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

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: ID#FL-910018: 24(c) Chlorothalonil (Bravo® 720) in or on Passion Fruit (CBTS #9147)

FROM: W. T. Chin, Ph.D., Chemist W. T. Chin
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THRU: P. V. Errico, Section Head P. V. Errico
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TO: Joanne Miller, PM #21
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and

Toxicology Branch
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The Florida department of Agriculture issued a Section 24(c) registration for the use of the fungicide chlorothalonil (2,4,5,6-tetrachloroisophthalonitrile) in Florida to control Anthracnose and Alternaria fruit and leaf rot on passion fruit.

Tolerances have been established for the combined residues of chlorothalonil and its 4-hydroxy metabolite (4-hydroxy-2,5,6-trichloroisophthalonitrile) on numerous commodities under 40 CFR 180.275. Chlorothalonil is a List A chemical. Registration Standard (Guidance Document) was issued in September, 1984; a final Registration Standard and Tolerance Reassessment (FRSTR), Residue Chemistry Chapter, was issued in February 1988.

DETAILED CONSIDERATIONS

BACKGROUND

In connection with PP#5E1569, a 3 ppm tolerance for the combined residues of chlorothalonil and its 4-hydroxy metabolite was established on passion fruit grown in Hawaii only under 40 CFR 180.275. There is nothing in our file which indicates the restriction to Hawaii only was a CBTS concern.

As indicated in the Guidance for Reregistration of Pesticide Products Containing Chlorothalonil as the Active Ingredient and the Chlorothalonil (FRSTR) Task 2: Residue Chemistry Chapter (2/19/88), the registrant is requested to provide additional residue data to support the 3 ppm tolerance established for the foliar applications of chlorothalonil on passion fruit grown in Hawaii.

Passion fruit culturing in Hawaii, however, has greatly decreased in recent years; and Florida has now become the major growing area for passion fruit in the U.S. Therefore, IR-4 has gathered residue data to support the existing 3 ppm tolerance of chlorothalonil on passion fruit for registration in Florida only. A report entitled Supporting Data of Bravo® 720 for Control of Diseases on Passion Fruit in Florida (7/24/91) is submitted.

FORMULATION

The proposed formulation, Bravo® 720 (EPA Reg. #50534-188), contains 54.0% chlorothalonil (0.75 lb ai/pint). [redacted] Present CB policy is to assume that HCB residues are 0.5% of chlorothalonil residues on all crops, in the absence of residue data to the contrary (Chlorothalonil Subject File, D. F. Edwards, 8/23/88).

Manufacturing Process Information is not Included

PROPOSED USE ON PASSION FRUIT

1. The Original Direction of Use Proposed in PP#5E1569 in 1974:

   "Apply by ground 1.5 lb ai/A in about 100 gal water for adequate coverage of fruit and leaves. Begin treatment with disease appears and continue at 14 day intervals until disease incidence drops. Do not feed treated vines or by-products to livestock."

2. The Label in the Residue Data Section of the IR-4 Data Package:

Crop diseases	Bravo® 720 Rate Per Acre	100 gal	Application Directions
Alternaria fruit & leaf	2 pts*	2 pts**	Apply with ground equipment only in sufficient water to obtain adequate coverage of fruit and leaves. Begin treatments with fruit spots appear and continue treatments at 14 day intervals until weather conditions no longer favor disease development. Do not apply more than 5 times per season or within 7 days of harvest. Do not allow livestock to graze in treated area.

* 2 pts Bravo® 720 = 1.5 lbs ai.
** Volumetric rate to be used with full dilute spray.

3. The Currently Submitted 24C Label (12/2/91):

Disease	Bravo® 720 Rate/Acre	Application Directions
Alternaria fruit & leaf spot Anthracnose	2 pts	Apply with ground equipment in sufficient water to obtain adequate coverage of fruit and leaves. Begin applications during late bloom and repeat at 14 day intervals until weather conditions no longer favor disease development. Do not apply within 7 days of harvest. Do not permit livestock to graze in treated areas or feed treated plant parts to livestock.

CBTS concludes that the above three labels are not consistent. The 24C label should be revised to allow a maximum of 5 applications, and 1.5 lbs ai/A in a minimum of 100 gal of water per acre.

Crop diseases	Bravo® 720 Rate/Acre	Application Directions
Alter-naria fruit & leaf rot Anthra-cnose	2 pts	Apply by ground 1.5 lb ai (= 2 pts Bravo® 720) in a minimum of 100 gal of water for adequate coverage of fruit and leaves. Begin treatments with disease appears and continue treatments at 14 day intervals until disease incidence drops or weather conditions no longer favor disease development. Do not apply more than 5 times per season and 7 days before harvest. Do not allow livestock to graze in treated area or feed treated plant parts to livestock.

It should be pointed out that the chemical name of chlorothalonil shown on the 7/24/91 and 12/2/91 labels is misspelled as "tetra-chloroisothalonitrile" and should be corrected to "tetrachloro-isophthalonitrile."

ANALYTICAL METHOD

Enforcement methods are available in PAM II. Briefly: Residues of chlorothalonil, Hexachlorobenzene (HCB), Pentachlorobenzonitrile (PCBN), 4-hydroxy-2,5,6-trichloroisophthalonitrile (SDS-3701) and 3-carboxy-2,5,6-trichlorobenzamide (SDS-46851) are extracted from passion fruit with acidified acetone and selectively partitioned. The residues of chlorothalonil, HCB and PCBN are separated by column chromatography prior to quantitation by GC with an electron capture detector. The residues of SDS-3701 and SDS-46851 are derivatized to their corresponding methyl ethers which are cleaned up and separated by column chromatography prior to quantitation. The sensitivities of this method for chlorothalonil, HCB, PCBN, SDS-3701 and SDS-46851 are 0.05, 0.01, 0.01 0.02 and 0.05 ppm, respectively. Detailed procedures and adequate examples of calculations and chromatograms are provided.

RESIDUE DATA

A field trial was conducted on passion fruit in 1990 in Florida. Foliar applications of chlorothalonil at the rate of 1.4 lb ai/A in 94 gal of water /A were first applied at flowering and repeat applications were made at 13 to 15 days until 7, 14, 21 and 28 days before harvest. Totally 5 applications were applied. Samples of passion fruit were collected at intervals ranging from 7 to 28 days after the last application. Results were reported in the document entitled Supporting Data of Bravo® 720 for Control of Diseases on Passion Fruit in Florida (7/24/91) and are summarized in Table 1.

Table 1. Residues of Chlorothalonil in/on Passion Fruit
(5 applications at 1.4 lb ai/A)

PHI (days)	Residues Determined (ppm)				
	Chlorothalonil	HCB	PCBN	SDS-3701	SDS-46851
7	--	<0.1	<0.1	<0.02	--
7	--	<0.1	<0.1	<0.02	--
7	0.61	<0.1	<0.1	<0.02	--
7	0.80	--	--	--	--
7	--	--	--	--	<0.05
14	--	<0.1	<0.1	<0.02	--
14	--	<0.1	<0.1	<0.02	--
14	0.51	<0.1	<0.1	<0.02	--
14	0.47	--	--	--	--
14	--	--	--	--	<0.05
21	--	<0.1	<0.1	<0.02	--
21	--	<0.1	<0.1	<0.02	--
21	0.33	<0.1	<0.1	<0.02	--
21	0.38	--	--	--	--
21	--	--	--	--	<0.05
28	0.35	<0.1	<0.1	<0.02	--
28	0.36	<0.1	<0.1	<0.02	--
28	0.35	<0.1	<0.1	<0.02	--
28	--	--	--	--	<0.05

The residue data indicate no substantial decrease in residues 7 - 14 days after the last of 5 applications.

Residue data generated in Florida shown in Table 1 indicate that with a maximum of 5 applications at the rate of 1.5 lb ai/A in 94 gal of water/A and a PHI of 7 days, the 3 ppm tolerance established for the use of chlorothalonil on passion fruit grown in Hawaii is not exceeded. The processing study submitted in the original petition (PP#5E1569) shows no concentration in juice is expected. The processed waste products are not considered a significant potential animal feed item at this time.

RECOMMENDATION

Pending the correction of label and TOX considerations permitting, CBTS recommends for the requested 24(c) registration for use of chlorothalonil on passion fruit grown in Florida.

cc: Circu, RF, PP#5E1569, W.T.Chin, D.Edwards, PIB/FOD,DRES/SACB

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