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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 23 1984

MEMORANDUM

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

SUBJ: NJ840013. §24(c) Registration for the use of chlorothalonil on tomato plants.

FROM: Allan Reiter, Chemist (TS-769) A Reiter
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TO: Henry M. Jacoby (TS-767C)
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THRU: Edward Zager, Section Head (TS-769) Edward Zager
Special Registration Section 2
Residue Chemistry Branch
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The State of New Jersey at the request of SDS Biotech Corp. has requested a Section 24(c) registration for the use of Bravo 500® (chlorothalonil, Daconil 2787, 2,4,5,6-tetrachloroisopthalonitrile, DS-2787, EPA Reg. No 50534-8) on tomatoes. A tolerance of 5 ppm has been established for combined residues of chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophtalonitrile in or on tomatoes (§180.275). This registration would permit use at different applications rates, i.e., at a higher rate with a longer interval between applications. The purpose for this alternative use pattern is to control anthracnose, a severe fungal fruit rot disease.

Bravo 500 is a dispersible suspension containing a minimum of 40.4% chlorothalonil (4.17 lb a.i./gal). The formulation was described in an earlier memo (PP#6F1799, 3/13/80). Two impurities in the technical material (also discussed in the Registration Standard) have also been identified, hexachlorobenzene (HCB) and pentachlorobenzonitrile (PCBN). These contaminants have been reported to be present in levels [redacted] for HCB and [redacted] for PCBN (PP#8E2025, 12/28/78 and PP#1E2473, 3/4/82). For two batches used in the study data submitted with the current application, these contaminants appeared at much lower concentrations averaging [redacted] for HCB and [redacted] for PCBN. The inert ingredients have been exempted under §180.1001.

IMPURITY INFO IS NOT INCLUDED

A tolerance of 5 ppm has been established for combined residues of chlorothalonil and its metabolite 4-hydroxy-2,5,6-trichloroisophthalonitrile in or on tomatoes (40 CFR§180.275, PP#F0599 and PP#F1024). Other tolerances range from 0.05 ppm for edible pulp of bananas to 15 ppm for celery and papayas. The registered use for chlorothalonil to control anthracnose on tomato plants was established for weekly applications at a rate equivalent of 1.43-2.21 lbs a.i./A at 7-10 day intervals with a zero-day PHI. The proposed use would permit applications at the rate of 7.28 lbs a.i./A in 500-1000 gal of water in two applications. The first would be when the crown fruit are 1/4 to 1/2 full size; the second, three weeks later. This is a new proposed use pattern resulting in fewer applications but at a higher concentration. There is no PHI.

The methodology for residue assay of chlorothalonil, its hydroxy-metabolite and two impurities in tomatoes was supplied by SDS in this application. It is similar to the method listed in the PAM Vol. II for chlorothalonil and its metabolite. Briefly, the assay involves extraction into acetone and then ether, separation on a column of florisil, conversion to the methylethyl ester and, finally analysis by GC/ECD. Data on method validation for all four chemicals was provided. It is based on fortifying untreated tomatoes with a broad range of standard solutions of each chemical. Recovery data ranges: 76-82% for HCB and 75-100% for PCBN.

New residue data were supplied with this request for an amended use. The studies run by SDS Biotech reflect applications of Bravo 500 at several rates and/or intervals between sprays to tomato plants. The tests were conducted in the states of NJ, PA, VA and OH. Application rates varied from 2.12 to 7.28 lbs a.i./A, PHI's from 0 to 11 days, and numbers of applications from 2 to 8. Duplicate composite samples were assayed for each test condition. Maximum residues detected on fruit were 4.0 ppm of chlorothalonil, 0.06 ppm of the 4-hydroxymetabolite, 0.058 ppm of PCBN, and no residue of HCB; these results were obtained on fruit harvested on the last day of application following six biweekly applications of 6.08 lbs a.i./A of the fungicide. In a separate study reflecting the proposed use, the maximum level of residue following two applications three weeks apart at 7.3 lbs a.i./A (1x) was 3.3 ppm of chlorothalonil when the fruit was harvested on the day of last application. Residue in or on tomatoes were observed ranging from 2.2-3.5 ppm for chlorothalonil and 0.019-0.031 for PCBN; no residues were detected for the 4-hydroxymetabolite (<0.02 ppm) or for HCB (<0.003 ppm). The dectection limits supplied by SDS were 0.03 ppm for chlorothalonil, 0.02 ppm for the metabolite, 0.003 ppm for HCB and 0.006 ppm for PCBN.

In general, there was an increase in chlorothalonil residue with an increase in the concentration of Bravo 500 in the spray preparation. In no case did the residue exceed the tolerance of 5 ppm established for tomatoes.

Previous residue data (PP#1F1024, Acc. No. 116868 and PP#F0599, Acc. No. 115048) reflecting unlimited weekly applications of 1.56 lb a.i./A chlorothalonil by sprinkler irrigation or ground application with a 0-1 day PHI show residues of either 1.2-3.1 ppm of the parent compound and 0.12 ppm of the 4-hydroxymetabolite (sprinkler irrigation study), or 0.05-4.4 ppm for the parent and "negligible" residue of the 4-hydroxymetabolite (ground application study). All the data showed that the chlorothalonil residues were surface residues.

Conclusions

1. Residues of chlorothalonil, its metabolite 4-hydroxy-2,5,6-trichlorisophthalonitrile resulting from the proposed use of chlorothalonil on tomato plants are not likely to exceed the established tolerance of 5 ppm in or on the mature fruit.

2. Residue of the impurity PCBN is not likely to exceed 0.06 ppm. No residue of the impurity HCB is expected to occur at levels exceeding the method detectability (0.003 ppm).

Recommendation

RCB has no objections to this §24(c) registration, toxicological considerations permitting.

cc: 24(c) S.F.
R.F.
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Reviewer

TS-769:RCB:Reviewer:A.J.Reiter:AJR:x77484:CM#2:Rm800:10/23/84

RDI:Section Head:E.Z.:Date:10/23/84:R.D.S.:Date:10/23/84