2,4-D/TOX

Dr. Perkin (11)

ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

Releasable

Date: August 14, 1972

Reply to Attn of:

Subject: Request for a residue tolerance of 2 ppm 2,4-dichlorophenoxyacetic acid (2,4-D) in or on apricots (fresh and dry).

To:

Mr. Drew M. Baker, Jr., Chief
Petitions Control Branch
Pesticides Tolerances Division

Pesticide Petition No. 2E1293

Interregional Research Project No. 4
Rutgers University
New Brunswick, N. J. 08903

Related Petitions: 167, 272, 414, 6F0459, 6F0477, 7F0589, 8F0670, 1E1046, 1E1122, 1E1136.

Existing Tolerances: 40 CFR 180.142

5 ppm	-	apples, citrus fruits, pears, quinces
0.5 ppm	-	grain of barley, oats, rye, and wheat
20 ppm	-	forage of barley, oats, rye, and wheat
0.1 ppm (negligible)	-	from application to irrigation ditch banks - citrus, cucurbits, forage grasses, forage legumes, fruiting vegetables, grain crops, leafy vegetables, nuts, pome fruits, root crop vegetables, seed and pod vegetables, small fruits, stone fruits, and the r.a.c.'s avocados, cottonseed, hops, and strawberries

40 CFR 180.165

5 ppm	-	asparagus

TOXICOLOGICAL EVALUATION

No new toxicological data was presented in this petition. Evaluation of the safety of 2,4-D must be conducted from material submitted and reviewed in previous petitions.

I. Pesticide Petition No. 162 reviewed by Dr. O.G. Fitzhugh (5/2/58). Citing no-effect levels of 300 ppm in rats fed 2,4-D for 113 days and 400 ppm in dogs fed for 90 days as well as a Department of Pharmacology study where only

minimal changes occurred in the bone marrow of rats fed 1,000 ppm of 2,4-D for 32 weeks, Dr. O.G. Fitzhugh concluded that a tolerance of 5 ppm of 2,4-D (or its sodium salt) on or in asparagus was safe.

II. Pesticide Petition No. 272 and 414 by Dr. G.E. Whitmore (12/5/63)

Chronic toxicity study - dogs (2,4-D) no-effect level 500 ppm

Oyster shell growth - 2,4-D no-effect at 2 ppm
2,4-D dimethylamine salt no-effect at 2 ppm
2,4-D butoxyethanol 50% growth decrease 3.75 ppm

Juvenile white mullet fish (2,4-D) no kill at 50 ppm

Longnose kill fish - 2,4-D glycol butyl ether LC_{50} = 4.5 ppm
2,4-D butoxyethanol LC_{50} = 5.5 ppm

Natural phytoplankton communities (4 hr.) - 2,4-D no effect at 1 ppm
2,4-D dimetylamine salt no effect at 1 ppm

Mallard ducks (100 days) - 2,4-D acetamide no effect level 500 ppm
2,4-D butoxyethanol no effect level 500 ppm
2,4-D dimethylamine no-effect level <500 ppm

Relative toxicity (with DDT = 1) rats 0.2
bobwhites 0.5
pheasants 0.5
mallards 0.5
bluegills 0.1

22-week cattle feeding study (5 doses/week) no-effect at 50 mg/kg

LD_{50} oral rat	2,4-D	300-470 mg/kg
	2,4-D sodium salt	610-1060 mg/kg
	2,4-D isopropyl ester	570-860 mg/kg
	2,4-D mixed butyl esters	320-950 mg/kg
	2,4-D mono, bi, tripropylene glycol butyl ether ester	510-640 mg/kg

Dr. Whitmore concluded that a mammalian reproduction study would be necessary to approve tolerances of 5 ppm in or on Irish potatoes and post-harvest use on lemons.

III. Pesticide Petition No. 459 by Dr. O.G. Fitzhugh (3/11/66)

The rat reproduction experiment exhibited no effect levels at 100 and 500 ppm but the 1500 ppm level was very toxic. Dr. Fitzhugh concluded that the proposed tolerance of 0.5 ppm on wheat, barley, rye, and oats is safe.

IV. Pesticide Petition No. 477 by Dr. G.E. Whitmore (12/20/65)

No new toxicological data submitted so the proposed amendment to include pre-harvest use of 2,4-D on citrus fruit was considered to represent no hazard to the public.

V. Pesticide Petition No. 7F0589 by Dr. M.L. Quaife (5/1/67)

No new toxicological data submitted so the tolerance of 2 ppm in or on apricots was judged safe.

VI. Pesticide Petition No. 8F0670

A. Reviewed by Dr. G.E. Whitmore (3/22/68)
Groups of purebred beagles were fed 0, 10, 50, 100, and 500 ppm 2,4-D for 2 years with no effects noted. Twenty-five rats/sex were fed 0, 5, 25, 125, 625, and 1250 ppm 2,4-D for 2 years also with no effect. Dr. Whitmore adjudged the proposed tolerances of 0.5 ppm on flax seed and rice and 0.2 ppm on grapes, blueberries, cranberries, raspberries, strawberries, corn (field, pop, and sweet), sorghum (milo, milo maize), soybeans, sugar cane, potatoes, alfalfa, clover, trefoil, and soybean hay to be safe.

B. Amendment to include a tolerance of 300 ppm in or on rangeland grasses or pasture grasses reviewed by Dr. C.H. Williams (7/15/71). Summary of previously submitted data presented along with reprints of several published articles describing 2,4-D toxicity in cattle, sheep, and chickens. Dr. Williams concluded that the requested tolerances on the berries and grains were safe but that insufficient data relating to the residues present in meat and milk was available to consider the range grass and forage crops safe.

VII. Pesticide Petition No. 1E1046 by Dr. R. Engler (11/22/71).

No new toxicological data was submitted and that previously submitted supported the request tolerances of 1 ppm in or on fish and 1 ppm in or on crop plants (corn, soybeans,

sugar beets).

VIII. Pesticide Petition No. 1E1122 by Dr. W.E. Parkin (2/16/72).

No new toxicity data was submitted but the data previously submitted supported a negligible residue tolerance of 0.1 ppm on or in potato tubers.

IX. Pesticide Petition No. 1E1136 by Dr. C.H. Williams (6/2/71).

No new toxicity data was submitted but Dr. Williams found that the data currently in our files supported the negligible residue tolerance of 0.1 ppm on numerous raw agricultural commodities resulting from the application of 2,4-D to irrigation ditch banks.

DISCUSSION

A 60 kg man could safely tolerate 7.5 mg/day of 2,4-D using the 100-fold safety factor for a 500 ppm no-effect level in a 2 year dog feeding study. A tolerance of 2 ppm on apricots (fresh and dry) in addition to the tolerances already established under 40 CFR 180.142 and 40 CFR 180.165 would result in the occurence of 0.5451 mg of 2,4-D in the total diet - a level well below the ADI.

R.A.C.	Tolerance	% Diet	Total Residue
Apples, citrus, pears, quinces	5 ppm	6.13	0.4597
Grains of rye, oats, barley, and wheat	0.5 ppm	8.62	0.0646
Asparagus	5 ppm	0.23	0.0172
Apricots	2 ppm	0.12	0.0036
			0.5451 mg

The use of 2,4-D on apricots is being restricted in that the kernels can not be used for food (marzipan or almond paste) or oil.

RECOMMENDATION

The requested residue tolerance of 2 ppm of 2,4-dichlorophenoxyacetic acid (2,4-D) in or on apricots (fresh and dry) is safe.

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Toxicology Branch
Pesticides Tolerances Division

cc: JGCummings
PRD/EPA
Atlanta Branch (CLewis)
Perrine Branch
Division Reading File
Branch Reading File
PP# 2E1293

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