

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

004368

OFFICE OF  
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Pesticide Petition No. 4F3103; Methoprene Tolerance  
on Cereal Grains.  
Caswell No. 28AAA

TO: Franklin Gee  
Product Manager (17)  
Registration Division (TS-767)

THRU: *[Signature]* 4/1/85  
Robert Zendzian, Ph.D.  
Acting Head, Review Section IV  
Toxicology Branch  
Hazard Evaluation Division (TS-769)

FROM: George Z. Ghali, Ph.D. *G. Ghali*  
Toxicology Branch 3/29/85  
Hazard Evaluation Division (TS-769)

Petitioner: Zoecon Corporation  
Palo Alto, California 94303

Action Requested:

Evaluation of an amended registration and permanent tolerances on small grains.

Conclusions and Recommendations:

Toxicology Branch recommends for the registration of Diacon® (Methoprene 5 E) for use on cereal grains, and the establishment of the associated tolerances as proposed by the registrant.

Detailed Considerations:

The acceptable daily intake has been established on the basis of a "no-observed effect level" of 250 ppm generated in a chronic feeding study in mice, using a 100 fold safety factor. On this basis, the the acceptable daily intake (ADI) was calculated to be 0.3572 mg/kg/day, and the maximum permissible intake (MPI) for a 60 kg person was calculated to be 21.42 mg/day based on 1500 gm of total daily food intake.

Published and Tox approved tolerances utilize 0.49% of the ADI. The increase in the theoretical maximum residue contribution (TMRC) to human diet as a result of granting the proposed tolerances would be 3.4775 mg/day or 15.45% of the ADI.

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TR-4364

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Proposed Tolerances:

Tolerances were proposed by the registrant on May 2, 1984. These tolerances were then revised (registrant's letter, July 3, 1984 ) as follows:

<u>COMMODITY</u>	<u>Proposed New Tolerance/Parts per Million</u>		
Cereal Grain Crop Group		10	
	<u>Current Tolerance</u>	<u>Amended Tolerance</u>	
Cattle	Meat	0.10	0.20
	Fat	0.30	3.00
	MBYP	0.10	0.20
	Milk	0.05	2.00
Goats	Meat	0.30	2.00
	Fat	0.30	3.00
	MBYP	0.10	0.20
	Milk	0.05	2.00
Hogs	Meat	0.30	2.00
	Fat	0.30	3.00
	MBYP	0.10	0.20
Sheep	Meat	0.30	2.00
	Fat	0.30	3.00
	MBYP	0.10	0.20
Horses	Meat	0.30	2.00
	Fat	0.30	3.00
	MBYP	0.10	0.20
Poultry	Meat	0.30	2.00
	Fat	0.30	3.00
	MBYP	0.10	0.20

Detailed Considerations:

Use Pattern:

The proposed methoprene use calls for a single treatment as the cereal grains are transferred into bulk storage. DIACON® (methoprene 5E) is the proposed methoprene formulation for this treatment. Methoprene 5E is currently registered under EPA Reg. No. 20954-104.

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Rationale for Updating the Acceptable Daily Intake of Methoprene Residues:

In the course of reviewing the methoprene data base for re-registration purposes, a "provisional acceptable daily intake" (PADI) was established on the basis of a "no-observed effect level" of 500 ppm from a subchronic feeding study (90 days) in dogs using a 2000 fold safety factor.

As of February 1982, the data requirements for technical methoprene were fulfilled except for the chronic feeding toxicity data in dogs. However, a waiver of this data requirement was granted (G. Ghali, memo dated 2/18/82). It was also suggested that an ADI should be re-established on the basis of a NOEL from an appropriate long-term feeding study, and the tolerance of methoprene should be reassessed in the light of the new ADI. Since then no action was taken to update the acceptable daily intake.

It is suggested that a new "acceptable daily intake" be established on the basis of a "no-observed effect level" of a 250 ppm generated in a chronic feeding study (18 months) in the mouse, using a safety factor of 100 fold. On this basis the acceptable daily intake was calculated to be 0.357 mg/kg/day, and the maximum permissible intake (MPI) for a "60 kg person" was calculated to be 21.42 mg/day.

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NOEL  
change  
not recorded  
per

NOEL	NOEL	NOEL	NOEL	NOEL
mg/kg	mg/kg	mg/kg	mg/kg/day	mg/day (60kg)
37.500	250.00	100	0.3750	22.5000

utilized references

CROP	tolerance	Food Factor	mg/day (1.5kg)
Cattle (26)	0.300	7.12	0.00214
Milk/dairy Products (23)	0.050	20.62	0.00100
Mushrooms (97)	0.000	0.03	0.00000
Eggs (54)	0.150	2.77	0.00000
Beets (22)	0.300	0.03	0.00014
Beans (55)	0.100	3.23	0.00025
Peanuts (115)	2.000	0.28	0.00073
Wheat (145)	0.300	0.19	0.00057
Poultry (120)	0.100	2.94	0.00207
Horses (208)	0.300	0.05	0.00014

NOEL 22.5000 mg/day (60kg)      TDRS 0.1053 mg/day (1.5kg)      ALI 0.47

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Current Action 4F3103

CROP	tolerance	Food Factor	mg/day (1.5kg)
Barley (5)	10.000	0.03	0.00050
Buckwheat (21)	10.000	0.03	0.00050
Corn, all types (36)	10.000	7.51	0.37550
Millet (54)	10.000	0.03	0.00050
Wheat (95)	10.000	0.03	0.00050
Oats (102)	10.000	0.34	0.00530
Rice (137)	10.000	0.55	0.00825
Rye (140)	10.000	0.03	0.00050
Sorghum (178)	10.000	10.55	1.00000
Cattle (26)	2.700	7.12	0.0017
Beets (22)	2.700	0.03	0.00022
Beans (55)	2.700	3.23	0.00007
Wheat (145)	2.700	0.19	0.0007
Horses (208)	2.700	0.05	0.00012
Poultry (120)	2.500	2.94	0.00037
Milk/dairy Products (23)	1.900	20.62	0.00030

NOEL 22.5000 mg/day (60kg)      TDRS 3.5820 mg/day (1.5kg)      ALI 15.92

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Methoprene toxicology reviews

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- Identity of product inert ingredients
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  - Description of the product manufacturing process
  - Description of product quality control procedures
  - Identity of the source of product ingredients
  - Sales or other commercial/financial information
  - A draft product label
  - The product confidential statement of formula
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  - FIFRA registration data
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