03/2-C

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

OCT 9 1985

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP #5F3284/5H5475. (RCB #1337,1378) Sethoxydim (Poast®) in/on fruiting vegetables. Evaluation of analytical methodology and residue data. Accession No. 073718.

FROM: Cynthia Deyrup, Ph.D., Chemist
Tolerance Petition Section 2
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

THRU: Charles L. Trichilo, Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: R.J. Taylor, Product Manager No. 25
Registration Division (TS-767)

and

Toxicology Branch
Hazard Evaluation Division (TS-769)

BASF Wyandotte Corporation proposes the establishment of a permanent tolerance on the raw agricultural commodity group, fruiting vegetables, at the level of 4.0 ppm for combined residues of 2-[1-(ethoxyimino)butyl]-5-(2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one (sethoxydim, Poast®) and its metabolites containing the 2-cyclohexen-1-one moiety calculated as parent.

The following food and feed additive tolerances for residues of sethoxydim/metabolites are also proposed:

Processed Commodity	Proposed Tolerance (ppm)
Tomato Puree	8.0
Tomato Paste	24.0
Dried Tomato Pomace	12.0

Permanent tolerances have been established on cotton, soybeans, sugar beets, and animal commodities at levels ranging from 0.05-15.0 ppm (40 CFR 180.412).

Permanent tolerances for residues of sethoxydim/metabolites are pending on sunflowers and peanuts (PP #5F3234/5H5464, memo of M. Firestone, 7/17/85) and on soybeans and alfalfa (PP #3F2904, memo of K. Arne, 6/26/85).

Conclusions

1. The petitioner will need to specify the method of application used in his field trials. If the data do not reflect his proposed use (i.e. application with either air or ground equipment), the petitioner has the option of submitting residue data reflecting aerial application or of limiting his proposed use to ground equipment application only in a revised Section B/label.

2a. RCB concludes that the nature of the residue in tomatoes is adequately understood. The residues of concern are sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety.

2b. RCB concludes that the nature of the residue in ruminants is adequately understood, provided that the petitioner submits reproductions of TLC's that were used to identify metabolites in liver and kidney. Further work may be necessary if these chromatograms do not support the petitioner's structural assignments. See memo of K. Arne, 6/26/85, PP #3F2904.

2c. RCB concludes that the nature of the residue in poultry is not adequately understood. A poultry metabolism study submitted with PP #3F2904 was found to be deficient because only 41% of the radioactivity in liver was identified (PP #3F2904, memo of K. Arne, 6/26/85).

3. RCB concludes that adequate analytical methodology is available for enforcement purposes.

4a. RCB does not consider it appropriate to translate available storage stability data on soybeans and soybean forage or on animal tissues to tomatoes, a highly acidic commodity. Therefore, the petitioner will need to submit storage stability data to cover the storage period, one year, on tomatoes or some other acidic commodity (e.g. citrus, apples, etc.)

4b. Although the proposed use allows application by ground and air equipment (except in CA), there is no indication that any of the data reflect application by air equipment. The petitioner should specify the method of application used in his field trials. If aerial application was not used, the petitioner has the option of submitting residue data which reflect aerial application or of restricting application to ground equipment only in a revised Section B/label.

4c. No description of the fractionating process was provided. Therefore RCB is unable to determine whether the processing study reflected common commercial practice. The petitioner will need to provide details of his fractionation study. At this time RCB is unable to judge whether the proposed food and feed additive tolerances are adequate.

5a. RCB at this time can make no estimate on the transfer of residues resulting from the proposed use to meat, milk, poultry and eggs until our questions on the nature of the residue have been satisfied (PP #3F2904, memo of K. Arne, 6/26/85).

5b. The petitioner should submit a revised Section F in which he proposes a tolerance for fruiting vegetables and food/feed additive tolerances on "Tomato products, concentrated" and tomato pomace, dried. The proposed tolerance for tomato puree should be deleted. The proposed tolerance should reflect the residue levels found in the commodity bearing the highest residues, i.e. tomato paste.

6. Neither Codex, Mexico, nor Canada has established a tolerance for residues of sethoxydim/metabolites on fruiting vegetables. Therefore there will be no compatibility problem.

Recommendations

RCB recommends against establishing permanent tolerances for residues of sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety in/on fruiting vegetables because of reasons given above under Conclusions 1, 2b, 2c, 4a, 4b, 4c, 5a, and 5b.

Detailed Considerations

Manufacture and Formulation

The manufacturing process of sethoxydim was discussed in RCB's review of PP #0G2396 (memo of E. Zager, 12/4/80). The technical product is >94.9% pure. The impurities are not expected to present any residue problems.

The formulation to be used on fruiting vegetables, Poast®, an emulsifiable concentrate, contains 20.0% by weight active ingredient. The inerts have been cleared under 40 CFR 180.1001.

Proposed Use

The timing of the application of Poast, a post emergent pesticide, is dependent upon the growth stage of the particular target weed. Therefore, the first application is generally made 15-30 days after planting, and the second, if needed, is made 14-21 days after the first.

The label stipulates that no more than 4.5 pints of formulation/A (0.9 lb a.i./A) may be applied per season. A 20 day PHI is imposed. Poast should always be applied with an oil concentrate. The label specifies that the concentrate must contain only EPA exempt ingredients.

Poast is to be applied in 5-20 gal of spray/A with ground equipment and in 5-10 gal spray/A with air equipment (not applicable to CA).

The dosage per application and the number of applications per season depend upon the region in which Poast is to be used and upon the target weed.

According to the submitted Section B, 2 applications per season are permitted; however, the submitted supplemental label permits up to 4 applications of Poast per season. However, since the dosage in all parts of the country is limited to 4.5 pints/A per season (0.9 lbs a.i./A per season), the number of applications permitted per season can readily be determined from the dosages of the individual treatments prescribed on the label.

Although the label permits application with either ground or air equipment, there is no indication that any of the residue data reflect aerial application. The petitioner will need to specify the method of application used in his field trials. If the data do not reflect his proposed use (i.e. application with either air or ground equipment), the petitioner has the option of submitting residue data reflecting aerial application or of limiting his proposed use to ground equipment application only in a revised Section B/label.

Nature of the Residue

Tomato Metabolism Study

A tomato metabolism study using [4-^{14}C]-sethoxydim was submitted with this petition. The first application of ^{14}-C-sethoxydim emulsified in water was made to tomato plants in the 4-6 trifoliate stage (18 inches tall). The specific activity of the sethoxydim was 13.16 mCi/mMole. The plants were sprayed again 14 days later. The treatment rate was equivalent to 0.5 lb a.i./A plus 0.5 lb a.i./A. Thus the radioactive study approximated the proposed use (maximum application rate, 0.9 lb a.i./A per season).

The tomatoes were homogenized by grinding with dry ice and were stored frozen until analysis. The radioactivity of solid samples was determined by combustion of the sample to give $^{14}CO_2$. The radioactivity of liquid samples was determined by liquid scintillation counting (LSC). Radioactivity on TLC plates was quantitated with a linear radioactivity analyzer. In addition to TLC, HPLC with a UV detector and a radioactive monitoring flow through detector, mass spectroscopy, and GC/MS were used to identify metabolites. The treated tomatoes were homogenized with methanol and filtered to yield a methanolic extract and the marc. After concentration of the filtrate, $Ca(OH)_2$ was added to precipitate protein. After filtration and concentration, the filtrate was acidified to pH 2 and extracted with methylene chloride. The acidic aqueous layer was refluxed up to 2 hours, cooled, and partitioned with methylene chloride.

The tables below give the total radioactive residue (TRR) found as a function of time after treatment and the distribution of the TRR in the various fractions. The distribution of the TRR found 35 days after treatment 1 (21 days after treatment 2) is presented separately; this PHI most nearly reflects the proposed use.

Days after treatment*	Total Radioactive Residue (ppm)
7	3.11
14	1.48
21(7)	2.48
35(21)	1.27
49(35)	0.88
63(49)	0.73
80(56)	0.21

*Numbers in parentheses indicate days after treatment 2

DISTRIBUTION OF TOTAL RADIOACTIVE RESIDUE (TRR) IN FRACTIONS

Fraction	%TRR	%TRR (35 Days after 1st Treatment)*
Unextracted (marc)	0.9-2.6	2.1
Extracted into MeOH	97.4-99.1	97.9
$Ca(OH)_2$ precipitate	0.4-5.5	3.7
Partitioned into CH_2Cl_2	67.5-94.3	86.1
Partitioned into CH_2Cl_2 after H^+ hydrolysis	0.7-5.8	2.3
Water soluble (final)	3.4-18.9	5.9

*21 days after treatment 2

Since most of the TRR (67-94%) partitioned into the dichloromethane layer from pH 2 water, metabolite analysis was carried out with this fraction. Metabolites were identified by direct comparison to reference standards using TLC and HPLC. To confirm the identity of the major metabolites (MSO, M2SO. MSO_2, and $M2SO_2$), the radioactive eluates corresponding to these metabolites were further purified by a second passage through the liquid chromatograph (see Attachment 2 of this review for formulas and chemical names for the abbreviated compounds; reproduced from Figure 2 of Laboratory Report No.: Pm-40 of PP #5F3284). The eluates corresponding to MSO, M2SO, and MSO_2 were analyzed by direct probe MS-DCI (NH_3). The expected M + 1 peaks for these metabolites were found. The metabolite $M2SO_2$ contributes very little to the TRR; the presence of this metabolite was indicated by a reconstructed ion chromatogram (GC-MS) with monitoring at M/Z = 178. The observed retention time of the metabolite was identical to that of the reference standard. The distribution of metabolites (determined by TLC) is given below.

DISTRIBUTION OF FREE METABOLITES IN DICHLOROMETHANE FRACTIONS FROM TREATED TOMATO SAMPLES (EXPRESSED AS % TRR)

Days*	Radioactivity in CH_2Cl_2 extracts (pH 2)	MSO	MSO_2	M1SO	M2SO	$M2SO_2$	5-OH-MSO_2	%TRR identified
7	94.3	56.1	5.1	6.6	2.6	-	3.8	74.2
14	92.0	57.3	3.6	7.2	4.0	-	3.8	75.9
21(7)	91.8	46.8	5.1	9.2	3.9	-	6.4	71.3
35(21)	86.1	41.8	4.3	7.7	7.5	-	7.2	68.5
49(35)	75.9	17.2	5.7	8.8	7.7	1.2	11.11	51.8
63(49)	81.6	23.7	7.9	7.2	6.9	3.6	10.57	63.3
80(66)	67.5	16.0	6.9	10.0	6.8	2.8	11.0	54.2

*Number in parentheses reflect days after treatment 2

Therefore, in the case which most nearly represents the proposed use, 35 days after treatment 1 and 21 days after treatment 2, 68.5% of the TRR has been identified.

Method 30B, which determines residues possessing the 2-cyclohexen-1-one moiety with the sulfur containing sidechain (see analytical methodology), was applied to the dichloromethane fraction derived from tomatoes which had received sethoxydim treatments 49 and 35 days before sampling. This fraction contained 75.9% of the TRR, 51.8% of which has been identified by TLC. Method 30B could account for 53.4% of the TRR by GC/FPD. However, according to LSC, 42% of the TRR was found in the final Method 30B solution.

An attempt was made to characterize the metabolites in the final aqueous phase. Because the levels of radioactivity were too low for identification by TLC or HPLC, the aqueous extracts from 3 samples were subjected to the analytical method 30B. The concentrations of DME and/or OH-DME in the samples were too low to be detected by GC using a FPD. However, LSC indicated that <3% of the TRR in the final aqueous extract consists of residues containing the cyclohexen-1-one moiety. The table below shows the levels of these residues in the final aqueous layer derived from tomatoes reflecting PHI's of 21-66 days.

LEVELS OF RESIDUES CONTAINING THE 2-CYCLOHEXEN-1-ONE MOIETY IN THE FINAL AQUEOUS FRACTION

Days	ppm	%TRR	LSC analysis after Method B ppm	%TRR
35(21)	0.07	5.9	0.01	0.8
63(49)	0.08	11.3	0.01	1.4
80(66)	0.04	18.9	0.01	2.86

The petitioner has shown that sethoxydim rapidly enters the plant and extensively translocates. Metabolism of sethoxydim yields a myriad of products of which 6 are identifiable. The metabolism of alfalfa was discussed in RCB's review of PP #3F2904 (memo of K. Arne, 6/26/85). The same metabolites or metabolites closely related to those found in tomatoes were found in alfalfa. Identifiable metabolites accounted for 54% of the TRR in alfalfa. A soybean metabolism study was also submitted with PP #3F2904 (memo of K. Arne, 6/26/85). In this study, 61% of the TRR consisted of 9 identifiable compounds, all of which were identical to, or related to the compounds identified in the tomato study. The metabolism of sethoxydim by sugarbeets was discussed in RCB's review of PP #3F2950 (memo of K. Arne, 2/2/84). In this study, >40% of the TRR consisted of 4 identifiable compounds, all of which were found in the tomato metabolism study.

RCB concludes that the nature of the residue in tomatoes is adequately understood. The residues of concern are sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety.

Animals

No new animal metabolism studies were submitted with this petition. However, the metabolism of ^{14}C-sethoxydim by lactating goats and poultry was extensively reviewed by K. Arne (PP #3F2904, memo of 6/26/85). Sethoxydim undergoes oxidation to the sulfoxide and sulfone, ring hydroxylation at the 5-position, de-ethoxylation of the imino group, and a Beckmann rearrangement to yield an oxazole. In addition to these transformations, which have previously been found in plants, demethylation to yield a "nor" series of compounds was found to occur in goats. The identified metabolites, including those of the "nor" series, are accounted for by the proposed analytical methodology. About 60% of the total radioactive residue in goat tissues (uncorrected for recovery) is accounted for by the analytical methodology, which does not identify and individually determine various metabolites, but converts metabolites containing the 2-cyclohexen-1-one moiety to substituted pentanedioic or OH-pentanedioic acid methyl esters (see Analytical Methodology) for GC analysis.

RCB concluded (PP #3F2904, memo of K. Arne, 6/26/85) that the nature of the residue in ruminants is adequately understood, provided that the petitioner submits reproductions of TLC's that were used to identify metabolites in liver and kidney. Further work may be necessary if these chromatograms do not support the petitioner's structural assignments.

A poultry metabolism study submitted with PP #3F2904 was found to be deficient because only 41% of the radioactivity in liver was identified. Also, the proposed methodology was capable of determining only 44% of the liver activity, 43% of the fat activity, and 64% of the muscle activity (PP #3F2904, memo of K. Arne, 6/26/85). RCB concluded in its 6/26/85 review of PP #3F2904 that nature of the residue in poultry was not adequately understood. That conclusion is reiterated in the present review.

Analytical Methodology

The petitioner has submitted a radioactive validation study of his proposed analytical methodology, Method 30B (the subject of a successful method trial on beef liver and soybeans, PP #2F2670, memo of K. Zee, 4/1/83) and has compared the results with a shortened version of this method.

Briefly, Method 30B consists of extracting the tomatoes with methanol, precipitating protein with $Ca(OH)_2$, partitioning the acidified filtrate with methylene chloride, concentration of the organic layer and oxidation of the residue with hydrogen peroxide in the presence of $Ba(OH)_2$ to give the substituted pentanedioic acids, and formation of the corresponding methyl esters (DME and DME-OH) with methanolic hydrogen chloride. The esters are then cleaned up on a silica gel column, and quantitated with GC using a FPD in the sulfur mode. Quantitation was achieved with the use of an internal standard, T-DME, in some of the field trials; the internal standard was not used in the radioactive validation studies.

In the shorter version, the partitioning of the acidified filtrate with methylene chloride following protein precipitation is omitted.

Tomatoes had been treated with 2 applications of C^{14}-sethoxydim at a rate of 0.5 lb a.i./A. The tomatoes were picked 63 days after the first treatment (49 days after the 2nd treatment).

The total radioactive residue (TRR) on the tomatoes amounted to 0.73 ppm sethoxydim equivalents (LSC). The tomatoes were analyzed by Method 30B and by the shortened version in which there was partitioning with dichloromethane after $Ca(OH)_2$ precipitation. The results of the parallel analyses are tabulated below.

Method	Method 30B ppm (equiv)	Method 30B %TRR	Shortened Method 30B ppm (equiv)	Shortened Method 30B %TRR
LSC	0.33	44.6	0.39	48.1
GC	0.37	50.0	0.44	54.3

Although there is slightly less loss with the shortened version, the limit of detection is only 0.2 ppm as compared to the 0.05 ppm limit of detection attainable with Method 30B. Therefore, the petitioner has elected to use Method 30B to determine residues of sethoxydim/metabolites in tomatoes.

The major loss of the TRR in Method 30B occurs in the partitioning step which is omitted in the shortened version. The data indicate that 26% of the TRR partitions into water and is not accounted for by the analytical methodology. However, these studies were conducted on samples which had been treated 63 and 49 days previously with sethoxydim. The submitted metabolism study indicates that partitioning of radioactive residues into water increases with the PHI, probably as a result of the formation of water soluble conjugates. Method 30B would be expected to be more efficient in determining residues under conditions which reflect the proposed use, namely a PHI of 20 days. In fact, the submitted metabolism study shows that with treatments 35 and 21 days before sampling, 86% of the TRR partitions into dichloromethane.

The following recoveries were reported using Method 30B.

Commodity	Fortification level (ppm)	Residue	Recovery	No. of analyses
Tomato	0.05-5.0	Poast®	62-102	12
	0.05-5.0	MSO	86-100	5
	0.05-5.0	5-OH-MSO_2	74-96	15
Tomato pulp (juice)	0.5	Poast®	58	1
	0.5	5-OH-MSO_2	76	1
Tomato puree	0.05-0.5	Poast®	62-64	2
		5-OH-MSO_2	64	2
Tomato paste	0.05-0.5	Poast®	62-76	2
		5-OH-MSO_2	62-84	2
Catsup	0.05-0.5	Poast®	74-76	2
		5-OH-MSO_2	82-84	2

Wet pomace	0.05-0.5	Poast®	60-64	2
		5-OH-MSO_2	52-58	2
Dry pomace	0.05-0.5	Poast®	50-70	2
		5-OH-MSO_2	54-64	2
Bell peppers	0.05-0.5	Poast®	60-86	5
	0.05-5.0	MSO	94-100	2
	0.05-5.0	5-OH-MSO_2	68-94	6
Eggplant	0.05-0.5	Poast®	70-94	2
	0.05-10.0	MSO	87-94	3
	0.05-10.0	5-OH-MSO_2	74-76	4

The sensitivity of the method is claimed to be 0.05 ppm.

RCB concludes that adequate analytical methodology is available for regulatory purposes.

Residue Data

Storage Stability

Tomatoes and bell peppers were stored frozen for one year before analysis. Eggplant samples were stored frozen for 10 months before analysis. RCB does not consider it appropriate to translate storage stability data on soybeans and soybean forage (PP #3F2904, memo of J.H. Onley, 1/12/84) or on animal tissues (PP #2F2670, memo of M.J. Nelson, 7/23/82) to tomatoes, a highly acidic commodity. Therefore, the petitioner will need to submit storage stability data to cover the storage period of one year on tomatoes or some other acidic commodity (e.g. citrus, apples, etc.)

Tomatoes

The residue data on tomatoes were generated from field trials conducted in the states of MI, MN, NJ, VA, FL, TX, MS, WI, and CA. These states encompass the major tomato growing regions in the US.

In the CA trials, 2 applications of either 0.5 + 0.3 lb. a.i./A or 0.5 + 0.5 lb. a.i./A were made to tomatoes. Treatment intervals ranged from 7-46 days. PHI's of 13-67 days were observed. The remaining tomato trials involved 1-3 applications at a rate of 0.3 lb. a.i./A with treatment intervals ranging from 1-87 days. PHI's of 10-67 days were observed in these trials. The maximum proposed application rate consists of multiple applications which are not to exceed a total of 0.9 lb. a.i./A per season and a 20 day PHI.

The tomato residue data are tabulated below.

Dosage (lb. a.i./A per season)	PHI (days)	Total residue--DME + DME-OH, ppm *Highest residue site, PHI
0.3-0.6	10	2.31
	20-22	<0.10-1.61 *MI, 21 days
	29-41	<0.10-1.00 *MI, 31 days
0.8-1.0	10	3.37 *VA
	13	<0.10 *CA
	20-25	<0.11-1.24 *VA, 20 days
	29-67	<0.10-0.87 *WI, 31 days

Although the proposed use allows application by air equipment (except in CA), there is no indication that any of the data reflect application by air equipment. The petitioner should specify the method of application used in his field trials. If aerial application was not used, the petitioner has the option of submitting residue data which reflect aerial application or of restricting application to ground equipment only in a revised Section B/label.

Bell Peppers

The residue data on bell peppers were generated from field trials conducted in MI, NJ, NC, FL, TX, MS, and CA. These states encompass the major bell pepper growing regions of the US.

The residue data reflect 1-3 applications at a rate of 0.3 or 0.5 lb. a.i./A. The total amount of Poast® applied per acre per season was 0.3-1.0 lb. a.i./A. PHI's of 8-49 days were observed. Treatment intervals ranged from 10-57 days. The maximum proposed application rate permits multiple applications not exceeding a total of 0.9 lb. a.i./A per season with a 20 day PHI.

The bell pepper residue data are tabulated below.

Dosage lb. a.i./A per season	PHI (days)	Total Residue--DME + DME-OH, ppm *Highest residue site, PHI
0.3-0.6	18-22	<0.29-1.25 *NJ, 20 days
	28-49	<0.19-<0.61 *NJ, 49 days
0.9-1.0	18-22	0.35-1.08 *TX, 18 days
	8	2.6-3.7 *CA
	49	0.34

Although the proposed use allows application by air equipment (except in CA), there is no indication that any of the data reflect application by air equipment. The petitioner should indicate whether aerial application was used in his field trials. If aerial application was not used, the petitioner has the option of submitting residue data which reflect aerial application or of restricting application to ground equipment only in a revised Section B/label.

Eggplant

The residue data were generated from field trials conducted in NJ and SC. The residue data reflect 2-3 applications at a rate of 0.3 lb. a.i./A. PHI's of 15-49 days were observed. Treatment intervals ranged from 10-36 days. The maximum proposed use on fruiting vegetables consist of multiple applications not to exceed 0.9 lb. a.i./A. A PHI of 20 days would be imposed.

The eggplant residue data are tabulated below.

Dosage lb. a.i./A per season	PHI	Total residues--DME + DME-OH, ppm *Highest residue site
0.6	15	1.5-2.5 *SC
	32-49	<0.10 *NJ
0.9	22	1.4-2.0 *SC
	32-49	<0.10-0.20 *NJ

Tomato Processing Study

Tomatoes from the field trials were composited and processed to yield tomato pulp (juice, 4.4% solids), tomato puree (8.5% solids), tomato paste (33% solids) and catsup. The residue levels of sethoxydim/metabolites in the various tomato processing fractions are tabulated below.

Commodity	Total residues--DME + DME-OH (ppm)	Concentration factor
Tomatoes	0.52	1.0
Juice	0.43	0.8
Puree	0.64	1.2
Paste	2.98	5.7
Catsup	0.55	1.1
Wet pomace	0.46	0.9
Dry pomace	1.10	2.1

No description of the fractionating process was provided. Therefore RCB is unable to determine whether the processing study reflected common commercial practice. The petitioner will need to provide details of his fractionation study. At this time RCB is unable to judge whether the proposed food and feed additive tolerances are adequate.

In any case, the petitioner should submit a revised Section F in which he proposes a tolerance for fruiting vegetables and food/feed additive tolerances on "Tomato products, concentrated" and tomato pomace, dried. The proposed tolerance for tomato puree should be deleted. The proposed tolerance should reflect the residue levels found in the commodity bearing the highest residues, i.e. tomato paste.

Meat, Milk, Poultry, and Eggs

Meat and Milk

Up to 25% of the diet of beef and dairy cattle may be composed of dry tomato pomace. The petitioner has submitted feeding studies which were discussed in RCB's review of PP #3F2904, amendment of 3/12/85 (memo of K. Arne, 6/26/85). However, RCB at this time can make no estimate on the transfer of residues resulting from the proposed use to meat and milk until our questions on the nature of the residue have been satisfied (PP #3F2904, memo of K. Arne, 6/26/85).

Poultry and Eggs

Tomato pomace is a poultry feed item. Until deficiencies in the poultry metabolism study have been resolved (PP # 3F2904, memo of K. Arne, 6/26/85), RCB will defer its conclusions on the transfer of residues to poultry and eggs from the proposed use.

Other Considerations

Neither Codex, Mexico, nor Canada has established a tolerance for residues of sethoxydim/metabolites on fruiting vegetables. Therefore there will be no compatibility problem.

Attachment 1 (Codex sheet)
Attachment 2 Structures and Abbreviations of Poast and its Related Reference Standards
cc: Circu, EEB, EAB, Deyrup, 5F3284/5H5475, R.F., PMSD/ISB, FDA
RDI:JHOnley:10/3/85:RDSchmitt:10/3/85
TS-769:RCB:CM#2:RM810:X7484:CDeyrup:cd:10/3/85

Attachment 1

INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL Sethoxydim (Poast)

CCPR NO. [illegible]

PETITION NO. 5F3284

Reviewer: Deyrup

Codex Status

[/] No Codex Proposal
Step 6 or above

Residue (if Step 9): ______

Crop(s)	Limit (mg/kg)

Proposed U.S. Tolerances

Residue: parent plus metabolites containing 2-cyclohexene-1-one moiety

Crop(s)	Tol. (ppm)
Fruiting Veg	4.0
Tomato Puree	8.0
Tomato Paste	24.0
Dry Tomato Pomace	12.0

CANADIAN LIMIT

Residue: ______

Crop	Limit (ppm)

MEXICAN TOLERANCIA

Residue: ______

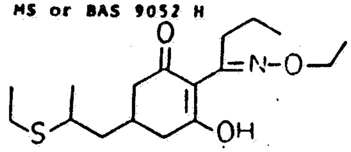
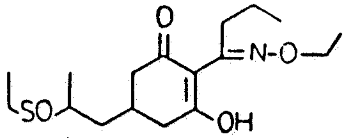
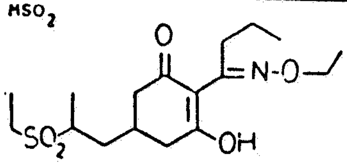
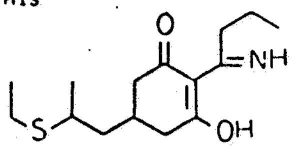
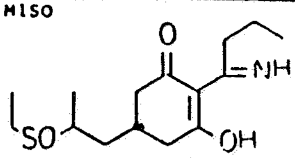
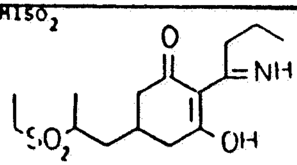
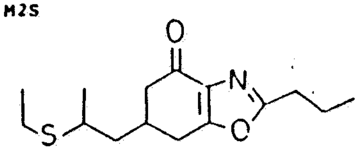
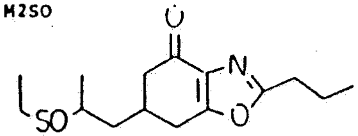
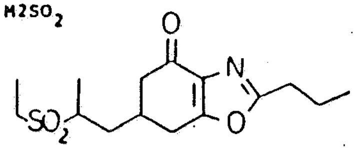
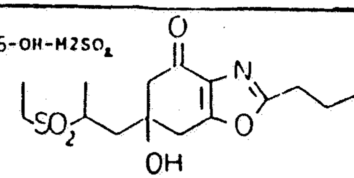
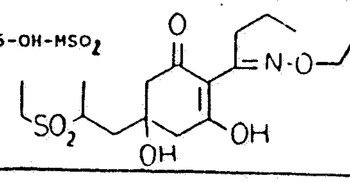
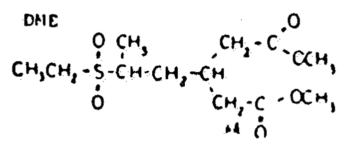
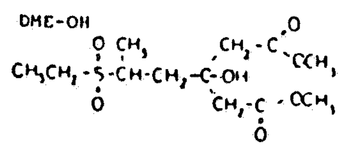
Crop	Tolerancia (ppm

NOTES:

Page ____ of ____

ATTACHMENT 2

STRUCTURES AND ABBREVIATIONS OF POAST AND ITS RELATED REFERENCE STANDARDS

MS or BAS 9052 H 	2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
MSO 	2-[1-(ethoxyimino)butyl]-5-[2-(ethylsulfinyl)propyl]-3-hydroxy-2-cyclohexen-1-one
MSO_2 	2-[1-(ethoxyimino)butyl]-5-[2-(ethylsulfonyl)propyl]-3-hydroxy-2-cyclohexen-1-one
MIS 	2-[1-(imino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
MISO 	2-[1-(imino)butyl]-5-[2-(ethylsulfinyl)propyl]-3-hydroxy-2-cyclohexen-1-one
$MISO_2$ 	2-[1-(imino)butyl]-5-[2-(ethylsulfonyl)propyl]-3-2-cyclohexen-1-one
M2S 	6-[2-(ethylthio)propyl]-6,7-dihydro-2-propyl-4(5H)-benzoxazolone
M2SO 	6-[2-(ethylsulfinyl)propyl]-6,7-dihydro-2-propyl-4(5H)-benzoxazolone
$M2SO_2$ 	6-[2-(ethylsulfonyl)propyl]-6,7-dihydro-2-propyl-4(5H)-benzoxazolone
6-OH-$M2SO_2$ 	6-[2-(ethylsulfonyl)propyl]-6-hydroxy-6,7-dihydro-2-propyl-4(5H)-benzoxazolone
5-OH-MSO_2 	2-[1-(ethoxyimino)butyl]-5-[2-(ethylsulfonyl)propyl]-3,5-dihydroxy-2-cyclohexen-1-one
DME 	3-[2-(ethylsulfonyl)propyl]-pentanedioic acid dimethyl estur
DME-OH 	3-[2-(ethylsulfonyl)propyl]-3-hydroxy pentanedioic acid dimethyl ester