

UNIT ATES ENVIRONMENTAL PROTECTION AGENCY

DATE: August 20, 1979

Caswell 358

SUBJECT: NE 730019. Dimethoate on Pasture Rangelands. Nebraska 24c State Registration.

RA. Gessert *WSW*
FROM: Roland A. Gessert, D.V.M.; Toxicology Branch
THRU: Dr. Adrian Gross, Chief, Toxicology Branch

TO: Ms. Marilyn Mautz; Team # 16

A letter dated July 28, 1978 from Edwin L. Johnson states that dimethoate may be applied at a rate of 2 to 4 ounces active ingredient per acre on pasture grass and rangeland (for the 1978 grasshopper emergency in Kansas, Nebraska, Colorado, and Oklahoma). For this use Mr. Johnson did not require residue monitoring. However, the Thompson-Hayward Company did monitor range grass residues in Texas, and these data are submitted in support of this Nebraska 24c registration. Additional data are being developed in Kansas and Nebraska.

The Texas data demonstrate that 14 days following treatment with 1.5 pints De-Fend 267, residue levels in grass were dimethoate 1.94 ppm and its oxygen analog 0.30 ppm, for a total level of 2.20 ppm. At 28 days the dimethoate level was 0.78 ppm and its oxygen analog 0.12 ppm for a total level of 0.90 ppm. The label specifies a 28-day pre-grazing interval.

40 CFR 180.204 currently provides residue tolerance levels of 2 ppm in or on alfalfa . . . and wheat (green fodder and straw); . . . 0.02 ppm in eggs and in meat, fat, and meat byproducts of cattle, goats, hogs, horses, poultry, and sheep; and 0.002 ppm in milk.

The consumption of range and pasture grass by livestock would be quite comparable to consumption of alfalfa and wheat (green fodder and straw). In fact, consumption of green wheat fodder by grazing livestock would likely result in greater intake (by weight) than consumption of range or pasture grass.

Residue Chemistry Branch has indicated that residue data from Kleberg County, Texas, would not be applicable to Nebraska range grass. I reject this contention. Besides my degree in veterinary medicine I also have a B.S. in agriculture and course work leading to an M.S. degree in animal nutrition. I also have conducted studies with livestock in both Kleberg County, Texas, and in the range areas of central and western Nebraska, and from my experience I can state that in the summer (during the grasshopper season) the climatic conditions and other conditions which might affect the residue picture would be quite comparable in both these areas.

As Residue Chemistry Branch points out, the label submitted indicates an application rate of $1\frac{1}{2}$ pints per acre (7.9 ounces), twice the rate authorized in Mr. Johnson's letter. Nevertheless, the residue data submitted support this rate when the 28-day pre-grazing period is observed.

An RPAR has issued against dimethoate based on oncogenicity, mutagenicity, and reproduction presumptions. However, based on data reviewed by Toxicology Branch

(Mr. Coberly and Dr. Dykstra) in the registration and tolerance setting process, no hazard would exist from the use of dimethoate as proposed for use on range and pastureland in Nebraska. These data include a carcinogenicity study in rats and mice by NCI (no carcinogenic effect), a reproduction study in the mouse (no adverse effects), and several tests for mutagenicity.

Also reported are two human studies. One is a study in which 20 human subjects ingested 0.04 mg/kg dimethoate for 4 weeks. No toxic effects were observed, nor any significant change in the blood ChE activity.

36 male and female volunteers were given dimethoate at levels of 5, 15, 30, 45, and 60 mg for 14 to 57 days. No effects on ChE activity were seen at levels 5 and 15 mg, but there was some depression at 30 mg. *@ 0.25 mg/kg* *5 mg/kg*

It was estimated that the level causing no significant toxicological effect for man is 0.2 mg/kg/day. Therefore, the ADI for man would be 0.02 mg/kg/day.

A Section 24(c) State Registration is authorized in FIFRA to meet special local needs within that state. Mr. Johnson and Mr. Jellinek had determined that the need existed in the Plains States and suggested dimethoate as the most acceptable (by EPA) pesticide for grasshopper control. Residue tolerances of 2 ppm currently exist for many fruits and vegetables which man consumes frequently. On the other hand, there would be minimal human exposure to dimethoate applied to pasture and rangeland.

CONCLUSION: Toxicology Branch therefore recommends for approval of the Section 24(c) State Registration of dimethoate for grasshopper control on pasture and rangeland in Nebraska.

per
W. J. Butler

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ACCEPTABLE DAILY INTAKE DATA

RAT, Older	NOEL	S.F.	ADI	MPI
mg/kg	ppm		mg/kg/day	mg/day/60kg
0.500	10.00	10	0.0500	3.0000

Published Tolerances

CROP	Tolerance	Food Factor	mg/day/1.5kg
Apples(2)	2.000	2.53	0.07590
Beans(9)	2.000	2.04	0.06120
Broccoli(19)	2.000	0.10	0.00307
Cauliflower(22)	2.000	0.74	0.02207
Cauliflower(27)	2.000	0.07	0.00215
Celery(28)	2.000	0.29	0.00858
Collards(37)	2.000	0.08	0.00245
Escarole(56)	2.000	0.03	0.00090
Grapefruit(65)	2.000	0.99	0.02974
Kale(75)	2.000	0.03	0.00090
Lemons(82)	2.000	0.17	0.00521
Lettuce(84)	2.000	1.31	0.03924
Mustard Greens(99)	2.000	0.06	0.00184
Oranges(108)	2.000	2.17	0.06500
Pears(116)	2.000	0.26	0.00766
Peas(117)	2.000	0.69	0.02085
Peppers(120)	2.000	0.12	0.00368
Spinach(150)	2.000	0.05	0.00153
Swiss Chard(158)	2.000	0.03	0.00090
Tangerines(160)	2.000	0.03	0.00090
Tomatoes(163)	2.000	2.87	0.08624
Turnip Greens(166)	2.000	0.03	0.00090
Turnips(165)	2.000	0.05	0.00153
Grapes, inc raisins(66)	1.000	0.49	0.00736
Melons(92)	1.000	2.00	0.03005
Potatoes(127)	0.200	5.43	0.01628
Cottonseed(41)	0.100	0.15	0.00022
Pecans(118)	0.100	0.03	0.00005
Safflower(141)	0.100	0.03	0.00005
Sorghum(147)	0.100	0.03	0.00005
Corn, grain(68)	0.100	1.00	0.00150
Soybeans(148)	0.050	0.92	0.00069
Wheat(170)	0.040	10.36	0.00622
Eggs(54)	0.020	2.77	0.00083
Meat, inc poultry(89)	0.020	13.85	0.00415
Milk&Dairy Products(93)	0.002	28.62	0.00086

MPI 3.0000 mg/day/60kg TMRC 0.5108 mg/day/1.5kg % ADI 17.03
