UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Caswell 889 File PP 9E2224 9/2

DATE: September 24, 1979

SUBJECT: PP# 9E2224. IR-4 Request for Tolerance for Trifluralin in or on Upland Cress at 0.05 ppm. TREFLAN EC. EPA Reg. No. 1471-35.

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

TO: Mr. Clinton Fletcher, Minor Uses Officer, Special Registrations Section, Registration Division (TS-767)

THRU: Dr. Adrian Gross, Toxicology Branch Chief
10-4-79

PETITIONER: Interregional Research Project No. 4
Rutgers University
New Brunswick, New Jersey 08903

and Agricultural Experiment Station of Tennessee

RESIDUE CHEMISTRY BRANCH CONCLUSIONS:

1. The metabolism of trifluralin in plants is adequately understood for the proposed use. The residue component of interest is the parent trifluralin.

2. Adequate analytical methods are available to enforce the proposed tolerance.

3. Trifluralin residues in or on upland cress are not expected to exceed the proposed 0.05 ppm tolerance as concluded from data for other leafy vegetables.

4. Upland cress is not a feed item. Therefore secondary residues in meat, milk, poultry, and eggs are not anticipated from the proposed use.

RECOMMENDATION: Residue Chemistry Branch recommends for the proposed tolerance.

ACTION REQUESTED: Applicant petitions the registration of TREFLAN EC be amended for the minor use of weed control in upland cress and the establishment of a 0.05 ppm residue tolerance in or on this minor leafy vegetable.

CONCLUSIONS:

1. The petition is toxicologically supported.

2. The toxicological profile is essentially complete.

3. The ADI has not been exceeded by this tolerance action.

SUBSTANCE IDENTIFICATION: See attached ASA sheets.

INERT INGREDIENT INFORMATION IS NOT INCLUDED

MANUFACTURING PROCESS INFORMATION IS NOT INCLUDED

FORMULATIONS: EPA Registration No. 1471-35. TREFLAN E.C. Under the one registration, seven alternate formulations are registered, each containing 44.5% active ingredient. The oral LD_{50}s varied from 2.8 to 6.0 ml/kg body weight in male and female rats, depending on the inert ingredients in each formulation. The inert ingredients [redacted] are all cleared under 40 CFR 180.1001.

The acute rat inhalation LD_{50}s were all greater than 47 mg/liter.

RELATED PETITIONS: 6F0493, 6G0494, 7G0533, 7F0555, 7F0565, 7F0586, 7G0595, 8F0664, 8F0679, 8F0702, 8F0715, 8F0721, 8F0731, 9F0787, 9E2224, 9F0801, 9F0851, 0F0862, 0H2445, 4G1501, 4E1509, 9F2159, 9F2172.

The registered formulation has been reviewed previously for toxicity by Dr. George Whitmore, Robert Coberly, and Laurence Chitlick. Therefore, the individual studies will not be reviewed again in detail.

Tolerances currently exist for residues of trifluralin as listed in the CFR and the attached computer sheet. No-effect levels on which these tolerances are based are:

2000 ppm	-	Rat, 2-year feeding (2 studies)
200 ppm	-	Rat, 4-generation reproduction study
2000 ppm	-	Rat, continuous breeding (approximately 8 litters from each female)
400 ppm	-	Dog, 2-year feeding (2 studies)
400 ppm	-	Dog, 3-year feeding study
400 ppm	-	Dog breeding study
450 ppm	-	Rabbit teratology study

Oncogenicity tests conducted by NCI with trifluralin technical chemical in rats and mice indicate the chemical is not oncogenic in rats nor in male mice. Hepatocellular carcinomas and alveolar/bronchiolar adenomas were observed in female mice (including controls) but the incidence appeared to be dose related.

Trifluralin is an RPAR candidate, possibly due to the presence of N-nitroso-di-n-propylamine (NDPA) contaminant at concentrations of [redacted] ppm in the trifluralin used in the tests. Residue Chemistry Branch does not expect nitrosamines of trifluralin to cause residue problems.

Upland cress is related to water cress and horseradish and is cultivated only sparingly for winter salads and pot herbs. As cultivated, leaf exposure and general culture are similar to those of spinach and turnips for greens. Residue tolerances of 0.05 ppm exist for the group, "leafy vegetables", which include anise, beet greens, broccoli, broccoli raab, brussel sprouts, cabbage, cauliflower, celery, chinese cabbage, collards, dandelion, endive, escarole, fennel, kale, kohlrabi, lettuce, mustard greens, parsley, rhubarb, salsify tops, spinach, sugar beet tops, Swiss chard, turnip greens, and watercress. (40 CFR 180.34 f).

While upland cress is a very minor crop, it also would be included in the above "leafy vegetable" group, and therefore would have no effect on the TMRC. Obviously, no food factor is available for upland cress, per se.

2

The ADI for trifluralin is based on the NEL of 400 ppm in the 3 long-term dog feeding studies. A 100-fold safety factor was used to calculate the ADI.

$$ADI = NEL \times \frac{1}{100}$$

$$ADI = 10 \text{ mg/kg/day} \times \frac{1}{100} = 0.1 \text{ mg/kg/day}$$

The MPI for a 60 kg person is 6 mg/day

The TMRC of all published tolerances is 0.429 mg/day/1.5 kg, or 0.72% of the ADI. An unpublished Toxicology Approved tolerance of 0.05 ppm for asparagus increases the TMRC to 0.0430 mg/day/1.5 kg diet. An unpublished Toxicology Approved tolerance of 0.05 ppm for barley and sorghum increases the TMRC to 0.0431 mg/day; and the current action has no effect on the TMRC. Therefore, the intake still remains at 0.72% of the ADI.

180.207 Triflu[illegible]n ~~8/9/79~~ 9/25/79

~~File last updated 8/9/79~~

~~ACCEPTABLE DAILY INTAKE DATA~~

~~Dog~~ mg/kg	~~NOEL~~ ppm	~~S.F.~~	~~ADI~~ mg/kg/day	~~MPI~~ mg/day/60kg
~~10.000~~	~~400.00~~	~~100~~	~~0.1000~~	~~6.0000~~

~~Published Tolerances~~

~~CROP~~	~~Tolerance~~	~~Food Factor~~	~~mg/day/1.5kg~~
Mung Beans(207)	2.000	0.03	0.00090
~~Carrots(24)~~	~~0.050~~	~~0.48~~	~~0.00684~~
Citrus Fruits(33)	0.050	3.81	0.00286
~~Cottonseed(41)~~	~~0.050~~	~~0.15~~	~~0.00011~~
Cucurbits(49)	0.050	2.84	0.00213
~~Corn,grain(68)~~	~~0.050~~	~~1.00~~	~~0.00075~~
Fruiting Vegetables(60)	0.050	2.99	0.00225
~~Grapes, inc raisins(66)~~	~~0.050~~	~~0.49~~	~~0.00037~~
Hops(73)	0.050	0.03	0.00002
~~Leafy Vegetables(80)~~	~~0.050~~	~~2.76~~	~~0.00207~~
Nuts(101)	0.050	0.10	0.00008
~~Peanuts(115)~~	~~0.050~~	~~0.36~~	~~0.00027~~
Peppermint(119)	2.000	0.03	0.00090
~~Root Crop Veg(138)~~	~~0.050~~	~~11.00~~	~~0.00825~~
Safflower(141)	0.050	0.03	0.00002
~~Seed&Pod Veg(143)~~	~~0.050~~	~~3.66~~	~~0.00274~~
Spearmint(149)	2.000	0.03	0.00090
~~Stone Fruits(151)~~	~~0.050~~	~~1.25~~	~~0.00094~~
Sugar,cane&beet(154)	0.050	3.64	0.00273
~~Sunflower(156)~~	~~0.050~~	~~0.03~~	~~0.00002~~
Wheat(170)	0.050	10.36	0.00777

MPI	TMRC	% ADI
~~6.0000 mg/day/60kg~~	~~0.0429 mg/day/1.5kg~~	~~0.72~~

****

Unpublished,Tox Approved 9F2159

CROP	Tolerance	Food Factor	mg/day/1.5kg
~~Asparagus(5)~~	~~0.050~~	~~0.14~~	~~0.00011~~

MPI	TMRC	% ADI
6.0000 mg/day/60kg	0.0430 mg/day/1.5kg	0.72

****

~~Current Action 9F2172~~

~~CROP~~	~~Tolerance~~	~~Food Factor~~	~~mg/day/1.5kg~~
Barley(8)	0.050	0.03	0.00002
~~Sorgnum(147)~~	~~0.050~~	~~0.03~~	~~0.00002~~

MPI	TMRC	% ADI
6.0000 mg/day/60kg	0.0431 mg/day/1.5kg	0.72

****

Current Action 9E2224

CROP	Tolerance	Food Factor
Upland Cress	0.050	Included in leafy vegetables

MPI	TMRC	% ADI
6.0000 mg/day/60kg	0.0431 mg/day/1.5kg	0.72