CHEM 105401 Methoprene

BRANCH EFB DISC 30 TOPIC 1010

FORMULATION 09 - MICROENCAPSULATED

FICHE/MASTER ID 00010417 CONTENT CAT 01

Zoecon Corporation (1972) Water Residue Data--Altosid¬(TM)¤. (Unpublished study received Dec 5, 1972 under 20954-EX-1; CDL: 127777-B)

FICHE/MASTER ID 00011484 CONTENT CAT 01

Zoecon Corporation (19??) Soil Residue Data--Altosid¬(TM)¤. (Unpublished study received Dec 5, 1972 under 20954-EX-1; CDL: 127777-H)

FICHE/MASTER ID 00011485 CONTENT CAT 02

Steelman, D. (1972) Altosid¬(TM)¤ 4E, R-20458 4E, and Monsanto 585: Test No. E-129-B-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif; CDL:127777-Y)

FICHE/MASTER ID 00012729 CONTENT CAT 02

Hazeltine, B. (1972) Altosid¬(TM)¤ SR-10: Test No. E-10-B-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-Z)

FICHE/MASTER ID 00010433 CONTENT CAT 02

Steelman, D. (1972) Altosid¬(TM)¤ SR-10: Test No. E-38-B-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AA)

FICHE/MASTER ID 00010434 CONTENT CAT 02

Schaefer, C.H. (1972) Altosid¬(TM)¤ 4E: Test No. E-5-Del-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AB)

FICHE/MASTER ID 00010435 CONTENT CAT 02

Schaefer, C.H. (1972) Altosid¬(TM)¤ 4E: Test No. E-6-Del-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AC)

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FICHE/MASTER ID 00010436 CONTENT CAT 02

Schaefer, C.H. (1972) Altosid¬(TM)¬ 4E: Test No. E-32-Del-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AD)

FICHE/MASTER ID 00010437 CONTENT CAT 02

Schaefer, C.H. (1972) Altosid¬(TM)¬ SR-10: Test No. E-11-B-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AE)

FICHE/MASTER ID 00010438 CONTENT CAT 02

Kauffman, G. (1972) Altosid¬(TM)¬ SR-10: Test No. E-8-B-72. (Unpublished study received Dec 5, 1972 under 20954-EX-1; submitted by Zoecon Corp., Palo Alto, Calif.; CDL:127777-AF)

SUBST. CLASS = S.

OTHER SUBJECT DESCRIPTORS
PRIM: EFB -30-100520
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DIRECT RVW TIME = 21 (MH) START-DATE END DATE

REVIEWED BY: D. Harper and J. Caplan
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SIGNATURE: Daniel Harper J. Caplan DATE: Mar. 4, 1981

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

CONCLUSIONS:

This study contains some treated crop residue data that were not included in this review.

Field Dissipation - Aquatic and Aquatic Impact

1. This study is scientifically valid.

2. Methoprene dissipates rapidly in flooded fields and ponds. Methoprene levels in water samples declined below detectable limits (0.001 ppm) 24-72 hours after treatment with 0.05-2.0 lb ai/A.

3. Methoprene does not accumulate in submerged soil or sediments. At 7 days

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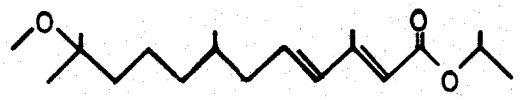
after treatment of water with 0.05 lb ai/A, methoprene remained at levels of 0.002 ppm in the 0-2 inch soil sample and at levels below the detection limit (<0.001 ppm) in the 2-4 inch samples.

4. In a sewage lagoon, trace (0.001-0.006 ppm) levels of methoprene may be dispersed 100-1,000 feet from the area of methoprene application by water over a 1-week period.

MATERIALS AND METHODS:

METHOPRENE, ALTOSID, ZR-515



Isopropyl (E,E)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate

Field Dissipation - Aquatic and Aquatic Impact

Baton Rouge, LA. Three rice fields (clay loam soil, high organic matter content, and submerged under 6 inches of water) were treated with methoprene at 0.5, 1.0, or 2.0 lb ai/A (Altosid 4 lb ai/gal emulsifiable concentrate, Zoecon Corp.), respectively, by hand sprayer. Water samples were collected at 1, 24, 48, 72, and 240 hours after treatment.

Oroville, CA. A marsh (clay soil, pH 7.8, and high organic matter content) under 0.5-3.0 feet of water was treated with methoprene at 0.1 lb ai/A (Altosid SR-10, Zoecon Corp.) by aerial application. Water samples were collected at 0, 1, 3, 5, and 7 days after treatment.

Bakersfield, CA. Three ponds (8-12 inch water depth) were treated with methoprene at either 0.1 or 0.3 lb ai/A (Altosid 4 lb ai/gal emulsifiable concentrate, Zoecon Corp.) by handsprayer. Water samples were collected at various time intervals after treatment.

Fresno, CA. A pasture field submerged under 3-5 inches of water was treated with methoprene at 0.1 lb ai/A (Altosid SR-10, Zoecon Corp.) by aerial application. Water samples were collected at 1 hour after treatment.

Yuba City, CA. Two pasture fields (clay soil), one under 6-14 inches of water and the other dry, were treated with methoprene at 0.05 lb ai/A (Altosid SR-10, Zoecon Corp.) by aerial application. Water and soil samples were collected at various time intervals for 7 days.

Soil samples were blended in an acetone:petroleum ether (1:1) mixture and Soxhlet extracted in acetone:petroleum ether (1:1). The petroleum ether layer was analyzed for methoprene by the method referenced in 00011484 and described in Study 19 (05009931, 05009930, 00011490, and 00010421).

All water samples were extracted and analyzed by the method referenced in 00010417 and described in Study 19 (05009931, 05009930, 00011490, and 00010419).

Water Dispersal

Baton Rouge, LA. A sewage lagoon of a slaughterhouse was treated with methoprene at 2 lb ai/A (Altosid SR-10, Zoecon Corp.). Water samples were collected from the lagoon and from the drainage system at 100, 300, and 1,000 feet from the lagoon.

The water samples were extracted and analyzed for methoprene by the method referenced in 00010417 and described in Study 19 (05009931, 05009930, 00011490, 00010419, and 00010421).

REPORTED RESULTS:

Field Dissipation - Aquatic and Aquatic Impact

Baton Rouge, LA. Methoprene at 0.12, 0.31, and 0.81 ppm was present in water samples 1 hour after treatment with 0.5, 1.0, and 2.0 lb ai/A, respectively. Methoprene was not detected in samples collected 72 hours after treatment (Table 1).

Oroville, CA. Methoprene at 0.003 ppm was present at 1 day after treatment with 0.1 lb ai/A. Methoprene could not be detected 3 days after treatment (Table 2).

Bakersfield, CA. In all three ponds, methoprene levels declined below the 0.001 ppm detection limit within 48 hours of treatment with 0.1 or 0.3 lb ai/A (Table 3).

Fresno, CA. Methoprene at 0.02-0.09 ppm was found in water samples 1 hour after treatment with 0.1 lb ai/A. At 1, 3, and 5 days after treatment, methoprene could not be detected in the water samples (detection limit 0.001 ppm).

Yuba City, CA. Methoprene levels in soil samples from the submerged field were lower than levels in soil from dry fields. Methoprene levels in water were below the detection limit (0.001 ppm) 1 day after treatment (Table 4).

Water Dispersal

Baton Rouge, LA. At 1 hour after treatment with methoprene at 2 lb ai/A, the compound was found at 0.180 ppm in the lagoon water and at 0.002 ppm or less in the drainage system up to 1,000 feet from the lagoon. At 144 hours after treatment, methoprene was present at ≤0.001 ppm in water samples from the drainage system up to 1,000 feet from the lagoon. (Table 5).

DISCUSSION:

Field Dissipation - Aquatic and Aquatic Impact

1. Soil (or sediment) samples were not collected from the Baton Rouge, Oroville, Bakersfield, and Fresno field plots (or ponds). Duplicate samples were not run at the Bakersfield ponds.

2. It is assumed that the water in all of the field plots and ponds was stagnant and not constantly moving.

3. Water samples were not collected immediately after treatment from the Baton Rouge and Fresno field plots.

Water Dispersal

1. The flow rate of the drainage system was not provided. This information is needed to determine whether the disappearance of methoprene was due to discharge from the lagoon or degradation.

2. A set of water samples was not collected immediately after treatment.

Table 1. Methoprene detected in rice paddy water following applications of methoprene 4E to three rice fields in Baton Rouge, LA.

Plot No.	Sample collection time (hours)	Application rate (lb ai/A)	Methoprene[a] (ppm)
1	1	0.5	0.12
	24	0.5	0.01
	48	0.5	ND[b]
2	1	1.0	0.31
	24	1.0	0.03
	48	1.0	0.11
	72	1.0	ND
3	1	2.0	0.81
	24	2.0	0.09
	48	2.0	0.03
	72	2.0	ND
Control	1	0.0	ND

[a]Detection limit for water: 0.01 ppm.

[b]ND - None detected.

From 00011485.

Table 2. Methoprene levels in water from a marsh in Oroville, CA, treated with methoprene SR-10.

Application rate (lb ai/A)	Sampling interval (days)	trans-Methoprene levels (ppm)	cis-Methoprene levels (ppm)
Control	--	ND[a]	--[b]
0.1	0	0.26	0.086
	1	0.003	0.001
	3	ND	ND
	5	ND	--
	7	ND	--

[a]None detected (ND), < 0.001 ppm.

[b]Not reported.

From 00012729.

Table 3. Methoprene detected in water collected from three ponds in Bakersfield, CA, treated with methoprene 4E.[a]

Sample collection time (hours)	Methoprene (ppm)		
	Pond 1[b]	Pond 3[b]	Pond 2[c]
0	0.241	0.373	0.529
4	--	0.018	0.047
8	--	0.005	0.015
24	<0.001	0.002	0.001
48	--	<0.001	<0.001

[a]Detection limit: 0.001 ppm (no methoprene found in controls).

[b]Application rate: 0.1 lb ai/A.

[c]Application rate: 0.3 lb ai/A.

From 00010434, 00010435, and 00010436.

Table 4. Methoprene levels in water and soil samples collected from pasture fields in Yuba City, CA, treated with methoprene SR-10.[a]

Sample	Sampling interval (days)	Soil sampling depth (inches)	trans-Methoprene levels (ppm)	cis-Methoprene levels (ppm)
Soil (submerged at application)	2	0-2	0.004	0.002
		2-4	ND[b]	ND
	3	0-2	0.002	ND
		2-4	0.016	0.006
	5	0-2	ND	ND
		2-4	ND	--[c]
	7,9	0-2	ND	--
		2-4	ND	--
Soil (dry at application)	0	0-2	0.16	0.061
		2-4	0.008	0.004
	1	0-2	0.012	0.009
		2-4	0.012	ND
	3	0-2	0.028	0.008
		2-4	ND	ND
	5	0-2	0.003	0.004
		2-4	ND	ND
	7	0-2	0.002	0.002
		2-4	ND	ND
Deep water	Control	--	ND	--
	0	--	0.015	0.006
	1	--	ND	ND
	3,5,7	--	ND	--
Shallow water	Control	--	ND	--
	0	--	0.030	0.008
	1	--	ND	ND
	2	--	ND	--

[a]Application rate: 0.05 lb ai/A.

[b]None detected (ND), <0.001 ppm.

[c]Not reported (--).

From 00010438 and 00011484.

Table 5. Methoprene levels in water collected from a sewage lagoon treated with methoprene SR-10.[a]

Sampling location	Sampling interval (hours)	Methoprene (ppm)
Lagoon	1	0.180
	24	0.005
	48	0.002
	72	0.002
	144	ND[a]
	168	ND
Drainage system 100 ft from lagoon	1	0.002
	24	0.006
	48	0.001
	72	0.006
	144	ND
	168	0.001
Drainage system 300 ft from lagoon	1	0.001
	24	ND
	48	ND
	72	0.003
	144	ND
	168	0.001
Drainage system 1,000 ft from lagoon	1	0.002
	24	0.004
	48	0.001
	72	ND
	144	ND
	168	0.001

[a]Application rate: 2 lb ai/A.
[b]None detected (ND), <0.001 ppm.

From 00010433 and 00010417.