UNITED S[illegible]S ENVIRONMENTAL PROTECTIO[illegible]ENCY

(26)

2,4-D/TOX

Caswell 315

Releasable

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SUBJECT: Section 18 Exemption for 2,4-D on Soybeans in Louisiana

FROM: Roland A. Gessert, D.V.M.; Toxicology Branch

Roland A. Gessert 8/29/79

TO: Mr. Don Rodier, Emergency Response Section

THRU: Dr. Adrian Gross, Chief, Toxicology Branch William M Batte for M Adrian Gross

The State of Louisiana requests a Section 18 Emergency Exemption for the use of 2,4-D on soybeans to control the pest weed sesbania.

Residue Chemistry Branch reviewed a similar request last year and concluded:

1. Maximum residues of 2,4-D in soybeans resulting from the proposed emergency use will be ca. 0.75 ppm.

2. There are no data for soybean straw. However, the present tolerances for meat and milk will cover any residues resulting from the feeding of treated soybeans or soybean straw.

3. Residues of dimethylnitrosamine, if any, resulting from this use will be less than 1 ppb.

4. There currently are no tolerances for residues of 2,4-D on soybeans and soybean straw.

From previous reviews by Dr. Reto Engler and Robert Coberly (October 11, 1977), the following data are summarized:

Oral LD_{50}, rat	300 - 470 mg/kg
113 day rat feeding study	NEL 300 ppm
90 day dog feeding study	NEL 400 ppm
2 year rat feeding study	NEL 1250 ppm
2 year dog feeding study	NEL 500 ppm
Rat 3-generation reproduction study	NEL 500 ppm
Rat teratology study	No terata at 25 mg/kg
Hamster teratology study	No terata at 40 mg/kg
Teratology on 2,7-dichloro dibenzo dioxin in rat and hamster	No terata at 2 mg/kg
22-week cattle feeding study	NEL 50 mg/kg
Carcinogenicity screen in mice (at Litton Bionetics)	No carcinogenicity

2,4-D is a pre-RPAR candidate, based on an informal review by Dr. Mel Reuber of a paper by Hansen, et al, which states that the Hansen paper provides "positive evidence that 2,4-D is carcinogenic." Subsequent reviews by CAG and others do not support Reuber's pronouncement.

Also casting aspersions on 2,4-D is a paper by K. Diane Courtney, "Prenatal Effects of Herbicides: Evaluation by the Prenatal Development Index." The paper states, "The herbicides 2,4-D and 2,4,5-T and many of the esters of these compounds produced cleft palates in CD-1 mice." In order to evaluate data from some experiments with fetotoxic doses of compounds in which the high incidence of fetal mortality and consequently low incidence of viable fetuses obscured the response, they derived a Prenatal Development Index. The index was computed from the incidence of malformed fetuses, fetal mortality, and fetal body weight. The paper discusses effects of the various herbicides studied, but in general the esters of 2,4-D decreased fetal weight only, but did not affect mortality. The effects, using this index, are less subtle with 2,4,5-T.

The TMRC for 2,4-D currently is 0.903 mg/day/1.5 kg. The ADI is not exceeded; only about 12% of the ADI is represented by these figures. The TMRC is not affected significantly by inclusion of a temporary tolerance of 0.75 ppm for soybeans in Louisiana.

CONCLUSIONS: Toxicology Branch has no objections to the proposed Section 18 Exemption for 2,4-D in Louisiana.

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ACCEPTABLE DAILY INTAKE DATA

Dog NOEL mg/kg	NOEL ppm	S.F.	ADI mg/kg/day	MPI mg/day/60kg
12.500	500.00	100	0.1250	7.5000

Published Tolerances

CROP	Tolerance	Food Factor	mg/day/1.5kg
Apples(2)	5.000	2.53	0.18975
Citrus Fruits(33)	5.000	3.81	0.28590
Cucurbits(49)	0.100	2.84	0.00426
Pears(116)	5.000	0.26	0.01916
Quinces(132)	5.000	0.03	0.00225
Potatoes(127)	0.200	5.43	0.01628
Sugar,cane&beet(154)	2.000	3.64	0.10915
Barley(8)	0.500	0.03	0.00023
Oats(102)	0.500	0.36	0.00268
Rye(140)	0.500	0.03	0.00023
Wheat(170)	0.500	10.36	0.07772
Corn,all types(38)	0.500	2.51	0.01883
Cranberries(44)	0.500	0.03	0.00023
Grapes, inc raisins(66)	0.500	0.49	0.00368
Sorghum(147)	0.500	0.03	0.00023
Blueberries(18)	0.100	0.03	0.00005
Rice(137)	0.100	0.55	0.00083
Citrus Fruits(33)	0.100	3.81	0.00572
Fruiting Vegetables(60)	0.100	2.99	0.00449
Grain Crops(64)	0.100	13.79	0.02069
Leafy Vegetables(80)	0.100	2.76	0.00414
Nuts(101)	0.100	0.10	0.00015
Pome Fruits(126)	0.100	2.79	0.00418
Root Crop Veg(138)	0.100	11.00	0.01649
Seed&Pod Veg(143)	0.100	3.66	0.00549
Small Fruit,berries(146)	0.100	0.83	0.00124
Stone Fruits(151)	0.100	1.25	0.00187
Avocados(6)	0.100	0.03	0.00005
Cottonseed(41)	0.100	0.15	0.00022
Hops(73)	0.100	0.03	0.00005
Strawberries(152)	0.100	0.18	0.00028
Asparagus(5)	5.000	0.14	0.01073
Fish,shellfish(59)	1.000	1.08	0.01625
Meat, red(90)	0.200	10.81	0.03244
Milk&Dairy Products(93)	0.100	28.62	0.04292
Poultry(128)	0.050	2.94	0.00221
Eggs(54)	0.050	2.77	0.00208
Millet(94)	0.500	0.03	0.00023

MPI	TMRC	% ADI
7.5000 mg/day/60kg	0.9033 mg/day/1.5kg	12.04

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Current Action Section 18

CROP	Tolerance	Food Factor	mg/day/1.5kg
Soybeans(148)	0.750	0.92	0.01033

MPI	TMRC	% ADI
7.5000 mg/day/60kg	0.9137 mg/day/1.5kg	12.18

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