected in liver as 19.01% of TRR. In this study parent was extensively metabolized through PAM and PAM was further metabolized into smaller molecules. PAM would also be expected to form in other avian species. Since PAM is an avian metabolite, it was tested previously in the avian toxicity studies using penthiopyrad.

MCAG believes the existing toxicity studies account for total toxicity of penthiopyrad, including PAM, and there is no need to sacrifice additional birds to test PAM in isolation. Avoiding the need to conduct additional avian studies would also be consistent with EPA's policies on reducing animal testing.[1]

Additional penthiopyrad avian acute toxicity studies and short-term dietary studies which were developed for global registrations are now available. As previously noted, these studies take into account toxicity of PAM. These additional studies can be submitted to the EPA upon request. It should be noted that, in the penthiopyrad avian studies conducted for global purposes, the LC50 was at the maximum dose level in acute dietary studies and the NOEC was at the maximum dose level in reproduction studies.

[1] https://www.epa.gov/newsreleases/epa-takes-important-step-reduce-unnecessary-animal-testing

PAM is not expected to be present in avian food stuff at high levels. In crop metabolism studies the dominant residue is parent with PAM making up relatively small quantity of the residue, as demonstrated in Table 4 below.

Table 4: PAM in Crop Metabolism Studies

Study ID	Sample	TRR (ppm)	parent MTF-753	PAM
A Metabolism Study with [^{14}C-pyrazole] and [^{14}C-thienyl] MTF-753 on Canola MRID 47614950	Canola Seed	0.139	0.7%	7.9%
	Canola Forage	12.2	11.4%	2.2%
A Metabolism Study with [^{14}C-pyrazole] and [^{14}C-thienyl] MTF-753 on Wheat MRID 47614949	1X Wheat Forage	6.52	76.5%	1.5%
	1X Wheat Hay	4.29	43.6%	4.3%
	1X Wheat Straw	9.23	19.3%	5.9%
	1X Wheat Grain	0.30	7.8%	3.7%
	3X Wheat Forage	22.1	81.3%	1.1%
	3X Wheat Hay	17.8	53.7%	2.3%
	3X Wheat Straw	43.7	20.5%	7.1%
	3X Wheat Grain	0.753	8.9%	4.6%
A Metabolism Study with [^{14}C-pyrazole] and [^{14}C-thienyl] MTF-753 on Cabbage MRID 47614948	1X Cabbage Outer Leaves	1.41		
	1X Cabbage Heads	0.045		
	1X Cabbage Leaves + Heads[1]	0.475	20.4%	10.7%
	5X Cabbage Outer Leaves	7.93		
	5X Cabbage Heads	0.155		
	5X Cabbage Leaves + Heads[1]	2.58	34.0%	10.4%
A Metabolism Study with [^{14}C-pyrazole] and [^{14}C-thienyl] MTF-753 on Tomatoes MRID 47614947	14 DAT 1X Tomato Fruit I	0.014	NA	NA
	14 DAT 1X Tomato Fruit II	0.024	NA	NA
	14 DAT 5X Tomato Fruit I	0.456	45.2%	4.4%
	14 DAT 5X Tomato Fruit II	0.294	46.3%	6.1%
	21 DAT 1X Tomato Fruit I	0.022	22.7%	a)
	21 DAT 1X Tomato Fruit II	0.017	a)	a)
	21 DAT 1X Tomato Leaves I	0.648	37.2%	4.2%
	21 DAT 1X Tomato Stems I	0.251	53.8%	3.2%
	21 DAT 5X Tomato Fruit I	0.281	38.4%	6.4%
	21 DAT 5X Tomato Fruit II	0.098	37.8%	a)
	21 DAT 5X Tomato Leaves I	4.84	55.3%	4.9%
	21 DAT 5X Tomato Stems I	1.17	59.1%	2.9%
A Metabolism Study with [^{14}C-pyrazole] and [^{14}C-thienyl] MTF-753 on Grapes MRID 47614946	30 day PHI Grape Fruit I	0.204	20.6%	8.8%
	30 day PHI Grape Fruit II	0.241	17.4%	3.7%
	60 day PHI Grape Fruit I	0.083	4.8%	13.3%
	60 day PHI Grape Fruit II	0.210	4.3%	3.8%
	30 day PHI Grape Leaves	5.11	16.8%	11.7%
	30 day PHI Gape Stems	0.173	13.9%	9.2%
	60 day PHI Grape Leaves	3.35	5.0%	14.1%
	60 day PHI Grape Stems	0.132	6.1%	5.3%

[1] Calculated by applying the ratio of rinsed leaves or heads weight versus total rinsed weight of leaves plus heads and summing the results
NA= Not analyzed due to low residue.
a) values art too low to calculate a meaningful percentage

Since PAM is formed in the avian metabolism pathway and is expected to occur at very low levels in avian plant food stuffs, MCAG does not believe avian toxicity studies on PAM are required. MCAG respectfully requests a meeting with EPA to discuss the requirement for an avian acute oral toxicity in bobwhite quail with PAM.

c. **850.2300 Avian Reproduction, Mallard (metabolite – PAM)**
(PWP Table 3, page 7 of 14 and PFRR page 3 of 102)

MCAG Comment: MCAG respectfully disagrees with EPA's request for an avian reproduction study with the metabolite PAM in mallard. MCAG believes that the avian reproduction study is unnecessary because exposure to PAM would be covered by the studies that were conducted for the parent, penthiopyrad. Please see Section 4b (850.2100 Avian acute oral toxicity, bobwhite quail (metabolite – PAM)) above for further details. MCAG respectfully requests a meeting with the EPA to discuss the EPA's request for a mallard reproduction study with PAM.

d. **850.1710 Oyster Bioconcentration Factor (BCF) Study**
(PWP Table 3, page 7 of 14 and PFRR page 3 of 102)

MCAG Comment: MCAG respectfully disagrees with EPA's request for an oyster bioconcentration factor study. 40CFR §158.630, foot note 19.ii. states that bioaccumulation studies are **not** required when:

ii. There are no potential exposures to fish and other nontarget aquatic organisms;

There are no aquatic uses for penthiopyrad products and exposures to fish and other nontarget aquatic organisms are not expected. EPA stated in the PFRR Section 4 Conclusions from Previous Risk Assessments that the RQ exceeds the LOC for non-listed aquatic species for *"Cranberry Use Only"*. Since cranberries are grown as a terrestrial crop until harvest when the bogs are flooded and penthiopyrad is not applied to flooded bogs, there are no aquatic uses for penthiopyrad. Since there are no aquatic uses for penthiopyrad an oyster bioconcentration study is not required. MCAG respectfully requests a meeting with the EPA to discuss the proposed oyster bioconcentration factor study.

e. **850.4150 Terrestrial Plant Toxicity, Vegetative Vigor, Wheat Only**
(PWP Table 3, page 7 of 14 and PFRR page 4 of 102)

MCAG Comment: Since the EPA request for Vegetative Vigor for Wheat Only is pertains to Corteva's FONTELIS® and VERTISAN® labels, we will defer to Corteva for comment on this requirement.

f. **875.2100 Turf Transferrable Residue (TTR)**
(PWP Table 3, page 7 of 14)

MCAG Comment: Turf Transferrable Residue (TTR) (OPPTS 875.2100) studies are typically conducted with the typical end use product (TEP) not the technical grade active ingredient (TGAI). MCAG recommends updating Table 3 (page 7) of the PWP. MCAG respectfully requests a meeting to discuss the TTR requirement with the EPA.

g. **Pollinator Data Requirements**
(PWP Table 3, page 8 and PFRR pages 3-4 of 102)

MCAG Comment: The OECD Guideline Numbers are cited incorrectly for the Tier I pollinator studies. The adult chronic bee toxicity study guideline is OECD Testing Guideline 245, the acute bee larval is toxicity study guideline is OECD Testing Guideline 237, and the chronic bee larval toxicity guideline is OECD Guidance Document 239.

MCAG has experienced difficulty solubilizing the TGAI in honey bee test diet in studies for requirements in other jurisdictions. For this technical reason, some Tier I studies were conducted using a 40% SC end-use product. In addition, studies were performed by other registrants using their end-use products. MCAG believes the endpoints from end-use product studies are sufficient and suitable to conduct risk assessments and no additional studies are required. MCAG can submit the studies conducted using Penthiopyrad 40% SC to the EPA upon request.

Based on honey bee biology, MCAG respectfully disagrees with the EPA that a Tier I honey bee larval acute toxicity study should be required. Honey bee larvae are fed from honey stores which would tend to have a relatively consistent level of chemical contamination. Larvae are not likely to experience a single high dose of contaminant. If the Agency considers that an acute larval risk assessment is necessary, the chronic endpoint should be used since chronic endpoints are typically lower than acute endpoints and would therefore be protective of both acute and chronic exposures.

The timelines for Tier II and Tier III studies, should they be required, do not allow sufficient time for the studies to be conducted and submitted to the Agency. Higher studies would be triggered by a finding of unacceptable risk based on exposure assumptions at Tier I. This would trigger the need for pollen and nectar residue studies (refined Tier I) which themselves take twelve months. Only after the completion of the refined Tier I pollen and nectar residue studies should Tier II or Tier III studies be initiated. A timeframe of 30 months from receipt of the DCI is more appropriate for the Tier II and Tier III studies, if required. MCAG respectfully requests a meeting with the EPA to discuss the pollinator requirements.

Conclusion

MCAG appreciates the opportunity to comment on the *Penthiopyrad Preliminary Work Plan* (PWP) and the supporting documents within the Penthiopyrad Registration Review Docket (EPA-HQ-OPP-2022-0362). We look forward to future discussions regarding data requirements, label language, grower practices and risk assessments with the Agency to ensure continued use of the valuable reduced risk active ingredient penthiopyrad.

Appendix A – Summary of Comments for Penthiopyrad Registration Review Documents

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
Penthiopyrad Preliminary Work Plan (EPA-HQ-OPP-2022-0362-0002)					
(1)	Page 3, Line 13	OVERVIEW	liquid ~~soluble~~ concentrate (SC) and water dispersible granules (WDG)	liquid suspension concentrate (SC), water dispersible granules (WDG), emulsifiable concentrate (EC), or flowable concentrate (F)	Correction of registered formulation type and addition of registered formulation.
(2)	Page 5, Table 1	CHEMICAL AND REGULATORY INFORMATION	Table 1: Chemical Facts for Penthiopyrad	Table 1 (Continued): Chemical Facts for Penthiopyrad	Minor Correction
(3)	Page 6, Table 2	USE AND USAGE INFORMATION	Liquid ~~soluble~~ concentrate or water dispersible granules	Liquid suspension concentrate, emulsifiable concentrate, water dispersible granules or flowable concentrate	Correction of registered formulation type and addition of registered formulation
(4)	Page 6, Table 2	Table 2 Application Methods	Aerial, chemigation, ground, airblast, and hand-held equipment	Aerial, chemigation, ground, airblast, hand-held equipment, and seed treatment	Addition of seed treatment products since they are also registered
(5)	Page 7, Table 3	Turf Transferrable Residue (TTR)	~~TGAI~~	TEP	TTR studies are typically conducted using formulation which is registered for turf use not the TGAI.
(6)	Page 7, Table 3 Page 8, Table 3	Table 3 Footnotes	Guideline Number[1] Guideline Number[4]	Delete reference to footnote or add footnote.	There is no footnote 1 or 4 regarding the Guideline Number[1 or 4]. Please consider deleting 1 and 4 or adding footnote 1 and 4.
(7)	Page 8, Table 3	Table 3 OECD Guideline Numbers	OECD ~~237~~ OECD ~~239~~ OECD ~~245~~	OECD 245 OECD 237 OECD Guidance Document 239	The OECD guideline numbers need to be corrected for the requested pollinator studies. Honey bee larvae chronic toxicity study is not yet an OECD study guideline but there is OECD guidance document for this study

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
(8)	Page 8, Table 3	Tier II and III study estimated timeframe (months from receipt of DCI)	~~12~~	30	Since Tier II and III studies are be conducted after Tier I studies completed and if they are triggered by Tier I study, 12 months is not an appropriate timeline for conducting the Tier II and Tier III studies. Typically, 30 months is given to conduct the Tier II and Tier III studies.
(9)	Page 8, Table 3	ANTICIPATED DATA NEEDS	Table 3: Anticipated Data Needs for the Penthiopyrad Registration Review	Table 3 (Continued): Anticipated Data Needs for the Penthiopyrad Registration Review	Minor Correction
Penthiopyrad: Problem Formulation for Registration Review (EPA-HQ-OPP-2022-0362-0004)					
(1)	Page 3-4, OECD Guideline Nos. for pollinator studies	2. Data Needs Ecological/effects data	OECD ~~237~~ OECD ~~239~~ OECD ~~245~~	OECD 245 OECD 237 OECD Guidance document 239	The OECD guideline numbers need to be corrected for the requested pollinator studies. Honey bee larvae chronic toxicity study is not yet an OECD study guideline but there is OECD guidance document for this study
(2)	Page 7, Table 4-1,	4. Conclusions from Previous Risk Assessments	acute freshwater fish EP data (with Fontelis®) does not have lower toxicity (i.e., less toxic).	acute freshwater fish EP data (with Fontelis®) does not have lower toxicity value (i.e., less toxic).	Contradiction between “does not have lower toxicity” and “(i.e., less toxic)” to be corrected by adding “value”
(3)	Page 7, Table 4-1,	4. Conclusions from Previous Risk Assessments	acute estuarine/marine fish EP data (with Fontelis®) does not have lower toxicity (i.e., less toxic).	acute estuarine/marine fish EP data (with Fontelis®) does not have lower toxicity value (i.e., less toxic).	Contradiction between “does not have lower toxicity” and “(i.e., less toxic)” to be corrected by adding “value”.
(4)	Page 7, Table 4-1,	4. Conclusions from Previous Risk Assessments	Estuarine/marine invertebrate EP data (Fontelis®) does not have lower toxicity than TGAI.	Estuarine/marine invertebrate EP data (Fontelis®) does not have lower toxicity value than TGAI.	“value” to be added.

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
(5)	Page 7, Table 4-1, Chronic RQ range for estuarine/marine fish	4. Conclusions from Previous Risk Assessments	0.03-0.09 0.61-~~5.3~~ (cranberry)	0.03-0.09 0.61-1.1 (cranberry)	The value for the chronic RQ needs to be corrected for estuarine/marine fish (1.1 is the value for estuarine fish, 5.3 is the value of freshwater fish). According to Table 4.1a in DP Barcode: 373577, 5.3 is the value of freshwater fish not estuarine/marine fish.
(6)	Page 7, Line 2	4. Conclusions from Previous Risk Assessments	Table ~~3-1~~ summarizes	Table 4-1 summarizes	Minor Correction of Table No.
(7)	Page 8, Table 4-1, RQ range for sediment exposure	4. Conclusions from Previous Risk Assessments	Emergence (28-day study) 0.01 (PW)	Emergence (28-day study) 0.01 (PW) 0.19 (cranberry)	According to Table 4.1a in DP Barcode: 373577
(8)	Page 25, Table 6-2, Acute contact (adult), EP (Treoris™) 8.91 % ai	6. Ecotoxicity Summary	"48-hr LD_{50} > 8.91 µg a.i./bee" in bold	"48-hr LD_{50} > 8.91 µg a.i./bee" not in bold	Toxicity value of co-formulated product should not be used for risk estimates.
(9)	Page 25, Table 6-2, Acute oral (adult), EP (Treoris™) 8.91 % ai	6. Ecotoxicity Summary	"48-hr LD_{50} > 10.9 µg a.i./bee" in bold	"48-hr LD_{50} > 10.9 µg a.i./bee" not in bold	Toxicity value of co-formulated product should not be used for risk estimates.
(10)	Page 10, Line 12	4. Conclusions from Previous Risk Assessments	Table ~~3-2~~ summarizes	Table 4-2 summarizes	Minor Correction of Table No.
(11)	Page 13, Table 5-1, Henry's Law Constant	5. Environmental Fate Summary	7.6×10^{-9}, pH ~~4 and~~ 7	7.6×10^{-9}, pH 7	It was calculated from the water solubility at pH 7. According to Table 3.2. (page 6) in DP Barcode: 373951 and DP Barcode: 373577 (page 31)
(12)	Page 13, Table 5-1, Log Dissociation Constant (pKa)	5. Environmental Fate Summary	MRID ~~47614832~~	MRID 47614840, MRID 47614841	According to Table 3.2. in DP Barcode: 373951 (page 6) and DP Barcode: 373577 (page 31)
(13)	Page 87, Table E-1, Freshwater Fish (Surrogates for Vertebrates), TEP (Treoris™) 8.91% ai	Appendix E. Full Summary of All Available Ecotoxicity Data	"96-h LC_{50} = 14 (95% CI 7.34-22.2) Slope = NA" in bold	"96-h LC_{50} = 14 (95% CI 7.34-22.2) Slope = NA" not in bold	Toxicity value of co-formulated product should not be used for risk estimates.

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
(14)	Page 89, Table E-1, Freshwater Invertebrates (Water-Column Exposure), TEP (Treoris™) 8.91% ai	Appendix E. Full Summary of All Available Ecotoxicity Data	"48-h EC_{50} = 18.5 (95% CI 12-25.8) Slope = NA" in bold	"48-h EC_{50} = 18.5 (95% CI 12-25.8) Slope = NA" not in bold	Toxicity value of co-formulated product should not be used for risk estimates.
(15)	Page 14, Table 5-2, Ontario, Ontario Loam, bare soi, Ph 6.68, 1.1 %OCl	5. Environmental Fate Summary	Ontario, Ontario Loam, bare ~~soi~~, Ph 6.68, 1.1 %OCl	Ontario, Ontario Loam, bare soil, Ph 6.68, 1.1 %OCl	Minor Correction According to Table 3.2. (page 7) in DP Barcode: 373951
(16)	Page 15, Table 5-3, Soil Photolysis	5. Environmental Fate Summary	IL Loam, ~~25°C~~, PH 7 40°N sunlight Dark Control adjusted half-life (23C)	IL Loam, 23 °C, PH 7 40oN sunlight Dark Control adjusted half-life (23 °C)	According to Table 3.2. (page 6) in DP Barcode: 373951 and DP Barcode: 373577 (page 32) Add degree sign.
(17)	Page 16, Table 5-3, Aerobic Aquatic Metabolism	5. Environmental Fate Summary	MRID 4761497~~6~~ Supplemental.	MRID 47614975 Supplemental.	According to Table 3.2. (page 7) in DP Barcode: 373951 and DP Barcode: 373577 (page 32)
(18)	Page 16, Table 5-3, Anaerobic Activated Sludge Biodegradation	5. Environmental Fate Summary	~~Anaerobic~~ Activated Sludge Biodegradation	Aerobic Activated Sludge Biodegradation	According to Table 3.2. (page 7) in DP Barcode: 373951 and DP Barcode: 373577 (page 32)
(19)	Page 17, Line 13	6. Ecotoxicity Summary	Treoris™ (EPA Reg. No. 352-83)	Treoris™ (EPA Reg. No. 352-833)	EPA Reg. No. correction.
(20)	Page 24, Table 6-2, Chronic	6. Ecotoxicity Summary	20-weeks NOAEC = 1520 LOAEC = 5090 mg/kg-diet	20-weeks NOAEC = 1520 LOAEC = 5090 mg a.i./kg-diet	According to Table 3.31. (page 69) in DP Barcode: 373577
(21)	Page 26, Table 6-2, Beneficial Insects	6. Ecotoxicity Summary	48 hr LR_{50} = 0.29 lb a.i./A	48 hr LR_{50} = 0.29 lb a.i./A (3504.5 g/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(22)	Page 26, Table 6-2, Beneficial Insects	6. Ecotoxicity Summary	48 hr LR_{50} > 0.211 lb a.i./A	48 hr LR_{50} > 0.211 lb a.i./A (>1.5 L/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
(23)	Page 26, Table 6-2, Beneficial Insects	6. Ecotoxicity Summary	7-d LR_{50} = 0.11 lb a.i./A 14-d ER_{50} = 0.006 lb a.i./A	7-d LR_{50} = 0.11 lb a.i./A (0.62 L/ha) 14-d ER_{50} = 0.006 lb a.i./A	According to Table 3.36. (page 76) in DP Barcode: 373577
(24)	Page 26, Table 6-2, Beneficial Insects	6. Ecotoxicity Summary	7-d LR_{50} = 0.0911 lb a.i./A 14-d ER_{50} >0.0911 lb a.i./A	7-d LR_{50} = 0.0911 lb a.i./A (0.513 L/ha; 102.6 g a.i./ha) 14-d ER_{50} >0.0911 lb a.i./A (>0.513 L/ha; >102.6 g a.i./ha)	According to Table 3.36. (page 77) in DP Barcode: 373577
(25)	Page 26, Table 6-2, Beneficial Insects	6. Ecotoxicity Summary	23-d LR_{50} = 2.08 lb a.i./A 23-d ER_{50} > 0.829 lb a.i./A	23-d LR_{50} = 2.08 lb a.i./A (11.7 L/ha) 23-d ER_{50} > 0.829 lb a.i./A (>4.67 L/ha)	According to Table 3.36. (page 77) in DP Barcode: 373577
(26)	Page 31, Table 7-2, PAM	7. Residues of Concern	>300<2000 (M&F)	>300<2000 (M&F) (cut-off LD_{50} = 500)	According to Table E.5. (page 139) in DP Barcode: 373577
(27)	Page 55, Table A-1, MRID 47614870	Appendix A	Analytical method Unacceptable	Analytical method in air Unacceptable & upgradeable	According to Table I.1. (page 165) in DP Barcode: 373577
(28)	Page 56, Table A-3, MRID 47737324	Appendix H	Supplemental	Acceptable	According to Table H.1. (page 145) in DP Barcode: 373577
(29)	Page 65, Table B-1, MW of 753-F-DO	Appendix B	486.83	375.34	Corrected. This number was also used in DP Barcode 373577
(30)	Page 65, Table B-1, Chemical name of 753-A-OH	Appendix B	(RS)-N-[2-(3-hydroxy-1,3-~~dimethyl-butyl)~~thiophen-3-yl]-1-methyl-3-trifluoromethyl-1H-pyrazole-4-carboxamide	(RS)-N-[2-(3-hydroxy-1,3-dimethylbutyl)thiophen-3-yl]-1-methyl-3-trifluoromethyl-1H-pyrazole-4-carboxamide	Minor correction from “dimethyl-butyl” to “dimethylbutyl”. Same typo is in DP Barcode 373577
(31)	Page 77, Table D-1	Appendix D	Maximum Seed Treatment Application Rate Sugar Beet 19.3 (fl oz ai/100 lb seed)	Maximum Seed Treatment Application Rate Sugar Beet 1.4 lb ai/100 lb seed	Maximum Seed Treatment Application Rate needs to be corrected.
(32)	Page 77, Table D-2	Appendix D	Maximum Seed Treatment	Maximum Seed Treatment Application Rate Cotton 0.05 lb ai/100 lb seed	Maximum Seed Treatment Application Rate needs to be corrected.

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
			Application Rate Cotton 48.2 (fl oz ai/100 lb seed)		
(33)	Page 91, Table E-1.	Appendix E	28-day OC-normalized sediment: NOAEC = 50 mg a.i./kg LOAEC = 100 mg a.i./kg (nominal); 72.5 mg a.i./kg (TWA) Pore water: NOAEC = 2720** LOAEC = 5400	28-day OC-normalized sediment: NOAEC = 50 mg a.i./kg LOAEC = 100 mg a.i./kg (nominal); 72.5 mg a.i./kg (TWA) Pore water: NOAEC = 2720** LOAEC = 5400	According to Table 3.21. (page 58) in DP Barcode: 373577 Footnote** after footnote * on page 92 needs to be added: **Only the highest and lowest test concentrations were measured, therefore, to estimate the NOAEC based on pore water concentrations a ratio using the nominal sediment concentration LOAEC and measured pore water LOAEC was used.
(34)	Page 91, Table E-1. MRID 47615008	Appendix E	EC_{50} >1470 NOAEC = 1470 Slope = NA	96-hr EC_{50} >1470 NOAEC = 1470 Slope = NA	According to Table 3.27. (page 66) in DP Barcode: 373577
(35)	Page 93, Table E-2. MRID 47614982	Appendix E	20-weeks NOAEC = 5090 LOAEC > 5090 mg/kg-diet	20-weeks NOAEC = 5090 LOAEC > 5090 mg a.i./kg-diet	According to Table 3.28. (page 66) in DP Barcode: 373577
(36)	Page 93, Table E-2. MRID 47614983	Appendix E	20-weeks NOAEC = 1520 LOAEC = 5090 mg/kg-diet	20-weeks NOAEC = 1520 LOAEC = 5090 mg a.i./kg-diet	According to Table 3.28. (page 67) in DP Barcode: 373577
(37)	Page 95, Table E-2. MRID 47615018	Appendix E	48 hr LR_{50} = 0.29 lb a.i./A	48 hr LR_{50} = 0.29 lb a.i./A (3504.5 g/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(38)	Page 95, Table E-2. MRID 47615338	Appendix E	48 hr LR_{50} > 0.211 lb a.i./A	48 hr LR_{50} > 0.211 lb a.i./A (>1.5 L/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(39)	Page 96, Table E-2. MRID 47615238	Appendix E	7-d LR_{50} = 0.11 lb a.i./A 14-d ER_{50} = 0.006 lb a.i./A	7-d LR_{50} = 0.11 lb a.i./A (0.62 L/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(40)	Page 96, Table E-2. MRID 47615339	Appendix E	7-d LR_{50} = 0.266 lb a.i./A	7-d LR_{50} = 0.266 lb a.i./A (1.19 L/ha)	According to Table 3.36. (page 76) in DP Barcode: 373577

No.	Reference to Document	Chapter	Original text	Revised text	Comment on Proposed Change
(41)	Page 96, Table E-2. MRID 47615240	Appendix E	7-d LR_{50} > 2.49 lb a.i./A 14-d ER_{50} = 1.91 lb a.i./A	7-day LR_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha) 14-day ER_{50} =1.91 lbs a.i./A (10.78 L/ha; 2156 g a.i./ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(42)	Page 96, Table E-2. MRID 47615241	Appendix E	9-d LR_{50} > 2.49 lb a.i./A 18-d ER_{50} > 2.49 lb a.i./A	9-day LR_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha) 18-day ER_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(43)	Page 96, Table E-2. MRID 47615242	Appendix E	9-d LR_{50} > 2.49 lb a.i./A 18-d ER_{50} > 2.49 lb a.i./A	9-day LR_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha) 18-day ER_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha)	According to Table 3.36. (page 76) in DP Barcode: 373577
(44)	Page 96, Table E-2. MRID 47615341	Appendix E	11-d LR_{50} > 2.49 lb a.i./A 14-d ER_{50} > 2.49 lb a.i./A	11-day LR_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha) 14-day ER_{50} >2.49 lbs a.i./A (>14 L/ha; >2800 g a.i./ha)	According to Table 3.36. (page 77) in DP Barcode: 373577