10-9-91 R F.

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

OCT 9 1991

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: 91-GA-11. Section 18 emergency exemption for the use of Iprodione [Rovral®50%WP] to control Alternaria brassicicola on Canola (rape) seed. EPA Reg. No. 264-453. No MRID #. CBRS No. 8605. Barcode No. D168922.

FROM: Christina B. Swartz, Chemist
Reregistration Section II
Chemistry Branch II: Reregistration Support
Health Effects Division (H7509C)

THRU: William J. Hazel, Ph.D., Section Head
Reregistration Section II
Chemistry Branch II: Reregistration Support
Health Effects Division (H7509C)

TO: Rebecca Cool (PM-41)
Registration Support Branch
Registration Division (H7505C)

The State of Georgia Dept. of Agriculture requests a crisis exemption for the use of the fungicide Rovral® 50WP to control Alternaria brassicicola on Canola (rape) seed (letter to D. Campt dated 9/17/91).

Rovral®50WP is a registered pesticide of Rhone-Poulenc Ag. Co. (EPA Reg. No. 264-453). The active ingredient is iprodione, [3-(3,5-dichlorophenyl)-N-(1-methylethyl)-2,4-dioxo-1-imidazolidinecarboxamide]. Tolerances are established for combined residues of iprodione, its isomer 3-(1-methylethyl)-N-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide, and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide in numerous commodities ranging from 0.1 to 150 ppm [40 CFR §180.399(a)].

Tolerances are established for the combined residues of iprodione, its isomer, and its metabolites 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide and N-3,5-dichloro-4-hydroxyphenyl)-ureido-carboxamide, all expressed as iprodione equivalents in or on the meat, meat by-products (except kidney and liver) and fat of cattle, goats, hogs, horses and sheep (0.5 ppm); in or on the kidney and liver of cattle, goats, hogs, horses and sheep (3.0 ppm); in

poultry meat and meat by-products excluding liver (1.0 ppm); in poultry fat (3.5 ppm); in poultry liver (5.0 ppm); in milk (0.5 ppm); and in eggs (1.5 ppm) [40 CFR §180.399(b)].

CBRS (formerly DEB) has recommended in favor of granting a temporary tolerance for iprodione and its 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide metabolite in or on stored corn at 20 ppm (memo, L. Propst, 6/8/88).

Tolerances are established for the combined residues of iprodione, its isomer, and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide in or on dried ginseng (4 ppm) and raisins (300 ppm) [40 CFR §185.3750]. Tolerances are established for combined residues of iprodione, its isomer, and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide in or on dry grape pomace (225 ppm), raisin waste (300 ppm), and soapstock (10.0 ppm) [40 CFR §186.3750].

No residue, metabolism, storage stability, processing, or analytical methodology studies have been submitted to the Agency in support of permanent tolerances, previous Section 18 requests, or 24(c) registrations for the use of iprodione on Canola (rape) seed.

Proposed Use

Canola is a type of rapeseed which is low in toxic erucic acid, and therefore is a good source of animal feed, and oil which can be consumed by humans or used for industrial purposes. During recent years Georgia farmers have been planting increasing acreage with Canola, due to increased consumer demand for the oil. Currently, over 100,000 lbs of the seed which will be used to plant the 1992 crop is infected with Alternaria brassicicola. The two varieties infected are A112 and Bingo; although other varieties may be available, lower yield and greater susceptibility to disease render them unfeasible from an economic standpoint.

The State of Georgia proposes to treat the infected seed (2,072 bags, each weighing 50 lbs) with Rovral®Fungicide. The infected seed can be used to plant 16,000 to 20,000 acres of Canola. The total quantity of active ingredient required is 310.76 lbs iprodione (the submission had the quantities of a.i. and product reversed; CBRS concluded that the GA Dept. of Agriculture was requesting approval of 620 lb product, or 310.76 lb a.i.). In the submission, the State requested the use of Rovral®50WP, but included use instructions for Rovral®4F; CBRS will require that instructions for use of the 50WP formulation be provided. The State proposes to treat affected Canola seed at 3.0 g a.i./Kg seed (0.003 lb a.i./lb seed) or 0.1 oz Rovral®4F/lb seed, in a single application prior to planting. The directions for use stipulate that treated seed may not be used for feed, food or oil processing.

Nature of the Residue

There are no available data on the metabolism of iprodione in Canola. However, based on data from previous petitions in support of registrations for use on strawberry and wheat (PP#8G2807), peaches (PP#2F2596), lettuce (PP#3G2801), peanuts (PP#4G3037) and rice

(PP#6F3443/FAP#6H5507) it has been concluded that the nature of the residue in plants is adequately understood. Residues of concern include iprodione, its isomer 3-(1-methylethyl)-N-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide, and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide.

Data submitted previously in support of tolerances in cows and goats (PP#2F2728), and poultry (PP#3F2964/FAP#4H5415) have shown the nature of the residue in animals to be adequately understood. Residues of concern in animals are the parent, iprodione, its isomer 3-(1-methylethyl)-N-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide, and itsmetabolites3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamideandN-3,5-dichloro-4-hydroxyphenyl)-ureido-carboxamide, all expressed as equivalents of iprodione.

Analytical Methodology

Analytical methodology is not available for the recovery of iprodione residues from Canola seed. However, the analytical method used for iprodione in corn has been found to be acceptable (PP#7G3525). The method used to recover iprodione residues from corn grain is entitled "Rhone-Poulenc Analytical Method No. 162. Determination of iprodione and its metabolites in/on grain and hay by GLC and TLC. ASD No.: 83/021." Residues recovered through the method include iprodione, its isomer, and the 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide metabolite. Briefly, ground samples are extracted twice with aqueous acetone. The organic fraction is evaporated, and the aqueous fraction partitioned with 10% ethyl acetate in methylene chloride, leaving residues in the organic fraction. Cleanup steps include gel permeation chromatography (GPC) and Florisil column chromatography. Quantitation is by gas chromatography with ^{63}Ni electron capture detection. The limit of detection for the method is 0.05 ppm. An enforcement analytical method is available for iprodione in corn in PAM II.

Canola meal and corn meal differ in terms of protein and fiber content, with canola containing higher levels of both. However, the ether soluble fractions of the two types of meal seem to be quite similar (approximately 4%). It is likely that residues of iprodione in Canola seed would be adequately recovered through the analytical method for corn, described above.

Magnitude of the Residue

As previously stated, there are no data available depicting iprodione residues in or on canola seed. However residue data submitted in support of a temporary tolerance for iprodione in or on corn (PP#7G3525) may be relevant to support the requested Section 18 crisis exemption. The proposed temporary tolerance of 20.0 ppm in or on corn was not approved due to data gaps concerning iprodione residues in grain dust. The data were used to support a Section 18 exemption for iprodione on corn in Illinois [(90-IL-11) memo, F. Toghrol, 10/18/90].

Data depicting iprodione residues in stored corn treated with Rovral®4F at a rate of 0.0006 oz Rovral®4F/lb corn, or 2×10^{-5} lb a.i./lb corn were submitted. Table I shows residues of iprodione, its isomer and the 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide

metabolite in treated stored corn.

Table I. Iprodione Residues in Stored Corn

Application Rate (lb a.i./lb corn)	PHI (Days)	Iprodione (ppm)	Isomer (ppm)	Metabolite (ppm)
2×10^{-5}	0	20.06	0.00	0.51
2×10^{-5}	28	19.23	0.00	0.14
2×10^{-5}	56	14.36	0.34	0.76
2×10^{-5}	84	14.07	0.25	0.11

The proposed treatment rate for this Section 18 request for Canola is approximately 150 times greater than that used to treat stored corn. However, given the minute size of the rapeseed, a much larger surface area of seed is treated and therefore a higher rate is also needed. In addition, iprodione is not a systemic fungicide, and therefore the possibility that residues would be translocated from the seed to the plant is reduced. Furthermore, the PHI can be up to 200 days, since Canola is planted September to October, and harvested May through July. If one were to assume that all of the insecticide applied to the seed were incorporated into the plants, then the 310.76 lbs of iprodione used to treat the seed would correspond to 16,000 to 20,000 acres, and the application rate would be 0.016 to 0.019 lb a.i./A.

Canola is a member of the Brassica family of vegetables; iprodione is registered for use on broccoli, another member of the Brassica, at a rate of 1 lb a.i./A. Two applications can be made to the base of the plant and the soil surface, with the second allowed up to one day prior to harvest. A tolerance for iprodione residues in or on broccoli is established at 25.0 ppm. It is unlikely that iprodione residues recovered from Canola (seed) grown from treated seed would exceed 25.0 ppm, since the theoretical "application rate" for Canola is low relative to that of broccoli.

At the request of CBRS, The Georgia Dept. of Agriculture has submitted (by FAX) additional data in support of the Section 18 Request (no MRID #). Field residue trials were conducted at 2 locations in Canada during 1980; the Candle (Stoney Plain) and Altex (Leask) varieties of oil seed rape were treated once with a 50WP formulation of iprodione, at a rate of 0.5 kg a.i./ha (0.45 lb a.i./A). No details regarding the treatment of the plants were submitted. The rapeseed harvested 40 to 50 days following treatment contained iprodione residues less than 0.1 ppm. Neither of the two iprodione metabolites were quantitated in this trial. These data indicate that the established tolerance for broccoli is too high to be used to estimate maximum residues in Canola.

The principal rapeseed-producing states in the U.S. are AK, ID, KY, MN, MO, MT, ND, OR, TN, and WA, with an average yield of 1019 $\pm$ 240 lb seed/A planted. If the treated seed were planted on 16,000 to 20,000 acres, the theoretical yield at harvest would be 8,152 to

10,190 tons of seed. If the entire quantity of the active ingredient were incorporated into the harvested seed, the theoretical residue level in the seed would be 20.0 ppm (mg a.i./kg seed).

CBRS concludes that iprodione residues in Canola (seed) harvested from plants grown from treated seed would not exceed 20.0 ppm. However, the more conservative residue level of 25.0 ppm (tolerance for broccoli) will be used to estimate the dietary burden in livestock.

Magnitude of the Residue in Meat, Milk, Poultry, and Eggs

Table II lists the potential percentage of Canola and rapeseed meal in livestock diets. The quantities of rapeseed allowed are much lower, due to the toxicity of erucic acid typically found in rapeseed meal.

Table II. Percent of Canola and Rapeseed Meal in Livestock Diets

	Cattle		Poultry		Swine	
Feeds	Beef	Dairy	Turkey/Broilers	Laying Hens	Boars/Sows	Finishers
Canola[a]	NR[b]	NR[b]	20	10	12	10-15
Rapeseed[a]	20	5	10	5	3	5
Rapeseed[c]	15	10	7	2	5	5

[a] Recommended levels of Canola and rapeseed meals recommended in various livestock diets. Excerpt from High and Low Erucic Acid Rapeseed Oils. John K.G. Kramer; Sauer, F.D.; and Pigden, W.J. Academic Press, Canada, 1983, p. 57.

[b] NR = no restriction; up to 100 percent of the diet could be Canola meal.

[c] Taken from Table II, Pesticide Assessment Guidelines, Subdivision O.

The maximum dietary burden for livestock is calculated using the estimated percent of the commodity in the diet and the maximum residue expected (tolerance); the dietary burden is calculated by adding up this information for each of the crops treated with iprodione.

Beef Cattle

If the diet consists of 30% dried grape pomace (0.30 X 225.0 ppm = 68 ppm), 25% peanut hay (0.25 X 150.0 ppm = 38 ppm), 20% bean hay (0.20 X 90.0 ppm = 18 ppm) and 25% Canola (0.25 X 25.0 ppm = 6 ppm), the maximum dietary burden for beef cattle is 130 ppm.

Dairy Cattle

If the dairy cattle diet consists of 60% peanut hay (0.60 X 150.0 ppm = 90 ppm), 20%

dried grape pomace (0.20 X 225.0 ppm = 45 ppm), and 20% Canola (0.20 X 25.0 ppm = 5 ppm), then the maximum dietary burden is 140 ppm.

A cattle feeding study was submitted previously in support of PP#2F2728. Lactating cows were fed iprodione for 28 days, at levels of 5, 15, 50, and 200 ppm iprodione. Maximum combined residues of iprodione in cattle milk and tissues are summarized in Table III.

Table III. Feeding Study: Iprodione Residues in Tissues and Milk from Cattle

	Residue Level Recovered from Commodity			Established Tolerance (ppm)
Feeding Level (ppm)	15.0	50.0	200.0	
Meat	<0.05	0.07	0.13	0.5
Kidney	0.16	0.80	2.87	3.0
Fat	0.05	0.21	0.52	0.5
Liver	0.13	0.66	1.95	3.0
Milk			0.39	0.5

Based on these data, and a calculated dietary burden of 130 to 140 ppm, CBRS concludes that established tolerances of iprodione for meat, fat, liver, kidney, and milk will not be exceeded as a result of the proposed Section 18 use.

Poultry--Turkeys/Broilers

If the turkey/broilers diet consists of 10% beans (0.10 X 2.0 ppm = 0.20 ppm), 5% dried grape pomace (0.05 X 225.0 ppm = 11.3 ppm), 10% peanuts (0.10 X 0.50 ppm = 0.05 ppm), and 20% Canola (0.20 X 25 ppm = 0.025 ppm), then the maximum dietary burden is 16.55 ppm.

Poultry--Laying Hens

If the diet consists of 15% beans (0.15 X 2.0 ppm = 0.30 ppm), 5% dried grape pomace (0.05 X 225 = 11.3 ppm), 10% peanuts (0.10 X 0.5 ppm = 0.05 ppm), and 10% Canola (0.10 X 25.0 ppm), then the maximum dietary burden for laying hens is 14.15 ppm.

A poultry feeding study was submitted in conjunction with PP#4F3129, in which hens were dosed with iprodione at 2, 20, and 100 ppm for 28 days. The combined iprodione residues recovered from poultry tissues and eggs are summarized in Table IV.

Table IV. Feeding Study: Iprodione Residues in Poultry Commodities

Feeding Level (ppm)	Residue Level Recovered from Commodity			Established Tolerance (ppm)
	2.0	20	100	
Meat	<0.05	0.32	1.68	1.0
Fat	0.18	2.57	8.62	3.5
MBYP (excluding kidney)	0.33	2.30	6.87	1.0
Liver	0.61	4.10	13.40	5.0
Eggs	0.14	0.75	2.17	1.5

The calculated dietary burden is 16.55 ppm for turkey/broiler poultry, and 14.15 ppm for laying hens. Given the results of the feeding study, the anticipated iprodione residues in poultry as a result of the proposed use can be estimated using linear regression. CBRS concludes that established tolerances in poultry tissues and eggs will not be exceeded as a result of the proposed Section 18 exemption.

In order to make the dietary burden estimates discussed above, the established tolerance level for broccoli (25.0 ppm) was used. CBRS expects the actual level of iprodione residues in Canola meal to be much lower.

Processing Studies

Data from processing studies depicting iprodione residues in corn processing fractions from processed treated corn were submitted in conjunction with PP#7G3525 (memo, L. Propst, 9/29/87). It was concluded that iprodione residues do not concentrate in processed corn fractions. CBRS concludes that, given the similarities between the processing fractions obtained from corn and Canola seed, it is unlikely that iprodione residues concentrate in processed Canola fractions.

Conclusions

1. The nature of the residue in plants is adequately understood. The residues of concern are the parent, iprodione, its isomer 3-(1-methylethyl)-N-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide, and its metabolite 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide.

2. The nature of the residue in animals is adequately understood. The residues of concern are iprodione, its isomer 3-(1-methylethyl)-N-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide, and its metabolites 3-(3,5-dichlorophenyl)-2,4-dioxo-1-imidazolidinecarboxamide and N-3,5-dichloro-4-hydroxyphenyl)-ureido-carboxamide, all

expressed as iprodione equivalents.

3. An enforcement analytical method is available in PAM II.

4a. No data depicting residues of iprodione in Canola seed harvested from plants grown from treated seed are available at this time. One study has shown that plants treated once foliarly with iprodione at a rate of 0.45 lb a.i./A, and harvested 40 to 50 days later, yielded Canola seeds containing less than 0.10 ppm iprodione.

4b. CBRS concludes that combined residues of iprodione in the Canola seed harvested from treated seed will not exceed 20.0 ppm.

4c. In order to estimate dietary burden to livestock, CBRS has used the conservative estimate of 25.0 ppm (established tolerance for broccoli, which is also in the Brassica family) on the seed at harvest.

5. Combined residues of iprodione in meat, milk, poultry, and eggs are not likely to exceed established tolerances as a result of the proposed use.

6. Iprodione residues are unlikely to concentrate in Canola processing fractions.

7. Analytical Reference Standards for iprodione are available from the Pesticides and Industrial Chemicals Repository, RTP, NC.

8. Data used to estimate residues resulting from the proposed use were not generated by Craven Labs.

Recommendation

CBRS has no objection to this Section 18 request, provided appropriate use instructions for the 50WP formulation of Rovral®Fungicide are submitted. A DRES Analysis has been requested by the PM team reviewer, Registration Division. An agreement should be made with the FDA regarding the legal status of the treated commodity in commerce.

cc: CBSwartz; DRES; Circulation (7); Section 18 File; RF; SF; C. Furlow (PIB/FOD).
H7509C:CBSwartz:CM2:Room 800D:703-557-1877:10/01/91
RDI: WJHazel: 10/7/91 EZager: 10/9/91