ESA

AGRICULTURAL
CHEMICALS

THE UPJOHN COMPANY
KALAMAZOO, MICHIGAN 49001

TELEPHONE
Area Code 616
345-3571

May 19, 1965

Mr. William Stokes
Bureau of Scientific Standards and Evaluation
Food and Drug Administration, HEW
Washington, D.C. 20204

Dear Mr. Stokes:

Mr. Wolff, who is reviewing the BOTRAN Tolerance Petition (5F0434) has asked questions about residues on dried fruit. I enclose three copies of a report entitled, "Analysis of Dried Plums for 2,6-Dichloro-4-nitroaniline (DCNA) Residue (Upjohn, 1965)." We had described the experiment verbally to him. Although plums are not in the petition, it was felt that the data contributed to previous observations that BOTRAN content of fruits does not increase on drying.

Mr. Wolff asked how the degree of drying compared with that of commercial drying of plums in California. We are told that plums vary in water content from 25% to 70%. The high values are found in green plums, the low in plums which have dropped from the tree. After drying, all plums (prunes) have 18% water content. The percent weight loss would then vary from 7% to 52% on drying. The plums that we dried at high temperature lost 50% of their original weight. Therefore, it appears that we had some of higher water content (probably picked green) and that the water loss was comparable to those dried commercially. Two people who analyzed the plums which were dried at room temperature stated that they appeared identical to those dried at 150°C.

Mr. Wolff also asked for further data on degree of drying of the grapes that we dried in Kalamazoo and of those dried commercially in Fresno, California.

In the case of the Kalamazoo experiments, we reported that the grapes dried at high temperature lost 65% of their weight. No figure was reported for those dried at room temperature. Examination of some of the materials remaining indicates that the grapes dried at room temperature lost approximately 70% of their original weight.

In the case of the Fresno experiments, the final raisins contained 12% water.

We inquired about the degree of drying obtained commercially. Ordinarily the water content of grapes for drying is 70% to 85%. Dehydration (heat) reduces the water content to 14%. "Natural" drying reduces it to 15%.

In either case, the water content is brought back to 18% before selling.

If the water content of the grapes dried in Kalamazoo was average (78%) and weight loss on hot drying was 65%, the final water content was then 13%, or somewhat above the commercial method. Those dried at room temperature lost approximately 70%, so the product contained about 8% water.

Therefore, in all of the drying experiments the degree of drying was approximately that of commercial processes.

There was also a question about analyzing untreated dried grapes. The tables submitted with the two grape reports did not specifically state which samples were untreated. The two reports were corrected to include this designation. Three copies of each corrected version are enclosed.

We thank you for your attention to these matters and hope that all questions are answered satisfactorily.

Respectfully yours,

Gerald A. Boyack, Head
Formulation & Residue Analysis
Agricultural Chemical Research

cll

Enclosures (11)

End of Document

Analysis of Dried Plums for 2,6-Dichloro-4-nitroaniline (DCNA) Residue (Upjohn, 1965)

Ref: 7615WMW42, 45, 47
FWS, BLC 4/20/65

May 11, 1965

Summary

Sample No. (1965)	Treatment	Drying Conditions	DCNA Found (P.P.M.)
150	Dip, 0.75/100 gal.	none	4.7
154	" " " "	150°F., 48 hours	3.7
155	" " " "	Ambient, 8 days	1.0
151	6% Dust	none	8.1
152	" "	150°F., 48 hours	4.6
153	" "	Ambient, 8 days	2.0

Source of Samples

The experiments were carried out in the Upjohn laboratories. Chilean plums were purchased locally. Part were dipped for ten seconds in a tank of BOTRAN 75W at one pound per 100 gallons. They were placed on a wire screen and allowed to dry. Other plums were dusted with BOTRAN 6D using a hand duster. They were turned over and dusted again. Part of each treatment was dried in an oven at 150°F. for 48 hours. The weight loss was 50%. Another portion was dried at room temperature for 8 days.

Method of Analysis

All samples were chopped in a Hobart food chopper and analyzed by the microcoulometric vapor phase chromatography method. The reported results make no correction for weight loss. Data are given in the following table.

Code: DCNA - Plum - 1965
Michigan, Upjohn, dried

c11

DCNA on Dried Plums (Upjohn, 1965)

1-874 6/64

DATE OF ASSAY	SAMPLE NUMBER	HISTORY	RETENTION TIME (MIN.)	INTEGRATION COUNT	OHMS	DCNA EQUIV. (Mcg.)	DILUTION FACTOR	DCNA FOUND (Mcg.)	DCNA FOUND (P.P.M.)	
									APPARENT	CORR. (RECOVERY)
/20/65		Standard, DCNA, 2.0 mcg.	2.8	1755	12.8	1.76	--	--	--	(88%)
/20/65	147	Untreated, fresh	3.0	90	12.8	0.09	41.25	3.71	0.060	--
/20/65	147	Untreated, Fort.,0.5 ppm., fresh	3.0	745	12.8	0.75	41.25	30.94	0.515	(92%)
/20/65	150	Dipped, 0.75#/100 gal., fresh	3.0	800	12.8	0.80	330.00	264.00	4.40	4.78
/20/65	150	Dipped, " " " "	3.0	1520	12.8	1.52	165.00	251.00	4.18	4.54
/20/65	151	Dusted, 6%, fresh	3.0	1800	12.8	1.80	247.50	445.50	7.42	8.07
/23/65		Standard, DCNA, 1.0 mcg.	1.9	940	12.8	0.94	--	--	--	(94%)
/23/65	148	Untreated, dried, 150°F., 48 hr.	1.9	295	12.8	0.30	8.25	2.43	0.04	--
/23/65	148	Untreated, Fort.,0.25 ppm, dried, 150°F.	1.7	930	12.8	0.93	16.50	15.35	0.26	(88%)
/23/65	154	Dipped, dried, 150°F., 48 hr.	1.9	1140	12.8	1.14	165.00	188.10	3.14	3.52
/23/65	154	" " " " "	1.9	1270	12.8	1.27	165.00	209.55	3.49	3.92
/23/65	152	Dusted, dried, 150°F., 48 hr.	1.9	1495	12.8	1.50	165.00	246.68	4.11	4.63
/28/65		Standard, DCNA, 2.0 mcg.	2.5	1680	12.8	1.68	--	--	--	(84%)
/28/65	149	Untreated, dried, ambient, 8 days	--	--	12.8	--	14.70	nil	nil	--
/28/65	149	Untreated, Fort.,0.25 ppm, dried 8 days	2.7	1045	12.8	1.05	14.70	15.36	0.256	(102%)
/28/65	155	Dipped,0.75#/100 gal.,dried,ambient 8 days	2.6	1645	12.8	1.65	36.75	60.64	1.010	1.01
/28/65	153	Dusted, 6%, dried, 8 day, ambient	2.7	1660	12.8	1.66	73.50	122.00	2.030	2.03
/28/65	153	" " " " " "	2.7	1670	12.8	1.67	73.50	122.75	2.050	2.05
11 /10/65										

2,6-Dichloro-4-nitroaniline (DCNA) Residues on Dried, Dusted and Dipped Grapes

(Upjohn, 1965)

Ref: 7615WMW41

April 21, 1965

corrected: May 10, 1965

Summary

Sample No. (1965)	Treatment	Drying Temperature	Drying Time (Hours)	DCNA Found (P.P.M.)
119	Dipped		0	5.1
121A,B	Dusted		0	10.4
125A,B	Dipped	150°F.	68	1.1
126A,B	Dusted	"	68	0.9
129A,B	Dipped	Ambient	96	2.0
130	Dipped	"	192	0.6
128	Dusted	"	192	0.9

Source of Samples

The drying experiments were carried out at The Upjohn Experiment Station in Kalamazoo under the supervision of Dr. George Swank.

California Red Table grapes were purchased locally. The grapes were cut from the stems, being careful to leave a short stem on each grape. One-pound samples were placed in a wire cage and dipped for 10 seconds in a suspension of BOTRAN 75W containing one pound per 100 gallons. They were allowed to drain 3 minutes, placed on paper towels, and allowed to dry.

For dusting, the grapes were laid on a screen. Dust was applied with a hand duster at a rate which gave approximately 10 p.p.m. residue. Drying was carried out under the same conditions. For drying, the grapes were spread on wire screens and placed in ovens (small vents) at 150°F., and in the greenhouse at 65°-90°F.

Drying at 150°F. was carried out for 68 hours. The grapes dried in the greenhouse were analyzed after 96 and 192 hours. At 150°F. the moisture loss was 65%.

Method of Analysis

The fresh grapes were macerated in a meat grinder before aliquots were taken. Samples of the dried grapes were weighed directly for analysis. They were assayed by the microcoulometric vapor phase chromatography method. Data are given in the attached table.

Code: DCNA - Grape, Dried - 1965
Michigan, Upjohn

DCNA on Dried, Dusted and Dipped Grapes (Upjohn, 1965)

DATE OF ASSAY	SAMPLE NUMBER	HISTORY	RETENTION TIME (MIN.)	INTEGRATION COUNT	OHMS	DCNA EQUIV. (Mcg.)	DILUTION FACTOR	DCNA FOUND (Mcg.)	DCNA FOUND (P.P.M.)	
									APPARENT	CORR. (RECOVERY)
4/13/65	116	Untreated (fresh)	3.0	100	12.8	0.10	8.25	0.83	0.01	--
4/13/65	116	Untreated, Fortified, 0.25 p.p.m.	2.9	1030	12.8	1.03	16.50	17.10	0.28	(104%)
4/14/65	119	Dipped (fresh)	2.4	1230	12.8	1.23	247.50	304.40	5.10	5.1
4/14/65	121A	Dusted (fresh)	2.4	1260	12.8	1.26	495.00	623.70	10.40	10.4
4/14/65	121A	Dusted (fresh)	2.4	1265	12.8	1.27	495.00	626.20	10.40	10.4
4/14/65		Standard, 2 mcg. DCNA	2.5	1770	12.8	1.77	--	--	--	(88.5%)
4/16/65	122	Untreated (dried, 150°F.)	3.4	30	12.8	0.03	36.75	1.24	0.02	
4/16/65	122	Untreated, Fortified, 0.25 p.p.m.	3.2	270	12.8	0.27	82.50	22.28	0.37	(140%)
4/16/65		Standard, 2 mcg. DCNA	3.2	3150	25.6	1.57	--	--	--	(78.5%)
4/16/65	125A	Dipped, dried, 150°F.	3.3	1600	25.6	0.80	82.50	66.00	1.10	1.1
4/16/65	125B	" " "	3.2	770	12.8	0.77	82.50	63.50	1.06	1.1
4/16/65	126A	Dusted, dried, 150°F.	3.0	620	12.8	0.62	82.50	51.20	0.85	0.9
4/16/65	126B	" " "	3.0	640	12.8	0.64	82.50	52.80	0.88	0.9
4/17/65	137	Untreated (dried, ambient, 96 hr.)	3.0	80	12.8	0.08	36.75	3.30	0.06	--
4/17/65	137	Untreated, Fortified, 0.25 p.p.m.	3.0	870	25.6	0.44	36.75	18.15	0.30	(96%)
4/17/65	129A	Dipped, dried, ambient, 96 hours	2.8	1445	12.8	1.45	82.50	114.20	1.90	2.0
4/17/65	129B	" " " " "	2.8	1500	12.8	1.50	82.50	123.80	2.06	2.1
4/20/65	138	Untreated (dried, ambient, 192 hr.)	2.8	110	12.8	0.11	41.25	4.50	0.08	--
4/20/65	138	Untreated, Fortified, 0.5 p.p.m.	3.2	660	12.8	0.66	41.25	27.20	0.45	(76%)
		(continued next page)								

DCNA on Dried, Dusted and Dipped Grapes (Upjohn, 1965)

DATE OF ASSAY	SAMPLE NUMBER	HISTORY	RETENTION TIME (MIN.)	INTEGRATION COUNT	OHMS	DCNA EQUIV. (Mcg.)	DILUTION FACTOR	DCNA FOUND (Mcg.)	DCNA FOUND (P.P.M.)	
									APPARENT	CORR. (RECOVERY)
4/20/65	130	Dipped, dried, ambient, 192 hours	3.2	155	12.8	0.16	165.00	25.60	0.43	0.57
4/20/65	128	Dipped, dried, ambient, 192 hours	3.0	940	12.8	0.94	41.25	38.80	0.65	0.86
cll 4/21/65	5/10/65									

2,6-Dichloro-4-nitroaniline (DCNA) Residues on Dusted Dried Grapes (California, 1965)

Ref: 7615WMW40

April 21, 1965

corrected: May 10, 1965

Summary

Sample No. (1965)	Variety	Treatment	DCNA Found (P.P.M.)
133-134*	Calmeria	0.25# 6D/100#	23.50
135-136*	Emperor	" " "	27.50
143	Calmeria	" " " , dried	0.31
145	Emperor	" " " , dried	0.22
144	Calmeria	" " " , dried, washed	0.10
146	Emperor	" " " , dried, washed	0.25

*Composite

Source of Samples

The grapes were treated and dried by Dr. Kurt Weinke of The Upjohn Company in cooperation with Dr. Petrucci and Dr. Karle of Fresno State College.

Fifty pounds of each variety of grapes were hung on strings and dusted with BOTRAN 6D, using a hand duster (Hudson Admiral #766). The dust was applied at the rate of 0.25 pounds per 100 pounds of fruit. The average yield of grapes in California is 400 boxes (28 lbs. each) per acre. If 30 pounds of dust per acre is the recommended field rate, 0.27 pounds of dust would be applied for each 100 pounds of grapes. Since 60-80% of the dust goes onto the leaves in the field, the application rate used is 4-5 times that of the field rate. The grapes were dusted on 4/13/65. Frozen samples were shipped to Kalamazoo by air the same day.

The remainder of the grapes were dried in commercial equipment at Fresno State College at 150°F. The Emperor grapes were dried for 36 hours and the Calmerias for 39 hours. Each product was divided into "natural" dried grapes and "processed" dried grapes. The "natural" product is without further treatment after drying. The "processed" product is washed, cleaned and all stems removed after drying. Frozen samples were shipped to Kalamazoo by air on 4/16/65, arriving 4/19/65 because of an intervening weekend.

Captan and sulfur had been applied to the grapes in the field.

Method of Analysis

The fresh grapes were ground in a meat grinder. The dried grapes were chopped in a Hobart food chopper. The microcoulometric vapor phase chromatography method was used. Data are given in the attached table.

Code: DCNA - Grapes, Dried - 1965
California, Weinke

c11

DCNA on Dusted Dried Grapes (California, 1965)

174 6/64

DATE OF ASSAY	SAMPLE NUMBER	HISTORY	RETENTION TIME (MIN.)	INTEGRATION COUNT	OHMS	DCNA EQUIV. (Mcg.)	DILUTION FACTOR	DCNA FOUND (Mcg.)	DCNA FOUND (P.P.M.)	
									APPARENT	CORR. (RECOVERY)
/19/65	139	Untreated (Emperor, dried)	--	--	12.8	nil	36.75	nil	nil	--
/19/65	140	Untreated (Calmeria, dried)	--	--	12.8	nil	36.75	nil	nil	--
/19/65	139	Untreated, Fortified, 0.5 p.p.m.	3.0	590	12.8	0.590	36.75	21.70	0.36	(72%)
/13/65	116	Untreated (Emperor, fresh)	3.0	100	12.8	0.100	8.25	0.83	0.01	--
/19/65	133-134	0.25# 6D/100#, Calmeria, fresh	3.0	2305	12.8	2.310	441.00	1016.50	16.90	23.5
/19/65	135-136	" " " , Emperor, fresh	3.1	1610	12.8	1.610	735.00	1183.30	19.80	27.5
/19/65	143	" " " , Calmeria, dried	3.2	90	12.8	0.090	147.00	13.20	0.22	0.31
/19/65	143	" " " , Calmeria, dried	3.2	370	25.6	0.185	73.50	13.60	0.23	0.32
/19/65	145	" " " , Emperor, dried	3.2	125	12.8	0.130	73.50	9.60	0.16	0.22
/19/65	144	" " " , Calmeria,dried,washed	3.2	60	12.8	0.060	73.50	4.40	0.07	0.10
/19/65	146	" " " , Emperor,dried,washed	3.0	300	1.28	0.300	36.75	11.02	0.18	0.25
.1 '10/65										

End of Document

Abbott
Edwards
Woodruff

MEMORANDUM OF CONFERENCE
May 28, 1965

PRESENT:

Dr. Smith) Dr. Bozeck)	-	Upjohn Company Kalamazoo, Michigan (AF 12-865)
Dr. G. E. Whitmore) Dr. H. Blumenthal)	-	FSA, BSEE Division of Toxicological Evaluation

SUBJECT: Pesticide Petition No. 421T, 5F0434, Botran

The visitors came to discuss their need to revise some of the tolerances requested in 5F0434. Specifically, although analytical data indicated residues on peaches would be 20 ppm and on apricots 10 ppm., members of FSA felt that both fruits should have the same tolerance. A second change would involve lettuce. Here it was found that head lettuce only required a 5 ppm tolerance. However, leaf lettuce, a much more limited crop, would require a 10 ppm tolerance. Since tolerances normally did not separate lettuce types, there would be a need to increase the tolerance on lettuce up to 10 ppm.

In summary then the need is to increase apricots from 10 to 20 ppm and lettuce from 5 to 10 ppm.

We stated that we thought the data would support such increase but would have to check all our figures before making a final evaluation. The visitors then went to see Mr. Stokes to define the most rapid means of formally presenting the desired changes in requested tolerances.

H. Blumenthal

cc: PP #421T, 5F0434
GEWhitmore
BSEE (data processing)
FSA
PCB
TR

HBlumenthal:mar 6-4-65

End of Document

May 20, 1965

MEMORANDUM OF TELEPHONE CONVERSATIONS

Between: Mr. Ray Barnes, office of Congressman John J. McFall, House of Representatives, Washington, D. C. 20515

Mr. Walter R. Moses, Advisory Opinions Branch, BEVC

Mr. Barnes called concerning a telephone call they had received from a representative of the Cherry Growers Association in the San Joaquin Valley. The growers were disturbed over the possibility that the temporary tolerance established for botran (2,6-Dichloro-4-Nitroaniline) would expire on May 25, 1965. This man claimed that it was urgent that the temporary tolerance be extended if they were to save the cherry crop in the San Joaquin Valley.

I explained that I did not have sufficient information to discuss this matter with him but that I would confer with members of Petitions Control Branch and call him back.

I was referred to Mr. Drew Baker in Petitions Control Branch. While I was in Mr. Baker's office, he received by telegram a request for extension of the temporary tolerance. He explained to me that it would be necessary to check with members of HEB and with Pesticides Regulation Division of the U. S. Department of Agriculture before he could recommend action on the request that the temporary tolerance be extended for three months beyond May 25, 1965.

I then called Mr. Barnes and explained the situation to him and assured him that prompt attention would be given to the request for extension of the temporary tolerance of botran for pre and post harvest treatment on cherries. I explained that it would be necessary to coordinate this with the issuance of an experimental permit by the U. S. Department of Agriculture. I suggested that if he had further questions about this matter, he could contact Mr. Drew Baker in PCB.

Mr. Barnes thanked me and indicated this supplied the desired information.

Walter R. Moses

cc Congressional Liaison Office
cc AC/O AC/P AC/R PCB PSA BESE

WRMoses:gz 5/28/65

End of Document

SAL

AGRICULTURAL CHEMICALS

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN

TELEPHONE
Area Code 616
345-3571

PCB

June 1, 1965
Petition No. 5F0434

File: PP# 5F0434

Mr. William Stokes
Bureau of Scientific Standards and Evaluation
Food and Drug Administration, HEW
Washington, D. C. 20204

Dear Mr. Stokes:

Confirming our conference on May 28, 1965 with Mr. J. Alpert, Mr. G. Busch, Mr. D. Wolfe, we are formally requesting that tolerances of 20 ppm. be granted for apricots (pre-harvest only), and 10 ppm. for head and leaf lettuce (pre-harvest only). We initialed appropriate changes in the January 6, 1965 petition during the above conference. This is a change from 10 ppm. on apricots and 5 ppm. on lettuce.

We also discussed these changes with Dr. H. Blumenthal of the Toxicological Section and was given the understanding that our toxicity data for BOTRAN would support the request for the above changes in tolerance level.

It was our understanding that the review of our petition on BOTRAN had been completed, except for testing methods of analysis by outside laboratories, and that the review summaries were being submitted to Mr. McFarland early this week.

Enclosed are three copies of our revised requested tolerances for 2,6-Dichloro-4-nitroaniline.

Thank you for your continued assistance in the processing of this petition.

Very truly yours,

George Swank
Manager,
Agricultural Chemical Development
Agricultural Products Division

PCB

JUN 3 1965

lf
Enclosures (3)
cc: Mr. G. M. Downard

Requested Tolerances for 2,6-Dichloro-4-nitroaniline

Based on data in this petition and data submitted in previous petitions, we request tolerances for residues of the fungicide, 2,6-Dichloro-4-nitroaniline as follows:

20 parts per million in or on peaches and sweet cherries (pre and post harvest use), apricots and nectarines (pre-harvest only), green, pole beans (pre-harvest only);

15 parts per million in or on strawberries (pre-harvest only);

10 parts per million in or on grapes and lettuce, head and leaf (pre-harvest only), sweet potatoes (post harvest only);

5 parts per million in or on garlic (pre-harvest only), onions (pre-harvest only), and tomatoes (pre-harvest only).

lf
6/1/65

End of Document

[redacted]

Dorothy Woodward

[redacted]

DATE: June 3, 1965

AF 12-868

SUBJECT: PP #[redacted], Botran on various crops. Evaluation of analytical methods and residue data.

The Upjohn Company proposes the following tolerances for residues of the fungicide 2,6-dichloro-4-nitroaniline* (trade name Botran, DCNA):

20 ppm - apricots, beans (green, pole), sweet cherries, nectarines, and peaches

15 ppm - strawberries

10 ppm - grapes, lettuce (head and leaf), and sweet potatoes

5 ppm - garlic and onions, and tomatoes

Temporary tolerances at the same levels were established previously--PP #T375 and PP #T421--on most of these crops. The last temporary tolerance for cherries was 10 ppm--in contrast to the 20 ppm now proposed--but the usage has been increased. The proposals for beans and head lettuce are new.

Conclusions

1. Adequate methods are available to enforce the proposed tolerances. This finding is based on the evidence on hand and is contingent on successful completion of the method tryout now in progress.**

2. When the pesticide is used as directed the tolerances will not be exceeded.

Recommendations

Pharmacological considerations permitting, we recommend that the proposed tolerances be established. However, we suggest that the tolerance which may be established for lettuce be on the basis of lettuce only, rather than leaf and head lettuce separately as proposed by the petitioner.

---

*Mr. K. Walker of the American Standards Association informs us that as of June 18, 1964, "dichloran" had not been accepted as the common name for this compound.

**L. Johnson, DFO, in telephonic report on 6/3/65, stated both Districts obtained satisfactory results--low blanks and 80-90% recoveries. District reports are now being prepared.

Detailed Considerations

Use

The use recommendations for different crops are indicated below under Residue Data.

Nature of the Residue

No new metabolic data are included in the latest submission. Dissipation is brought about by evaporation and enzymolysis, chiefly evaporation. Previous studies on lettuce and peaches show no detectable intermediate breakdown products. Attempts to find the corresponding phenylenediamine, 2-chloronitroaniline, or p-nitroaniline were fruitless and we conclude that these potential intermediates are absent. Radioactive tracer studies with C^{14}-labeled DCMA show radioactivity only as DCMA and its fragments incorporated into normal plant constituents. Thus, we conclude that enzymatic degradation of any DCMA intermediate breakdown products is very rapid. The parent compound is the only toxic component of the residue.

Analytical Methods

MCGC--Most of the new data were obtained by the petitioner's microcoulometric gas-chromatographic procedure. A benzene extract of the macerated crop is evaporated to dryness, followed by partitioning between hexane and acetonitrile. Finally, a benzene solution of the residue is chromatographed under conditions somewhat different than those for the FDA multiple detection system for chlorinated pesticides.

In the recovery studies which were run on all crops except sweet potatoes, leaf lettuce, and nectarines--blanks are low, ranging from nil to 0.2 ppm on most crops. In one study on green beans, blanks of 0.3 and 0.4 ppm are reported--but this is low relative to the proposed 20 ppm tolerance. Recoveries are adequate, ranging from 75% (in one study on head lettuce) to 108% (in one study on apricots).

Overall we consider this method adequately validated for the residue data reported. We would have anticipated that extraction of the residue by benzene alone could be incomplete in some cases but the petitioner claims that his studies have shown the benzene extraction to be complete. In addition the clean-up involving only a partition between immiscible solvents may not always be adequate. However, the good recoveries obtained by the petitioner indicate that perhaps with some modifications, this method would be adequate for use as an enforcement procedure.

Colorimetric--Most of the earlier data were obtained by the method of Kilgore (J. Agr. Food Chem., 10, 399 (1962)). The natural yellow color of DCNA in an acetone solution of the cleaned-up residue is enhanced by adding KOH. A study on 34 pesticides shows that only sulfur might interfere significantly with the analysis. Where present, sulfur could be determined separately or the MCGC method described above could be used to determine DCNA residues.

The reported blank values are adequately low, ranging from 0.01-0.07 ppm in most instances--with a few values of 0.14-0.25 ppm on strawberries and tomatoes. The recoveries, ranging overall from 70-100%, also are adequate.

A method tryout on the colorimetric method is underway in two of our field laboratories. We will forward our evaluation of the results in a supplemental memorandum.

Residue Data

Beans (green, pole)--Use 1 lb/100 gal and 3 lb/A, repeat at 7-day intervals, 7-day PHI. Do not feed treated foliage to livestock. Western use only.

The data, consisting of six studies (five in Washington and one in Oregon) reflect both single and multiple applications. Two studies include dissipation rates, but one, presumably due to sampling variation, shows higher residues at seven days than at four. Adjusting for dosage, the average residue at seven days is 4 ppm for single applications and 14 ppm for multiple applications. The maximum residue at seven days is 7.8 ppm for single applications and 17.3 ppm for multiple applications. Since the maximum value of 17.3 ppm at seven days is above the limit line on a graph of the other studies, we consider the proposed 20 ppm tolerance to be adequate.

Sweet Cherries--Preharvest: use 1 lb/100 gal at popcorn, bloom, full bloom, and petal fall. Then one day and ten days before harvest.

Postharvest: spray with 1 lb/100 gal while sorting. The 1 lb/100 gal rate for both treatments represents an increase from the 0.75 lb/100 gal rate used under the temporary tolerances.

Preharvest Use--We would expect only very minor residues from the treatments through petal fall. The new data indicate somewhat higher residues from the treatments one day prior to harvest, than the previous data. The residue values range from 1-15 (av. 10) ppm. With the indicated three-day half-life, the treatment ten days before harvest would contribute less than 1 ppm to the residue at harvest. Thus the maximum from the last two treatments would be less than 16 ppm.

Postharvest Use--The postharvest treatment studies show residues of 1.6-12.1 (av. 5.4) ppm. Normally we would not expect cherries, treated one day before harvest, to be treated again in the sorting machine. In addition the cherries are washed with water at the start of the sorting process. One study shows that 80-90% of the DCNA residue is removed by such washing. If we assume that the degree of removal would be only 50% (most studies on other crops show that 50% or more is removed by washing) and make the unlikely assumption that cherries that are treated in the sorting machine would be treated the day prior to harvest as well--the maximum residue prior to the postharvest spray would be less than 8 ppm (1/2 x less than 16 ppm, see above). If we add the average residue from postharvest treatments, the combined residue would be less than 13 ppm. If we add the maximum residue from the postharvest use to the maximum residue from the preharvest use, the total residue would approach the tolerance level. Therefore, we conclude that the tolerance of 20 ppm is adequate to cover both uses.

Nectarines and Peaches--Preharvest: use 1 lb/100 gal, one-day PHI. Postharvest (peaches only): (1) 0.75 lb/100 gal dip or spray for fruit that is to be canned or frozen, (2) a 0.2% fruit wrap. The last is a new usage.

Preharvest Use--Seven new studies reflecting the preharvest use show residues of 1-9 ppm. This is in line with the data from 11 studies in 1963 which were evaluated in our memorandum of 8/21/64 (PP #T421) and which show residues of 1-11 (av. 5.6) ppm, except for one North Carolina study which shows a calculated value at one day of slightly over 20 ppm. In addition, a plot of one of the twelve 1962 studies indicates a one-day residue in excess of 20 ppm. Thus, while a few values--and these are calculated ones--do exceed the proposed tolerance, residues generally will be well within the proposed tolerance.

No new data are included for nectarines. Two older studies show low (less than 3 ppm) residues. The data for nectarines do not indicate the need for a 20 ppm tolerance. However, the usage is the same as that for peaches and we are therefore applying the peach data to nectarines. Hence, we consider the 20 ppm tolerance proposed for nectarines to be appropriate.

Postharvest Uses--New studies on the postharvest dip or spray treatments of peaches intended for canning and freezing show results that are higher on average than the few values reported previously. The results are rather erratic as well. When two samples were treated in a hydrocooler at 0.25 and 0.50 lb/100 gal, respectively, both show residues of 90 ppm. Another sample treated three times at 0.50 lb/100 gal in a dip, a spray, and in the hydrocooler shows only 18 ppm. One value of 230 ppm from a 0.50 lb/100 gal dip appears to be aberrant. The previous data indicate that the maximum residue from dipping would be about 20 ppm. The data also show that the large bulk of residue is present on the peel, and only about 5% of the residue is present in the peeled fruit which is used in canning and freezing. Even if we use the 5% factor on the probably aberrant 230 ppm residue value, the maximum DCNA residue on the processed fruit would be 12 ppm. However, we

believe that any residues in processed peaches from preharvest and/or post-harvest treatments would be contaminative and would not exceed the 0.2-0.3 ppm which were generally reported for the processed fruit.

The paper fruit wraps for fresh market peaches contain 0.2% (2000 ppm) or 4 mg DCNA/sq.ft. One study involved paper with 0.1, 0.2, and 0.3% fungicide. The residue values range from 3.2-4.0 ppm. In another study with paper containing 0.05-0.3%, residues range from 1.6-3.5 ppm. The 3 to 4 ppm residues from this use and preharvest applications would not be fully additive as the peaches would be brushed before packing.

Conclusion--Residues in fresh market peaches from the combined uses will not exceed the proposed 20 ppm tolerance. Residues in processed peaches will normally be well under 1 ppm.

Apricots--Preharvest only: use 1 lb/100 gal, one-day PHI.

One new study with Michigan apricots shows residue values of 10.1 ppm at zero-day and 8.0 ppm one day later. This is in line with previous California data which show an average residue of 7.8 ppm and a maximum of 10.5 ppm. This crop has the same use pattern as--and is similar to--peaches. Considering the relative fruit size, we would expect apricots, if differing at all, to have somewhat higher residues. Since the number of studies reflecting preharvest use are over 30 for peaches and only 8 for apricots--we believe that had more data been obtained, the maximum residues on apricots would have been the same as those on peaches. We conclude therefore that the 20 ppm tolerance proposed for apricots is appropriate.

Strawberries--Use 0.75 lb/100 gal, 200 gal/acre.

One new Arkansas study shows residues of less than 2 ppm from three applications of 2.1 lbs/A (vs 1.5 lbs/A recommended)--the last application being one day before harvest. The previous studies show that residues in colder areas--such as Michigan--may be higher and somewhat more persistent than residues in warmer areas. Our previous estimate (see memorandum of 8/21/64, PP #T421) was that four weekly treatments would yield a maximum residue of 14 ppm. The data which include values reflecting multiple and high dosage treatments show average residues of less than 5 ppm. Of the 11 residue studies, only one Michigan study (there are three studies from that state) shows residue values in excess of 10 ppm. Therefore, we consider the 15 ppm tolerance proposed for strawberries to be adequate.

Grapes--Dust only, 1.8 lbs/A, at 2-week intervals, one-day PHI.

The original study (with three sets of residue values) has been supplemented with three additional studies. All studies are for dust applications and reflect California usage.

The data reflect single and multiple applications. Adjusted to the proposed dose, single applications at zero-day yield residues of 3.5-4.5 (av. 4.2) ppm. The one study with dissipation data shows a higher residue at 3 days than at 1 day. This is probably due to sampling variation. The residue values in all studies range from 0.3-5.3 (av. 2.2) ppm. While the data are meager, there is an adequate margin of safety between the maximum residue of 5.3 ppm and the proposed 10 ppm tolerance, and we conclude that the tolerance is adequate.

Sweet Potatoes--Postharvest dip or spray 0.75 lb/100 gal.

Four new studies show residue values in line with the previous data. Overall, adjusted for dosage, the studies show four values of 8, 7, 6, and 5 ppm. All other values in the eleven studies range from 1-4 ppm, averaging about 2.5 ppm. The exposure time is not indicated for the dip treatments (label calls for 10-15 seconds), but since the bulk of the data is in the 1-4 ppm range, we feel that the proposed 10 ppm tolerance is adequate.

Lettuce

Head--Two lbs/A at thinning, repeat 10 days later, 14-day PHI. Western use only.

Leaf--Two lbs/A, 10 days after transplant, repeat when plants half-mature, 14-day PHI.

Three new California studies and two new Washington studies, all for head lettuce, show residues of less than 0.2 ppm. With the restriction to use in Western states, we consider the proposed 10 ppm tolerance to be more than adequate for head lettuce. We consider this level appropriate, nevertheless, in view of our suggestion which we make below on an inclusive tolerance for lettuce.

No new data are available for leaf lettuce. Sixteen previous studies represent adequate geographic representation. As expected, residues on leaf lettuce are considerably higher than those on head lettuce. Our previous estimate (see memo of 8/21/64 in PP #T421) which we now reaffirm is that maximum residues at 14 days would be about 7 ppm. We conclude that the 10 ppm tolerance proposed is adequate for leaf lettuce.

We suggest for administrative convenience that the tolerance which may be established for lettuce be on the basis of lettuce only, rather than leaf and head lettuce separately as proposed.

Garlic and Onions--Use 10-24 lbs/A broadcast or in spray at planting.

Two previous onion studies have been supplemented with seven new studies. Data are now available for garlic and green onions. Therefore, the restrictions to onions (dry bulb), in the last temporary tolerance is no longer required.

Values are reported for Illinois, Michigan, Oregon, and Washington. Application rates ranged up to 50 lbs/A. The residue range is less than 0.1-2.1 ppm showing an ample margin of safety. The proposed 5 ppm tolerance is adequate.

Tomatoes, Greenhouse--Use 3/4 lb per 100 gal. Apply to stems up to 18-24 inches. A proposed use on field tomatoes was eliminated by PRD, USDA, because of insufficient effectiveness data.

Eight 1962 studies are pertinent to the proposed use. Most residue values, adjusted to the proposed dosage are less than 1 ppm. The highest value for stem treatments is equivalent to 1.8 ppm. During stem applications, some overspray might settle on the lower tomato clusters; but residues from such oversprays would be less than those from full foliar applications. The maximum residue from foliar applications is calculated to be 3.3 ppm on the last day of 15 weekly applications. Therefore, the proposed 5 ppm tolerance is adequate.

Residue Persistence in Soil

In a Michigan study, three plots of sandy soil, topsoil (sandy loam), and muck soil were sprayed with the equivalent of 20 lbs DCNA/A. Samples were analyzed by the MCGC method. (Blanks were nil, recoveries at 0.1-10 ppm ranged from 76-99%.) The residue values are erratic. Residues in the top 2 inches on the day after application are about 7 ppm for sand and topsoil. After 85 days residues are about 50% lower. Muck soil (probably due to sampling variation) shows 2 ppm at 1 day and 6 ppm at 85 days. Assays of soil from between the treated plots shows little lateral movement.

In PP #T375, data are given for tomatoes grown in soil treated at 1.25-10 lbs/A and harvested 41 days after treatment. Tomatoes not touching the soil show trace (less than 0.05 ppm) residues. Tomatoes in contact with the soil show 0.45-0.75 ppm. The residues are not dose responsive, the maximum occurring from the 2.5 lbs/A treatment.

In a 1964 study, spinach grown in soil treated 11 months earlier with 30 lbs DCNA/A (for onions) shows residues of less than 0.05 ppm.

On the basis of the indicated three-month half-life for residues in Michigan soil, we conclude that DCNA will not accumulate in the soil from yearly treatments.

Other Considerations

Grapes, apricots, and peaches are often processed to the dried fruit. The petitioner has submitted data for grapes and prunes showing actual reductions of residues of 60 to more than 99% under commercial and simulated commercial conditions. The residues in dried fruits on a ppm basis will not exceed those on the fresh fruit--and no food additive tolerances will be required for dried grapes, apricots, and peaches.

End of Document

Export Branch

August 12, 1965

File PP 5F0434

Dr. George Swank
The Upjohn Company
Kalamazoo, Michigan 49001

Dear Dr. Swank:

This will acknowledge the copy of your letter of August 5, to Mr. George M. Dennard re dermal studies with Botran.

We also have a copy of your letter of August 4, to Mr. Dennard regarding registration of labels for this fungicide. The registration of labels is the responsibility of the U. S. Department of Agriculture and not the Food and Drug Administration. Presumably they will advise you regarding registration.

The precaution statement "Do not use on dried fruits" was deleted from the copies of labels in the Botran petition (PP No. 5F0434) in possession of the FDA and Dr. Boyack informed us that the same deletions were made in the USDA copies of the petition.

Sincerely yours,

William Stokes
Assistant to the Director
Bureau of Scientific Standards
and Evaluation

cc: PRD, USDA

cc: PCB FSA DTE

WStokes:mjo:8/11/65

R/D: WS:mcs:8/9/65

End of Document

Atpoot
Branch
Wolff
JRF

COMMISSIONER OF FOOD AND DRUGS — June 18, 1965

BRIEFING MEMORANDUM

Drew M. Baker, Jr.
Petitions Control Branch, BSSE

The Upjohn Company
Kalamazoo, Mich. (AF 12-868)

File → Pesticide Petition No. 5F0436 - Botran

Botran is the trade name for the fungicide 2,6-dichloro-4-nitroaniline. The attached order establishes permanent tolerances for residues of Botran at several levels on certain fruits and vegetables from various preharvest and postharvest applications. Temporary tolerances on most of these crops are in effect but will expire on or before August 28, 1965.

The Division of Food Standards and Additives finds that the colorimetric analytical method proposed in the petition is adequate for enforcement and that the proposed tolerances for residues of Botran will not be exceeded from applications according to the proposed usage.

The Division of Toxicological Evaluation finds that the proposed tolerances will protect the public health. Adequate reproduction studies have been submitted.

The Pesticides Regulation Division, USDA, has certified usefulness of Botran for the purposes for which tolerances are sought. They find that the proposed tolerances reasonably reflect the amounts of residues likely to result from the proposed usage.

The Fish and Wildlife Service, USDI, has no objection to the proposed tolerances.

It is recommended that this order be published.

APPROVED:

F. J. McFarland
Asst. to the Director
Bureau of Scientific Standards and Evaluation

Robert S. Roe, Director
Bureau of Scientific Standards and Evaluation

cc: PCB FSA TE GC(Hearing Clerk) FRW ACR
DMBaker:mak 6/18/65
R/D DMB:rh 6/11/65
R/D signed Mr. McFarland & Mr. Roe
R/D Init: JGBevsch 6/9/65, (GFitzhugh 6/11/65

End of Document

Report
Berusch
Wolff
JRF

Petitions Control Branch June111, 1965

Dr. George E. Whitmore
Division of Toxicological Evaluation
Petitions Review Branch

Botran, tolerance request changes: apricots-10 ppm increased to 20 ppm; leaf lettuce-5 ppm increased to 10 ppm.

File → PESTICIDE PETITION NO. 5F0434
(Final Evaluation)

Upjohn Chemical Company
Kalamazoo, Michigan
(AF 15-522)

By calculation, about 0.1 mg/day of Botran would be added to the human diet by the granting of the requested changes. Added to previously computed intake the resultant sum would be approximately 1.5 mg/day. This is the calculated safe amount that could be ingested based on a no effect level of 100 ppm in test animals with a safety factor of 100 fold. Although the petitioner submits some data indicating apricot residues are 10 ppm rather than 20, and that leaf lettuce can have 10 ppm residues in contrast to 5 ppm residues on head lettuce, it is the opinion of FSA that, had more extensive apricot residues been studied, the need for the 20 ppm tolerance already established for peaches would be evident, and that both leaf lettuce and head lettuce can have 10 ppm residues. If the calculated values are real the total possible residues would still be considered safe.

CONCLUSION:

The requested change of residue tolerance for apricots from 10 to 20 ppm and for lettuce from 5 to 10 ppm would be without hazard.

INIT:HBlumenthal

cc:
FSA
TE
BSSE(Data Processing)
PP No. 5F0434

GEWhitmore:amp 6/11/65

End of Document

Petitions Control Branch and
Division of Toxicological Evaluation

June 11, 1965

AF 12-[illegible]

Division of Food Standards and Additives

PP #5F0436, Botran on various crops. Addendum to evaluation of analytical methods and residue data.

We have received the reports of the Boston and Atlanta District laboratories on the results of the tryout of the colorimetric method for Botran.

No serious difficulties were encountered although the description of steps was not as complete as would have been desired. Precipitate formation or fading after color development was handled respectively by filtering through glass wool or reading at a uniform time after the potassium hydroxide addition. Both steps were previously suggested by the petitioner for use when required. Problems in the Florisil standardization were overcome by minor modifications in the procedure.

Blanks on lettuce, onions, and peaches ranged from nil to 0.07 ppm and are satisfactory in relation to the proposed tolerances.

Average recoveries on these crops fortified at one and two times the proposed tolerance levels were adequate and ranged from 70-[illegible]%. These results are in line with those reported by the petitioner.

Conclusion:

We conclude that the colorimetric method is adequate for enforcing the proposed tolerances. This would be the method of choice for enforcement use but will require some rewriting to incorporate the modifications found desirable in our trials. We reaffirm our favorable recommendation on the establishment of the proposed tolerances (see our memo of June 3, 1965).

Note: If, at some future time, a tryout of the petitioner's MEGC method is contemplated, the petitioner has informed us that pure PCNA can be chromatographed using the instrumental conditions of Burke and Johnson in JAOAC, 45, 345 (1962). The retention time is 0.7[illegible] that of an aldrin standard. In the presence of plant substrates, the petitioner's clean-up procedure would have to be used, because of hang-up on our Florisil column.

J. Wolff

cc
BSSR(2); PFO; TE
PP (Jones); FSA/OB
PP #5F0[illegible]; JWolff:jrf:dep
C.J. Deusch: JAlpert 6/11/65

A.S. Bernberg 6/11/65

End of Document

File: PP# 5F0434

Petitions Control Branch and
Division of Toxicological Evaluation

June 3, 1965

AF 12-868

Division of Food Standards and Additives

PP #5F0434, Botran on various crops. Evaluation of analytical methods and residue data.

The Upjohn Company proposes the following tolerances for residues of the fungicide 2,6-dichloro-4-nitroaniline* (trade name Botran, DCNA):

20 ppm - apricots, beans (green, pole), sweet cherries, nectarines, and peaches

15 ppm - strawberries

10 ppm - grapes, lettuce (head and leaf), and sweet potatoes

5 ppm - garlic and onions, and tomatoes

Temporary tolerances at the same levels were established previously--PP #T375 and PP #T421--on most of these crops. The last temporary tolerance for cherries was 10 ppm--in contrast to the 20 ppm now proposed--but the usage has been increased. The proposals for beans and head lettuce are new.

Conclusions

1. Adequate methods are available to enforce the proposed tolerances. This finding is based on the evidence on hand and is contingent on successful completion of the method tryout now in progress. **

2. When the pesticide is used as directed the tolerances will not be exceeded.

Recommendations

Pharmacological considerations permitting, we recommend that the proposed tolerances be established. However, we suggest that the tolerance which may be established for lettuce be on the basis of lettuce only, rather than leaf and head lettuce separately as proposed by the petitioner.

---

*Mr. K. Walker of the American Standards Association informs us that as of June 18, 1964, "dichloran" had not been accepted as the common name for this compound.

**L. Johnson, DFO, in telephonic report on 6/3/65, stated both Districts obtained satisfactory results--low blanks and 80-90% recoveries. District reports are now being prepared.

Detailed Considerations

Use

The use recommendations for different crops are indicated below under Residue Data.

Nature of the Residue

No new metabolic data are included in the latest submission. Dissipation is brought about by evaporation and enzymolysis, chiefly evaporation. Previous studies on lettuce and peaches show no detectable intermediate breakdown products. Attempts to find the corresponding phenylenediamine, 2-chloronitroaniline, or p-nitroaniline were fruitless and we conclude that these potential intermediates are absent. Radioactive tracer studies with C^{14}-labeled DCNA show radioactivity only as DCNA and its fragments incorporated into normal plant constituents. Thus, we conclude that enzymatic degradation of any DCNA intermediate breakdown products is very rapid. The parent compound is the only toxic component of the residue.

Analytical Methods

MCGC--Most of the new data were obtained by the petitioner's microcoulometric gas-chromatographic procedure. A benzene extract of the macerated crop is evaporated to dryness, followed by partitioning between hexane and acetonitrile. Finally, a benzene solution of the residue is chromatographed under conditions somewhat different than those for the FDA multiple detection system for chlorinated pesticides.

In the recovery studies which were run on all crops except sweet potatoes, leaf lettuce, and nectarines--blanks are low, ranging from nil to 0.2 ppm on most crops. In one study on green beans, blanks of 0.3 and 0.4 ppm are reported--but this is low relative to the proposed 20 ppm tolerance. Recoveries are adequate, ranging from 75% (in one study on head lettuce) to 108% (in one study on apricots).

Overall we consider this method adequately validated for the residue data reported. We would have anticipated that extraction of the residue by benzene alone could be incomplete in some cases but the petitioner claims that his studies have shown the benzene extraction to be complete. In addition the clean-up involving only a partition between immiscible solvents may not always be adequate. However, the good recoveries obtained by the petitioner indicate that perhaps with some modifications, this method would be adequate for use as an enforcement procedure.

Colorimetric--Most of the earlier data were obtained by the method of Kilgore (J. Agr. Food Chem., 10, 399 (1962)). The natural yellow color of DCNA in an acetone solution of the cleaned-up residue is enhanced by adding KOH. A study on 34 pesticides shows that only sulfur might interfere significantly with the analysis. Where present, sulfur could be determined separately or the MCGC method described above could be used to determine DCNA residues.

The reported blank values are adequately low, ranging from 0.01-0.07 ppm in most instances--with a few values of 0.14-0.25 ppm on strawberries and tomatoes. The recoveries, ranging overall from 70-100%, also are adequate.

A method tryout on the colorimetric method is underway in two of our field laboratories. We will forward our evaluation of the results in a supplemental memorandum.

Residue Data

Beans (green, pole)--Use 1 lb/100 gal and 3 lb/A, repeat at 7-day intervals, 7-day PHI. Do not feed treated foliage to livestock. Western use only.

The data, consisting of six studies (five in Washington and one in Oregon) reflect both single and multiple applications. Two studies include dissipation rates, but one, presumably due to sampling variation, shows higher residues at seven days than at four. Adjusting for dosage, the average residue at seven days is 4 ppm for single applications and 14 ppm for multiple applications. The maximum residue at seven days is 7.8 ppm for single applications and 17.3 ppm for multiple applications. Since the maximum value of 17.3 ppm at seven days is above the limit line on a graph of the other studies, we consider the proposed 20 ppm tolerance to be adequate.

Sweet Cherries--Preharvest: use 1 lb/100 gal at popcorn, bloom, full bloom, and petal fall. Then one day and ten days before harvest.

Postharvest: spray with 1 lb/100 gal while sorting. The 1 lb/100 gal rate for both treatments represents an increase from the 0.75 lb/100 gal rate used under the temporary tolerances.

Preharvest Use--We would expect only very minor residues from the treatments through petal fall. The new data indicate somewhat higher residues from the treatments one day prior to harvest, than the previous data. The residue values range from 1-15 (av. 10) ppm. With the indicated three-day half-life, the treatment ten days before harvest would contribute less than 1 ppm to the residue at harvest. Thus the maximum from the last two treatments would be less than 16 ppm.

Postharvest Use--The postharvest treatment studies show residues of 1.6-12.1 (av. 5.4) ppm. Normally we would not expect cherries, treated one day before harvest, to be treated again in the sorting machine. In addition the cherries are washed with water at the start of the sorting process. One study shows that 80-90% of the DCNA residue is removed by such washing. If we assume that the degree of removal would be only 50% (most studies on other crops show that 50% or more is removed by washing) and make the unlikely assumption that cherries that are treated in the sorting machine would be treated the day prior to harvest as well--the maximum residue prior to the postharvest spray would be less than 8 ppm (1/2 x less than 16 ppm, see above). If we add the average residue from postharvest treatments, the combined residue would be less than 13 ppm. If we add the maximum residue from the postharvest use to the maximum residue from the preharvest use, the total residue would approach the tolerance level. Therefore, we conclude that the tolerance of 20 ppm is adequate to cover both uses.

Nectarines and Peaches--Preharvest: use 1 lb/100 gal, one-day PHI. Postharvest (peaches only) (1) 0.75 lb/100 gal dip or spray for fruit that is to be canned or frozen, (2) a 0.2% fruit wrap. The last is a new usage.

Preharvest Use--Seven new studies reflecting the preharvest use show residues of 1-9 ppm. This is in line with the data from 11 studies in 1963 which were evaluated in our memorandum of 8/21/64 (FF #T421) and which show residues of 1-11 (av. 5.6) ppm, except for one North Carolina study which shows a calculated value at one day of slightly over 20 ppm. In addition, a plot of one of the twelve 1962 studies indicates a one-day residue in excess of 20 ppm. Thus, while a few values--and these are calculated ones--do exceed the proposed tolerance, residues generally will be well within the proposed tolerance.

No new data are included for nectarines. Two older studies show low (less than 3 ppm) residues. The data for nectarines do not indicate the need for a 20 ppm tolerance. However, the usage is the same as that for peaches and we are therefore applying the peach data to nectarines. Hence, we consider the 20 ppm tolerance proposed for nectarines to be appropriate.

Postharvest Uses--New studies on the postharvest dip or spray treatments of peaches intended for canning and freezing show results that are higher on average than the few values reported previously. The results are rather erratic as well. When two samples were treated in a hydrocooler at 0.25 and 0.50 lb/100 gal, respectively, both show residues of 90 ppm. Another sample treated three times at 0.50 lb/100 gal in a dip, a spray, and in the hydrocooler shows only 18 ppm. One value of 230 ppm from a 0.50 lb/100 gal dip appears to be aberrant. The previous data indicate that the maximum residue from dipping would be about 20 ppm. The data also show that the large bulk of residue is present on the peel, and only about 5% of the residue is present in the peeled fruit which is used in canning and freezing. Even if we use the 5% factor on the probably aberrant 230 ppm residue value, the maximum DCNA residue on the processed fruit would be 12 ppm. However, we

believe that any residues in processed peaches from preharvest and/or post-harvest treatments would be contaminative and would not exceed the 0.2-0.3 ppm which were generally reported for the processed fruit.

The paper fruit wraps for fresh market peaches contain 0.2% (2000 ppm) or 4 mg DCNA/sq.ft. One study involved paper with 0.1, 0.2, and 0.3% fungicide. The residue values range from 3.2-4.0 ppm. In another study with paper containing 0.05-0.3%, residues range from 1.6-3.5 ppm. The 3 to 4 ppm residues from this use and preharvest applications would not be fully additive as the peaches would be brushed before packing.

Conclusion--Residues in fresh market peaches from the combined uses will not exceed the proposed 20 ppm tolerance. Residues in processed peaches will normally be well under 1 ppm.

Apricots--Preharvest only: use 1 lb/100 gal, one-day PHI.

One new study with Michigan apricots shows residue values of 10.1 ppm at zero-day and 8.0 ppm one day later. This is in line with previous California data which show an average residue of 7.8 ppm and a maximum of 10.5 ppm. This crop has the same use pattern as--and is similar to--peaches. Considering the relative fruit size, we would expect apricots, if differing at all, to have somewhat higher residues. Since the number of studies reflecting preharvest use are over 30 for peaches and only 8 for apricots--we believe that had more data been obtained, the maximum residues on apricots would have been the same as these on peaches. We conclude therefore that the 20 ppm tolerance proposed for apricots is appropriate.

Strawberries--Use 0.75 lb/100 gal, 200 gal/acre.

One new Arkansas study shows residues of less than 2 ppm from three applications of 2.1 lbs/A (vs 1.5 lbs/A recommended)--the last application being one day before harvest. The previous studies show that residues in colder areas--such as Michigan--may be higher and somewhat more persistent than residues in warmer areas. Our previous estimate (see memorandum of 8/21/64, PP #T421) was that four weekly treatments would yield a maximum residue of 14 ppm. The data which include values reflecting multiple and high dosage treatments show average residues of less than 5 ppm. Of the 11 residue studies, only one Michigan study (there are three studies from that state) shows residue values in excess of 10 ppm. Therefore, we consider the 15 ppm tolerance proposed for strawberries to be adequate.

Grapes--Dust only, 1.8 lbs/A, at 2-week intervals, one-day PHI.

The original study (with three sets of residue values) has been supplemented with three additional studies. All studies are for dust applications and reflect California usage.

The data reflect single and multiple applications. Adjusted to the proposed dose, single applications at zero-day yield residues of 3.5-4.5 (av. 4.2) ppm. The one study with dissipation data shows a higher residue at 3 days than at 1 day. This is probably due to sampling variation. The residue values in all studies range from 0.3-5.3 (av. 2.2) ppm. While the data are meager, there is an adequate margin of safety between the maximum residue of 5.3 ppm and the proposed 10 ppm tolerance, and we conclude that the tolerance is adequate.

Sweet Potatoes--Postharvest dip or spray 0.75 lb/100 gal.

Four new studies show residue values in line with the previous data. Overall, adjusted for dosage, the studies show four values of 8, 7, 6, and 5 ppm. All other values in the eleven studies range from 1-4 ppm, averaging about 2.5 ppm. The exposure time is not indicated for the dip treatments (label calls for 10-15 seconds), but since the bulk of the data is in the 1-4 ppm range, we feel that the proposed 10 ppm tolerance is adequate.

Lettuce

Head--Two lbs/A at thinning, repeat 10 days later, 14-day PHI. Western use only.

Leaf--Two lbs/A, 10 days after transplant, repeat when plants half-mature, 14-day PHI.

Three new California studies and two new Washington studies, all for head lettuce, show residues of less than 0.2 ppm. With the restriction to use in Western states, we consider the proposed 10 ppm tolerance to be more than adequate for head lettuce. We consider this level appropriate, nevertheless, in view of our suggestion which we make below on an inclusive tolerance for lettuce.

No new data are available for leaf lettuce. Sixteen previous studies represent adequate geographic representation. As expected, residues on leaf lettuce are considerably higher than those on head lettuce. Our previous estimate (see memo of 8/21/64 in PP #7421) which we now reaffirm is that maximum residues at 14 days would be about 7 ppm. We conclude that the 10 ppm tolerance proposed is adequate for leaf lettuce.

We suggest for administrative convenience that the tolerance which may be established for lettuce be on the basis of lettuce only, rather than leaf and head lettuce separately as proposed.

Garlic and Onions--Use 10-24 lbs/A broadcast or in spray at planting.

Two previous onion studies have been supplemented with seven new studies. Data are now available for garlic and green onions. Therefore, the restrictions to onions (dry bulb), in the last temporary tolerance is no longer required.

Values are reported for Illinois, Michigan, Oregon, and Washington. Application rates ranged up to 50 lbs/A. The residue range is less than 0.1-2.1 ppm showing an ample margin of safety. The proposed 5 ppm tolerance is adequate.

Tomatoes, Greenhouse--Use 3/4 lb per 100 gal. Apply to stems up to 18-24 inches. A proposed use on field tomatoes was eliminated by PMD, USDA, because of insufficient effectiveness data.

Eight 1962 studies are pertinent to the proposed use. Most residue values, adjusted to the proposed dosage are less than 1 ppm. The highest value for stem treatments is equivalent to 1.8 ppm. During stem applications, some overspray might settle on the lower tomato clusters; but residues from such oversprays would be less than those from full foliar applications. The maximum residue from foliar applications is calculated to be 3.3 ppm on the last day of 15 weekly applications. Therefore, the proposed 5 ppm tolerance is adequate.

Residue Persistence in Soil

In a Michigan study, three plots of sandy soil, topsoil (sandy loam), and muck soil were sprayed with the equivalent of 20 lbs DCNA/A. Samples were analyzed by the MCGC method. (Blanks were nil, recoveries at 0.1-10 ppm ranged from 76-99%.) The residue values are erratic. Residues in the top 2 inches on the day after application are about 7 ppm for sand and topsoil. After 85 days residues are about 50% lower. Muck soil (probably due to sampling variation) shows 2 ppm at 1 day and 6 ppm at 85 days. Assays of soil from between the treated plots shows little lateral movement.

In PP #7F375, data are given for tomatoes grown in soil treated at 1.25-10 lbs/A and harvested 41 days after treatment. Tomatoes not touching the soil show trace (less than 0.05 ppm) residues. Tomatoes in contact with the soil show 0.45-0.75 ppm. The residues are not dose responsive, the maximum occurring from the 2.5 lbs/A treatment.

In a 1964 study, spinach grown in soil treated 11 months earlier with 30 lbs DCNA/A (for onions) shows residues of less than 0.05 ppm.

On the basis of the indicated three-month half-life for residues in Michigan soil, we conclude that DCNA will not accumulate in the soil from yearly treatments.

Other Considerations

Grapes, apricots, and peaches are often processed to the dried fruit. The petitioner has submitted data for grapes and prunes showing actual reductions of residues of 60 to more than 99% under commercial and simulated commercial conditions. The residues in dried fruits on a ppm basis will not exceed those on the fresh fruit--and no food additive tolerances will be required for dried grapes, apricots, and peaches.

Dipped peaches could have residues in excess of 20 ppm and therefore this usage may yield excessive residues on peaches for the fresh market. We originally had some reservations about the practicality of restricting the postharvest treatments to peaches "for freezing and canning only." However, Dr. E. Carter, ARS, USDA, agreed with the petitioner that this was a practical limitation. In addition, we understand that the dipping process imparts an unattractive yellow color to the peaches. This would be an additional safety factor in avoiding the diversion of these peaches into the fresh fruit market. Therefore, we are not questioning the practicality of this usage.

J. Wolff

cc
BSSB(2)
TE
DF(Jones)
FSA/CB
FSA/PB - PPs #5F0434; #T421, #T375

JWolff:eer:jrf
6/4/65
RD/I - GJBeusch; JAlpert

End of Document

Pf# 5F0434

Petitions Control Branch and
Division of Toxicological Evaluation

August 9, 1966

AF 12-868

Pesticides Branch, Division of Food
Standards and Additives

PP 6F0434, Botran on various crops. Evaluation of analytical methods and residue data.

The Upjohn Company proposes the following tolerances for residues of the fungicide 2,6-dichloro-4-nitroaniline (trade name Botran):

15 ppm - blackberries, boysenberries, raspberries (red) and currants

10 ppm - celery and rhubarb

5 ppm - carrots, cucumbers, Irish potatoes, plums and prunes, and spinach

Tolerances ranging from 5-20 ppm already have been established on 12 crops under Section 120.200.

The petitioner agreed informally on July 29, 1966, to withdraw the tolerances proposed for currants and spinach, but has not done so officially.

Conclusions

1. Adequate methods are available for enforcing the proposed tolerances.

2. When the pesticide is used as directed, the proposed tolerances would not be exceeded by the residues on blackberries, boysenberries and raspberries (red), rhubarb, and cucumbers.

3. Residues on carrots would exceed the proposed 5 ppm tolerance. A 10 ppm tolerance would be adequate.

4. The 10 ppm tolerance proposed for celery is inadequate. It would be adequate with a 14-day rather than a 7-day preharvest interval.

5. The 5 ppm tolerances proposed for potatoes and plums (prunes) are higher than necessary. Lower tolerances of 0.25 ppm for potatoes, and of 1 ppm for plums (prunes) would be adequate.

6. With a tolerance of 0.25 ppm on potatoes, in conjunction with the label restrictions, we would not reasonably expect residues to transfer to meat and milk.

7. The residue in dried prunes would not exceed the level of 1 ppm and a food additive tolerance would not be needed here.

8. The tolerance proposed for spinach is intended to cover incidental residues which result on spinach as a follow-up crop, and not from the purposeful use of Botran on spinach. A residue problem is likely only when spinach follows onions, and the soil is treated in connection with the growing of the onion crop. This type of a tolerance probably should have been proposed under Section 406 of the Act, but in view of the petitioner's verbal agreement to withdraw the proposed tolerance, this question may be moot.

9. In the absence of a described use for currants, we are unable to evaluate the adequacy of the proposed tolerance for currants.

Recommendations

1. Pharmacological considerations permitting, we recommend that the tolerances proposed on the crops enumerated in Conclusion 2 above be established.

2. We could recommend favorably on carrots if the proposed tolerance were increased to 10 ppm.

3. We could recommend favorably for the tolerance for celery if the preharvest interval were increased from 7 to 14 days.

4. We could recommend favorably if the proposed tolerances were reduced to 1 ppm for plums (prunes) and 0.25 ppm for potatoes.

5. We are making no recommendations on the tolerances proposed for currants and spinach as we understand the proposals are being withdrawn.

Detailed Considerations

Proposed Use

The use recommendations for different crops are given below under Residue Data. All uses are preharvest except for that on carrots.

Nature of the Residue

As we stated in our memo of 6/3/65 (see PP #5F0434), dissipation of residues on plants is effected chiefly by volatilization.

The parent compound is considered the only toxic component of the residue on plants.

Animals metabolize Botran to 3,5-dichloro-4-aminophenol and excrete it in conjugated form, chiefly in the urine.

Analytical Methods

Colorimetric - The colorimetric method was used in one study on carrots which had been submitted previously. This procedure was evaluated and subjected to a method tryout in connection with PP #5F0434. It was considered adequate for enforcing the previously established tolerances and we consider it to be adequate for enforcing the proposed tolerances on the crops of this petition.

MCGC - The MCGC method used for the residue determinations was discussed in detail in the aforementioned memo in PP #5F0434. Cheng and Kilgore (see J. Food Sci., 31, 259; 1966) recently applied a simplified version of this method to various fruits using electron-capture detection.

Overall, we consider the sensitivity of this method to be 0.05-0.1 ppm which is satisfactory in relation to the contemplated tolerances. A few values of 1-3 ppm were obtained on red raspberries and carrots and may represent inadequate cleanup of these samples.

Recoveries on samples fortified with 0.25-5 ppm of Dowco are also satisfactory ranging overall from 75% (on blackberries) to 124% (on celery).

We consider this method to be adequate for obtaining residue data or for use as an alternate enforcement procedure.

Residue Data

Blackberries, Boysenberries, and Raspberries (Red) - Pacific Northwest only--use 1 lb act/100 gals or 3 lbs act/A as dust just prior to bloom and then at 10-day intervals, maximum of four applications, 7-day PHI. Considering that up to 250 gallons of spray liquid may be used per acre, the rate for the dust formulation is not out of line.

In the absence of a described use for currants, we are unable to evaluate the adequacy of the proposed tolerance for currants.

Seven studies made in Washington and Oregon include dissipation data, and data reflecting both multiple applications and excessive doses of sprays and dusts. Residue values from four applications at the proposed 7-day PHI (derived from plots of the data with adjustments for dosage where necessary) range from 0.5-12 ppm. Only two values are in the 11-12 ppm range.

We conclude that residues from the described use would not exceed the proposed 15 ppm tolerance.

Celery - Use 1.5 lbs act/100 gals and 100 gals/A at 7-day intervals beginning 10 weeks before harvest, 7-day PHI.

Cucumbers (Greenhouse) - Use 1 lb/100 gals on diseased parts, with additional application if necessary after 14 days, no PHI.

Four studies made in California and Oregon include data reflecting excessive dosages and multiple applications. The highest residues are of the order of 2 ppm where a 25% excess of fungicide was used. (One value reflects a 50-day PHI for a soil treatment with Botran, which is not pertinent here.) Most residue values are <0.2 ppm, but a few approach 2 ppm.

Since the studies reflect applications to the whole crop rather than just the diseased parts, residues would be even lower than these, and we conclude that residues on cucumbers would not exceed the proposed 5 ppm tolerance.

Irish Potatoes - Michigan only--use 1.5 lbs/100 gals and 100 gals/A beginning at lay-by and continuing at 10-14 day intervals, 14-day PHI. Do not feed treated potatoes to livestock.

The use pattern is such that only very minor contaminative residues would be expected. The source of the residues would be soil contamination from foliar applications. [In the case of DDT (a much more persistent pesticide) on sweet potatoes (a related crop), we estimated an increment of 0.1 ppm on tubers from foliar applications at 2.5 lbs act/A - see PP #395.]

Both of the two available studies reflect excessive treatments. In a New York study the potato plants received 10 sprays at intervals of 5-11 days and were harvested 3 days earlier than the proposed 14-day PHI. All samples show less than 0.05 ppm. In a Michigan study there was a pre-emergent soil application at 4.5 lbs act/A (soil applications are not proposed) plus 4 weekly applications. At harvest 21 days later, all reported residues are less than 0.2 ppm. Even this value is excessive as the potatoes were unwashed.

On the basis of the proposed use pattern and the data available, we consider the proposed 5 ppm tolerance to be too high. In our opinion, a nominal tolerance of 0.25 ppm would be adequate.

Since the application is a foliar one, residues are not normally to be expected on the tubers. Occasionally small residues, not in excess of 0.25 ppm, will be found from contamination by soil. The question of transfer of residues to meat and milk from the feeding of cull and surplus potatoes is therefore only a minor one and the label warning against the feeding of treated potatoes to livestock should serve to prevent the occurrence of such transfer.

Plums and Prunes - Use 1 lb act/100 gals at popcorn and full bloom.

Two of the three available studies reflect postharvest or post-blossom applications and are not pertinent to the proposed use. FRD, USDA in its memo of 3/29/66 states that the data are insufficient to serve as a basis for an opinion of the residues likely to result on this crop. While we agree that the data do not permit a precise determination of the residue levels, the use pattern is such that only very minor residues would be expected. In the one pertinent study, quadruple the recommended dosage was used; but no detectable residues are reported at harvest. In another study, plums on the trees were sprayed and harvested the next day. The resulting residue reported is only 2.5 ppm.

We therefore conclude that the proposed 5 ppm tolerance is too high. In our opinion, a nominal tolerance of 1 ppm (about three times the highest blank reported) would be adequate.

Data in PP #5F0434 show that residues in fruit are reduced by 60-99% on commercial drying. Therefore establishing a tolerance on plums and prunes would not necessitate establishing a food additive tolerance for dried prunes.

Spinach - No purposeful applications are proposed, but a tolerance is requested to cover possible residues from treatments made on previous crops. The maximum previous use would be that on onions where soil treatments are permitted using up to 30 lbs act/A.

In one study, a very high dosage of 70-125 lbs act/A was used. Residues of 2-3 ppm are reported for 9.9 months; but at 10.6 months after application, only trace residues below the 0.05 ppm practical limit of sensitivity are reported. In a second study, a residue of 0.23 ppm is reported, but here the crop was harvested only 6 months after the application of 30 lbs act/A. In a third study, spinach harvested 10.9 months after soil treatment with 30 lbs act/A shows no residues (<0.05 ppm).

We are dubious about the need for a tolerance in this situation. Even at the maximum application rate (for onions) it seems unlikely that residues would be present in spinach 7 or 8 months after the initial treatment for the proceeding crop. In addition a residue problem is likely to arise only where spinach follows onions; and the petitioner already has a warning on his label for onions to plow and cross-disc treated areas before seeding with spinach, which is sensitive to Botran. The warning itself would discourage the rotation of onions and spinach.

Since the petitioner has agreed verbally to withdraw the tolerance proposed for spinach, we are making no recommendations on this.

Other Considerations

The persistence of Bolran residues in soil was discussed in our memo of 6/3/03 in PP #5F0434. The half-life in soil is about 3 months and we would not expect residues to accumulate on the soil from yearly treatments.

J. Wolff

cc:
DFB
CGI-CB
CGI-R
LFG(Jones)
LFG(L.Johnson)
FSA/CB
FSA/CB
PP #5F0434 ✓
PP #6F3474

JWolff:jrf
8/9/06
RD/I - GJBeusch, JAlpert

End of Document

File 5F0432

MEDICINE...
DESIGNED FOR HEALTH...
PRODUCED WITH CARE

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN 49001
TELEPHONE (616) 345-3571

AGRICULTURAL PRODUCTS DIVISION
PLANT HEALTH RESEARCH
AND DEVELOPMENT

February 18, 1969

Mr. L. L. Ramsey
Assistant Director for Regulatory Matters
Bureau of Science
Food and Drug Administration
Department of Health, Education and Welfare
Washington, D.C. 20204

Dear Mr. Ramsey:

From the results of preliminary experiments in California last year, it appears that application of our fungicide BOTRAN to grapes being sun-dried into raisins gives good protection from rot during the drying process. In order to further investigate this use and obtain the data necessary for registration, we would like to obtain an experimental permit for this year. At present, a tolerance of 10 ppm is established for BOTRAN on grapes, from preharvest application.

I discussed this situation with Mr. Drew Baker early last month, and he indicated that such a use would require a food additive tolerance and that there was no provision for temporary tolerances under the food additive regulations. He suggested that I submit the question in a letter, which I did (copy attached). The answer to this inquiry (copy attached) again simply stated that a food additive regulation would be required. Since the immediate problem of the experimental permit was not resolved, I contacted Mr. Baker by phone and he again said that there was no provision for temporary tolerances under the food additive regulations. He suggested that our data from the preliminary trials might be adequate for a permanent tolerance. I therefore discussed this with Mr. Alpert by phone and it seems most unlikely that our present data are sufficient for a permanent tolerance. More will be required under conditions of commercial field use. I also discussed the situation with Mr. Harold Alford of the USDA, who said that an experimental permit could be issued only if some adjustment of the tolerance is made to allow the postharvest application.

Received
FEB 20 1969

I suggest that a possible solution to this problem could be to amend the existing pesticide tolerance for BOTRAN on grapes to allow postharvest application. Analogous situations, it seems to me, exist in our established permanent tolerances for BOTRAN from both preharvest and postharvest applications on peaches to be used for freezing and canning, and on carrots for storage. In the case of the grapes, our present data indicate that residues resulting from this additional proposed use will be well below the existing tolerance of 10 ppm, primarily because of the long (20-30 days) exposure time following treatment. Some other arrangement may, however, be more satisfactory. Our objective is simply to be able to obtain the field data necessary for permanent registration. I would appreciate your help in this matter.

I plan to be in Washington on Wednesday, February 26th, and would like to see you that afternoon, if possible. I will call in a few days for an appointment, but I felt that this letter in advance would help give some information prior to my visit.

Thank you for your consideration.

Sincerely,

THE UPJOHN COMPANY

Ross R. Herr, Head
Pesticide Regulatory Affairs

jgc

attachments

cc: Mr. Drew Baker
Mr. Jerome Alpert
Mr. Harold Alford

End of Document

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN 49001
TELEPHONE (616) 345-3571

AGRICULTURAL PRODUCTS DIVISION
PLANT HEALTH RESEARCH
AND DEVELOPMENT

January 10, 1969

Mr. Drew M. Baker, Jr.
Petitions Control Branch
Bureau of Science SC-13
Food and Drug Administration
Department of Health, Education,
and Welfare
Washington, D.C. 20204

Dear Mr. Baker:

Subject: Proposed Use of Botran on Raisins

This is to restate the question concerning a temporary tolerance for Botran which we discussed during my visit to Washington, Wednesday, January 8, 1969.

Preliminary small-scale experiments in California have indicated that application of Botran to grapes being sun dried into raisins gives good protection from rot during the drying process. In this process the grapes are picked and laid out on paper sheets between the vine rows. The Botran is applied as a single application shortly after the grapes are laid out.

In our small-scale tests the Botran was applied with a hand sprayer, however, this year we would like to conduct trials of actual field applications, usually by fixed-wing aircraft. We are planning to apply to the USDA for a temporary permit for such an experimental program.

At the present time a tolerance of 10 ppm is established for Botran on grapes from preharvest applications. The proposed postharvest use in the drying process is not expected to result in residues greater than 10 ppm after the raisins are washed during processing. Residue analyses to substantiate this will be available shortly.

Can you advise us of the correct procedure to obtain a temporary tolerance to allow this proposed experimental program? Will this involve a modification of our existing tolerance? Also, can you advise us of the correct procedure to obtain a permanent tolerance assuming that the experimental program gives satisfactory results? Will this require a food additive tolerance or an amended pesticide tolerance to allow for postharvest application?

Your answers to these questions will be greatly appreciated as soon as possible since we would like to submit our request for the experimental permit as early as we can. If you have any questions concerning this matter, please call me collect: Area Code - 616 - 345-5571.

Thank you for your consideration.

Sincerely,

THE UPJOHN COMPANY

Ross R. Herr, Head
Pesticide Regulatory Affairs

clb

End of Document

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CONSUMER PROTECTION AND ENVIRONMENTAL HEALTH SERVICE
WASHINGTON, D.C. 20204

FOOD AND DRUG ADMINISTRATION

January 31, 1969

Dr. Ross R. Herr
The Upjohn Company
Kalamazoo, Michigan 49001

Dear Dr. Herr:

This refers to your letter of January 10, 1969, regarding experimental use of Botran on grapes being dried for raisins.

As we understand it, the grapes are placed on trays to be dried by sunlight and the trays are placed on the ground between the rows of growing grapes. Airplane applications of Botran are to be made so that preharvest and postharvest treatment is done simultaneously.

As raisins are considered a processed food rather than a raw agricultural commodity, use of a pesticide on them during the drying process would require a food additive regulation established on the basis of a food additive petition presented under § 409. The petition should present data which reflect the residues on the finished raisins accumulated from the presently registered preharvest treatment of the grapes and the proposed use on the drying raisins.

Sincerely yours,

Drew M. Baker, Jr.
Petitions Control Branch
Bureau of Science

cc: Pesticides Regulation Division
ARS, USDA

End of Document

AGRICULTURAL
CHEMICALS

THE UPJOHN COMPANY

KALAMAZOO, MICHIGAN

TELEPHONE
Area Code 616
345-3571

Object
Summary
Review
PP 4F

March 3, 1969

Mr. H. G. Alford, Assistant Director
Pesticides Regulation Division
Agricultural Research Service
United States Department of Agriculture
Washington, D.C. 20250

Dear Mr. Alford:

Subject: Deletion of Forage Restrictions from BOTRAN labeling. Additional data.
Reference: My letter to you, February 26, 1969.

It has been pointed out, with reference to our request to delete the forage restriction statements from our BOTRAN labeling, that although we do not have direct data on the residue present on cotton foliage, the use of BOTRAN on lettuce may provide an analogous situation on which to base judgement of probable residues on cotton. Residue data on leaf lettuce was submitted in our petition for Temporary Tolerance T375, on August 1, 1962. Ultimately, a tolerance of 10 ppm was established on lettuce.

Since the use pattern on lettuce is at least equivalent (in terms of probable residue) to that on cotton, we ask that the lettuce data be considered as indicative of the magnitude of residues likely on cotton foliage. And since the feeding studies show that no measurable residues result in milk or tissue of cattle even at feeding levels of 80 ppm in the diet, it appears that a substantial safety factor is present.

With regard to the other crops involved in our request, a tolerance of 0.25 ppm is established for BOTRAN on potatoes, and we understand that snap beans are no longer considered a forage crop.

If there are any further questions concerning this requested label change, please call me collect: Area Code 616, 345-3571, Ext. 7263.

Sincerely,

THE UPJOHN COMPANY

/s/

Ross R. Herr, Head
Pesticide Regulatory Affairs

cc: Mr. Jerome Alpert, FDA

Received
MAR 6 1969

13544

R103264

Chemical:	**Dicloran**
PC Code:	**031301**
HED File Code	**11500 Petition Files Chemistry**
Memo Date:	**10/26/2004**
File ID:	**00000000**
Accession Number:	**412-05-0090**

HED Records Reference Center
01/27/2005