

28 MAY 1987

PM50/ISB
1562

RESIDUE CHEMISTRY BRANCH, HED MAY 28 1987
PETITION REVIEW QUICK FORM

FROM: Maxie Jo Nelson, Ph.D., Chemist
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THRU: Charles L. Trichilo, Ph.D., Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: Dennis Edwards, PM 12
Registration Division (TS-767)

and

Toxicology Branch
Hazard Evaluation Division (TS-769)

MRID #: 401704-01
401167-05
401167-06

1. Petition No(s): 7F3516; EPA Reg. # 264-379 RCB#: 2249, 2250
2. Chemical(s): Thiodicarb
3. Tolerance Proposal (RAC's & Levels):
Leafy Vegetables Crop Group - 30 ppm
4. Petitioner: Union Carbide
5. Tolerance Expression: combined residues of thiodicarb and
its metabolite methomyl
6. Established Tolerances: 40 CFR 180.407 (Thiodicarb) - 0.2 to 2.0
ppm on RACs; 40 CFR 180.253 (Methomyl) - 0.1 to 40 ppm on RACs.
7. Letter(s) of Authorization (if applicable): N/A.
8. Formulation(s): Larvin[®] 3.2 (Thiodicarb Insecticide), an
aqueous flowable containing 3.2 lbs thiodicarb as ai/gal. EPA Reg. #264-379.
9. Inerts Status: This is a registered formulation; inerts status
is under RD preview.

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10. Manufacturing Process: Submitted with PP# 6F3417 (Section A), which see for details. Technical is 96% pure. Impurities are not expected to present a residue problem.
11. Proposed Use(s): Larvin 3.2 on Leafy Vegetables:

PEST	DOSAGE PER ACRE		SPECIFIC DIRECTIONS	USE RESTRICTIONS
	POUNDS ACTIVE	FLUID OUNCES		
Airfa Looper Armyworms such as: Beet Fall Southern Heliothis zea (Bollworm, Corn Earworm, Tomato Fruitworm)	0.4 to 0.75	16.0 to 30.0	Spray as needed. Use the higher dosage rates for heavier infestations of larger larvae. Use the lower rates for light to moderate infestations.	Do not exceed 1.5 pounds of active ingredient (60 fluid ounces of LARVIN 3.2) per acre per season.
Cabbage Looper	0.6 to 0.75	24.0 to 30.0	Apply in a minimum finished spray volume of 5 gallons per acre by air or 20 gallons per acre by ground.	Do not apply less than 14 days before harvest.

12. Plant Metabolism Data on: cotton, soybeans, corn, wheat, cabbage, and carrots (PP# 9G2152, memo of A. Smith, 12/19/79); tomatoes (PP# 4F3013, memo of F. Boyd, 7/26/84). Metabolism studies to demonstrate absence of acetamide as a plant metabolite: tomatoes (PP# 6F3417, F. Boyd memo of 1/12/87); corn and peanuts (this petition, MRIDs 401167-05 and 401704-01).
13. Plant Residues Comprised of: ref. discussion and pathway schema in 1/21/81 review, A. Smith, PP# OF2413/FAP# OH5275. Major components of plant residues are parent & metabolite methomyl; minor components (<10%) are methomyl oxime, methomyl sulfoxide, and hydroxymethyl methomyl. Metabolites are free and (<10%) bound. Acetamide is not detected as a plant residue.
14. Plant Metabolism Data Translatable Here: All.
15. Nature of Plant Metabolism Data (is) ~~is not~~ adequately defined.
The Residue of Concern is: thiodicarb and methomyl, per #5.
16. Animal Metabolism Data on: N/A. There are no animal feed items associated with the leafy vegetable crop group.

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17. Animal Residues Comprised of: N/A. See #16.
18. Animal Metabolism Data Applicable Here: N/A. See #16.
19. Nature of Animal Metabolism Data is/is not adequately defined.
The Residue of Concern is: N/A. See #16.
20. Analytical Methods (reference or brief description):
"Thiodicarb-FPD-General" method (copy in PP# 6F3417) - macerated sample is exhaustively extracted with aqueous acetone, cleaned-up by liquid-liquid partitioning, residues are converted to methomyl oxime by caustic hydrolysis, and determination is via GLC using NPD or FPD. Limit of quantification is 0.04 ppm.
This procedure is similar to that MTO'd on soybeans successfully in re PP# OF2413 (see E. Hayes memo, 10/21/82); that procedure is the enforcement method of PAM II.
A confirmatory procedure using liquid chromatography is available.
21. Method Validation (crop recoveries): fortified with thiodicarb:
celery - fortified with 0.04-25 ppm; recoveries ranged 75-96% (avg 87%).
head lettuce - " " 0.04-20 ppm; " " 70-104% (" 90%).
leaf lettuce - " " 0.05-20 ppm; " " 74-98% (" 90%).
Spinach - " " 0.04-20 ppm; " " 76-113% (" 82%).
22. Method Validation (control values): <0.04 ppm - 0.09 ppm;
celery, lettuce (head and leaf), and spinach.
23. Residues Determined by Method: thiodicarb and methomyl, both as methomyl oxime. (Reported as thiodicarb equivalents.)
24. Enforcement Methodology (is/is not available. In PAM II.

2 x 0.75 lb ai/A
applications, 14 day PHI

25. Residue Data (crop and residue range (ppm) from Proposed Use):

MRID
401167-06

Crop: celery 0.07-23 ppm
spinach <0.04-25 "
leaf lettuce <0.04-18 "
head lettuce <0.04-22 "

these are the representative
RACS of the leafy vegetables
crop group.

lettuce (head)
data are located
in PP# GF3417

1985 field trials
aerial data for head lettuce
6-8 states per crop
different soils and varieties
minimum of 9 trials per crop
samples frozen stored 3-15 mos.

all 4 seasons of the year data on
each crop submitted;
harvested per normal cultural practice
re trimming, etc.
additional lettuce data reflecting
4 applications are available.

Other Comments: ① No significant difference in residue levels observed between ground and aerial data; ② Head lettuce with wrapper leaves data given; ③ frozen storage stability studies are available for cotton, corn, and tomatoes reflecting up to 6 months storage. Longer studies are needed to support this petition since up to 15 months storage was involved. (Tomatoes showed ~50% loss @ 71 days.)

26. Residues will not exceed proposed tolerance on (commodities)
judgment deferred, pending resolution of storage stability deficiency.
and will exceed proposed tolerance on (commodities) _____

27. Livestock Feeding Studies on (species): N/A. See #16.

28. Animal Feeding Levels: N/A. See #16.

29. Animal Residue Ingestion Levels from Proposed Crop Tolerance
Levels (proposed tol. level x % in diet): _____ ppm in
beef cattle; _____ ppm in dairy cattle/goats; _____
ppm in hogs; _____ ppm in horses; _____ ppm
in sheep; _____ ppm in poultry.

30. Livestock Tolerances are Adequate in (species) _____
_____, but not adequate in _____

N/A

N/A

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31. Livestock Tolerances Need to be Established: yes/no. If yes (species/levels): N/A. See #16.

32. Other Comments: ^① Leafy vegetables crop group is defined in 40 CFR 180.34(f)(9)(iv). ^② There is no Registration Standard for thiodicarb, but one was issued for methomyl, 10/81; no data gaps apply.

^③ Methomyl is completely recovered by an FDA multiresidue procedure (III-Luke), and thiodicarb is converted to methomyl for analysis.

33. Other Considerations: ^④ The representative crops of the leafy vegetables group are celery, lettuce (head and leaf), and spinach.

→ ^⑤ Adequate geographic representation was submitted. ^⑥ No representative chromatograms were submitted.

34. Additional Data Needed: ^① Frozen storage stability study to validate the up-to-15 month storage of the RACs of this petition. Study should be run for ≥ 15 months. ^② Representative chromatograms for leafy vegetables, standards, blanks, etc. should be submitted.

35. Recommendations: Negative at this time for the reasons discussed in #25(3) and #33(6), as reiterated in #34. (Also ref. #26.)

36. Other Comments under Recommendations: PM, a ¶ needs to be added to 40 CFR 180.3(d) to indicate: "Where tolerances are established for residues of methomyl, resulting from the use of thiodicarb and/or methomyl on the same raw agricultural commodity, the total amount of methomyl shall not yield more residue than that permitted by the higher of the two tolerances".

37. Compatibility with Codex Tolerances: N/A re leafy vegetables (see Attachment). The Codex expression includes methomyl oxime; the USA's doesn't. Codex is considering its deletion. If they don't, USA may consider its inclusion at a future date so harmonization can be achieved.

Attachment: International Residue Limits Status Sheet

cc: RF, Circ, Reviewer, PMSD/ISB, TOX, EEB, ERB, [REDACTED] PP#7F3516

Approved: Quick 2/IRSQ 5/27/87; Schmitt RD 5/28/87

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INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL Thiodicarb

CODEX NO. 154

CODEX STATUS:

☒ No Codex Proposal
Step 6 or above (on leafy veg.)

Residue(if Step 8): Sum of methomyl/
and methoxydemeton-methyl (metathiothionate)
expressed as thiodicarb 1/

Crop(s) Limit
(mg/kg)

PROPOSED U.S. TOLERANCES:

Petition No. 7F3516

RCB Reviewer Nelson

Residue: parent plus metabolite,
methomyl - per §180.407

Crop(s) Limit
(mg/kg)

Leafy Vegetables 30
Crop Group

CANADIAN LIMITS:

☒ No Canadian limit

Residue: _____

Crop(s) Limit
(mg/kg)

MEXICAN LIMITS:

☒ No Mexican limit

Residue: _____

Crop(s) Limit
(mg/kg)

NOTES:

1/ Definition for steps proposals on other commodities

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