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

JAN 29 1988

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP#8F3577/EPA Reg. No. 7969-58
Poast^{R} Herbicide for Use In or On Celery, Head Lettuce, Leaf Lettuce and Spinach.
MRID No.s 403757-01, through 403757-04. RCB No. 2945.
Evaluation of Analytical Method and Residue Data.

FROM: Michael T. Flood, Ph.D., Chemist MTF
Tolerance Petition Section I
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C)

TO: Robert J. Taylor/Vickie K. Walters, PM#25
Fungicide-Herbicide Branch
Registration Division (TS-767C)

and

Toxicology Branch
Hazard Evaluation Division (TS-769

THROUGH: Charles L. Trichilo, Ph.D., Chief
Residue Chemistry Branch
Hazard Evaluation Division (TS-769C)

BASF Corporation Chemical Division requests the establishment of tolerances for residues of the herbicide Sethoxydim [2-[1-(ethoxyimino)butyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one] and its metabolites containing the 2-cyclohexen-1-one moiety (calculated as the herbicide) in or on the following raw agricultural commodities (racs):

Celery	1.00 ppm
Head Lettuce	1.00 ppm
Leaf Lettuce	1.00 ppm
Spinach	3.00 ppm

The registration of Poast^{R} Herbicide, EPA Reg. No. 7969-58, would be amended by this petition.

Tolerances have been established in or on the following racs under 40 CFR 180.412: alfalfa forage and alfalfa hay (40ppm); cottonseed (5 ppm); flaxseed (5 ppm); flax straw (2 ppm); peanut hulls (5 ppm); peanuts (25 ppm); soybean hay and

soybeans (10 ppm); sugar beets, roots (0.1 ppm); sugar beets, tops (3 ppm); and sunflower seeds (7 ppm). A tolerance of 2.0 ppm has been established under the same section for meat, fat, and meat byproducts of cattle, goats, hogs, horses, poultry and sheep. The tolerances for eggs and milk are 0.5 and 0.05 ppm, respectively.

Conclusions.

1. The nature of the residue in plants and animals is adequately understood. The residue which is regulated consists of parent plus metabolites containing the 2-cyclohexene moiety (calculated as parent).

2. Adequate analytical methods are available for enforcement. The method used for this petition is a minor variant of Method No. 30, which underwent a successful method trial for soybeans, milk and liver. Method No. 30 appears in the Pesticide Analytical Manual, Volume II (PAM II) as Method I.

3. Sethoxydim and its metabolites are not recovered using any of the four multiresidue protocols of PAM I.

4a. The proposed tolerance of 1.0 ppm for combined residues of sethoxydim and its metabolites in or on celery is appropriate, based on the data received. However, we note that the whole rac, which in this case includes the leaves, must be analyzed. The petitioner should confirm that this was indeed the case.

4b. The proposed tolerance of 1.0 ppm in or on head lettuce is appropriate, based on the data received. However, the petitioner should verify that the whole rac was actually analyzed. The rac in this case includes all wrapper leaves except those that are obviously wilted or decomposed.

4c. The proposed tolerance of 1.0 ppm in or on leaf lettuce (including endive) is not adequate. The petitioner should submit a revised Section F proposing a tolerance of 2.0 ppm. Alternatively, additional field trials should be conducted in Arizona, California and Oregon. The trials should include applications at exaggerated rates.

4d. The proposed tolerance of 3.0 ppm in or on spinach is not adequate. The petitioner should submit a revised Section F proposing a tolerance of 4.0 ppm.

5. Because celery, lettuce and spinach are not animal feed

items, no sethoxydim residue in animal products is expected from the proposed use (40 CFR 180.6(a)(3)).

6. An International Residue Limit (IRL) Status Sheet is appended to this review. There are no established IRLs for sethoxydim or its metabolites on celery, lettuce or spinach. Therefore, the compatibility of tolerance levels does not arise.

Recommendations

RCB recommends against establishment of the proposed tolerances for reasons stated in Conclusions 4a, b, c and d:

4a. The petitioner should confirm that the analyses for celery were based on the whole rac, which includes the leaves in this case.

4b. The petitioner should confirm that the analyses for head lettuce were based on the whole rac, which includes all wrapper leaves except those that are obviously wilted or decomposed.

4c. The petitioner should submit a revised Section F proposing a tolerance of 2.0 ppm for the combined residues of sethoxydim and its metabolites in or on leaf lettuce. Alternatively, additional field trials should be conducted in Arizona, California and Oregon. The trials should include applications at exaggerated rates.

4d. The petitioner should submit a revised Section F proposing a tolerance of 4.0 ppm for the combined residues of sethoxydim and its metabolites in or on spinach.

Detailed Considerations

Manufacture and Formulation

The manufacturing process is outlined in PP#0G2396 (E. Zager, memo of 12/4/80). Technical sethoxydim has a minimum purity of 95%. The major impurities are listed in E. Zager's review. No residue problems with the impurities are anticipated.

Poast^{R} Herbicide is an emulsifiable concentrate containing 20% sethoxydim (1.52 lb ai/gal).

Proposed Use

Poast^{R} Herbicide is a selective broad spectrum herbicide for control of annual and perennial grass weeds. Single application rates range from 1/2 pt. to 1 1/2 pts./A (0.1-0.3 lbs ai/A) and vary with the type of grass to be controlled and the region of

the country. A nonphytotoxic oil concentrate should always be added to the spray tank at a level equivalent to 2 pts/A. In addition, a urea ammonium nitrate solution or an ammonium sulfate solution may also be added depending on the particular weed to be controlled.

Application is made by ground equipment only.

Do not apply more than a total of 3 pints per acre per season (0.6 lbs ai/A/season).

Do not apply within 30 days of harvest to celery and head lettuce. Do not apply within 15 days of harvest to leaf lettuce and spinach.

Nature of the Residue

No new metabolism studies have been submitted in this petition. Studies have been previously submitted and reviewed for soybeans (PP#0G2396, memo of E. Zager, 12/4/80; PP#3F2904, memo of K. Arne, 6/26/85), alfalfa (PP#3F2904, memo of K. Arne, 6/26/85), sugarbeets (PP#3F2950/FAP#3H5413, memo of K. Arne, 2/2/84) and tomatoes (PP#5F3284/FAP#5H5475, memo of C. Deyrup, 10/9/85).

The structure of sethoxydim is shown in Attachment 1.

Metabolism of sethoxydim in plants is complex. The following reactions are known to occur:

1. The sulfur atom is oxidized to the sulfoxide and sulfone. The sulfoxide is frequently the major metabolite (Attachment 1), but its concentration as well as the concentrations of the other metabolites are dependent on PHI.

2. The ring is hydroxylated in the 5-position.

3. The imino group is de-ethoxylated.

4. An oxazole is formed as a result of a Beckman rearrangement.

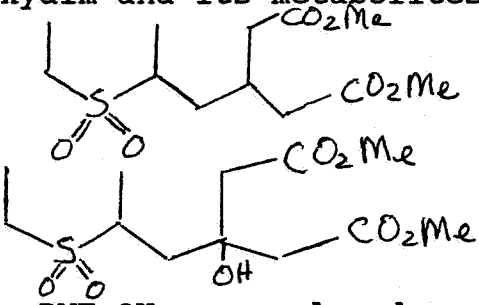
Metabolism of sethoxydim in animals is similar to that in animals, but -- at least in goats -- sethoxydim may also be demethylated to form an analogous series of "nor" metabolites (Attachment 1) (PP#3F2904, memo of K. Arne, 6/26/85).

The nature of the residue in plants and animals is adequately understood. The residue of concern consists of parent plus metabolites containing the 2-cyclohexene moiety (calculated as parent).

Analytical Methods

Residues in/on crops of this petition were analyzed by Analytical Method No. 30G, January 1985. The method is an addendum to BWC Agricultural Chemicals Method No. 30 entitled "Determination of BAS 9052 H and Its Metabolite Residues in Alfalfa Forage and Soybean Forage" originally submitted in PP#3F2904. The authors are R.C. Paulick, L.A. Sears and E.J. Panek. No claim of confidentiality has been made for this method.

Sethoxydim and its metabolites are oxidized to



"DME"

or to

"DME-OH" (from the 5-OH-metabolite)

DME and /or DME-OH are analyzed on a gas chromatograph equipped with a sulfur specific flame-photometric detector (FPD).

Samples are extracted directly with methanol. After a calcium hydroxide precipitation step, the aqueous methanol extracts are concentrated and oxidized with basic hydrogen peroxide. The oxidation products are then esterified (H^+, MeOH) and purified by silica gel chromatography and solid phase extraction cleanup (C_{18} column) prior to analysis by GC. For celery lettuce and spinach the limit of quantitation is 0.05 ppm.

Percent recoveries were obtained at levels ranging from 0.05-2.5 ppm. Samples were fortified with sethoxydim and the metabolites MSO and 5-OH-MSO_2. Recoveries are given in Tables 1a,b,c,and d.

Table 1a
Celery

	Ppm Added	Percent Recovery
Sethoxydim	0.05, 0.10, 0.50 1.0, 2.0, 2.5	90±10% (n = 8)
MSO	same	91±12% (n = 6)
5-OH-MSO_2	same	87±11% (n = 14)

Table 1b
Head Lettuce

Sethoxydim	0.05, 0.50 1.0, 2.5	86±9%	(n = 8)
MSO	same	81±7%	(n = 9)
5-OH-MSO_2	same	80±7%	(n = 17)

Table 1c
Leaf Lettuce

Sethoxydim	0.05, 0.50, 1.0	82±4%	(n = 5)
MSO	0.05, 0.50 1.0, 2.5	81±6%	(n = 5)
5-OH-MSO_2	0.05, 0.50 1.0, 2.5	83±14	(n = 9)

Table 1d
Endive

	Ppm Added	Percent Recovery	
Sethoxydim	0.05, 1.0	80±6%	(n = 2)
MSO	0.05, 0.50	82±3%	(n = 2)
5-OH-MSO_2	0.05, 0.50, 1.0	80±7%	(n = 4)

Table 1e
Spinach

Sethoxydim	0.05, 0.50, 1.00 2.50, 5.00	90±8%	(n = 11)
MSO	0.05, 0.10, 0.50 1.00, 2.50, 5.00	87±12%	(n = 12)
5-OH-MSO_2	0.05, 0.10, 0.50 1.00	87±13%	(n = 16)

It should be noted that the GLC method has been tested against known residues obtained by radioactive counting of sethoxydim/metabolites in or on soybean forage, hay and seeds

and alfalfa hay. Methanol or methanol/water extracts 63-93% of the total radioactivity. The lower recoveries were obtained using weathered samples (PP#3F2904, memo of K. Arne, 6/26/85). For weathered sampes the analytical method will yield low values of the total toxic residue even when the residue is corrected for recoveries obtained in the fortification studies.

BASF's Analytical Method No. 30, which differs from 30G in that a dichloromethane partition replaces the C_{18} cleanup, underwent a successful method trial for soybeans, milk and liver (PP#2F2670, K.F. Kissler, memo of 4/1/83). Method 30 appears as Method I in PAM II. A MTO has been requested for the same method with the "nor" metabolites of sethoxydim (PP#3F2904, memo of S. Malak, 8/15/86). In the meantime, the petitioner has obtained acceptable recoveries in analyses of these metabolites.

Sethoxydim and its metabolites were analyzed using the four FDA multiresidue protocols of PAM I (PP#6F3452, memo of M.Nelson, 9/22/87). The petitioner was unable to achieve acceptable recoveries using these methods and claims that the labile nature of these compounds makes them very difficult to analyze without any derivatization procedures.

Residue Data

Storage Stability. Storage stability data are available for soybeans (PP#3F2904 -- -15°C, 24 months), soybean forage (PP#3F2904 -- -15°C, 27 months), tomatoes (PP#5F3284, "frozen", 15 months), strawberries (PP#6F3383, frozen, 31 months) and potatoes (PP#3529, frozen, 26 months). The storage stability data on soybean forage has been extended to 53 months. Recoveries (corrected) were 87% for parent and 82% for MSO.

A storage stability study has been completed for succulent peas. The report (A8736) was completed July, 1987 but has not as yet been made available to RCB. After 52 months at temperatures < -5°C, recoveries of sethoxydim equivalents (as DME and DME-OH) reportedly averaged 101%.

Storage stability data are adequate to support the submitted residue data.

Residue data are presented in four reports:

Single, Y.H., Magnitude of the Residue of Sethoxydim and Metabolites in Celery. BASF Document No. 87/5052. May, 1987. The report has been assigned MRID No. 403757-01.

Single, Y.H., Magnitude of the Residue of Sethoxydim and Metabolites in Head Lettuce. BASF Document No. 87/5049. June, 1986. The report has been assigned MRID No. 403757-02.

Single, Y.H., Magnitude of the Residue of Sethoxydim and Metabolites in Leaf Lettuce and Endive. BASF Document No. 87/5043. February, 1987. The report has been assigned MRID No. 403757-03.

Single, Y.H., Magnitude of the Residue of Sethoxydim and Metabolites in Spinach. BASF Document No. 87/5405. The report has been assigned MRID No. 403757-04.

No claim of confidentiality is made for any of the information in these reports.

Celery. Twelve field trials were conducted in California, Florida, Michigan, New Jersey, Mississippi and Texas. In 1983 California, Florida, and Michigan accounted for 47% of the total U.S. celery production (Agricultural Statistics, 1985).

After harvest, samples were frozen and shipped to BASF Corporation Chemicals Division in New Jersey where they were processed and then shipped in dry ice to Nippon Soda Co., Ltd. in Japan for analysis. A maximum of 46 months elapsed between harvest and analysis.

Data are summarized in Table 2.

Table 2
Celery Residue Data

Test Site	Treatment Dates	Application Rate (lb ai/A)	PHI	Sethoxydim Equivalents DME(ppm)	DME-OH(ppm)
Dinuba, CA	8/29, 10/23/85	2 x 0.3	30	0.42	<0.05
Salinas, CA	4/22, 6/10/83	2 x 0.3	31	<0.05	<0.05
Soledad, CA	4/22, 6/10/83	2 x 0.3	28	<0.05	<0.05
Soledad, CA	6/13, 7/29/85	2 x 0.3	33	0.06	<0.05
Belle Glade, FL	3/29, 4/25/83	2 x 0.3	28	<0.05	<0.05
Belle Glade, FL	4/12, 5/17/83	2 x 0.3	29	0.12	<0.05
Belle Glade, FL	4/22, 5/17/83	2 x 0.3	29	0.10	<0.05
Belle Glade, FL	4/21, 5/6/86	2 x 0.4	30	0.21±0.03	<0.05
		2 x 0.8	30	0.33±0.14 (max = 0.49)	<0.05
Haslett, MI	7/9, 7/31/83	2 x 0.3	32	0.08	<0.05
Greenville, MS	5/6, 5/25/83	2 x 0.3	28	0.34	<0.05
East Brunswick NJ	6/23, 7/26/83	2 x 0.3	30	<0.05	<0.05
Weslaco, TX	12/8/84, 2/9/85	2 x 0.3	30	0.50	<0.05

No 5-OH metabolites were detected (as DME-OH) in the celery residue studies.

Based on the submitted data, the proposed tolerance of 1.0 ppm is appropriate. We note, however, that the analytical sample must include the leaves -- i.e., the whole rac is to be considered for analysis [40 CFR 180.1(j)]. The petitioner should verify that the analyses were based on the whole rac.

Head Lettuce. Twenty-one field trials were conducted in ten states: Arizona, California, Florida, Massachusetts, Michigan, Minnesota, New Jersey, Oregon, Texas and Washington. In 1983, Arizona, California and Florida were the three largest lettuce producing states, accounting for over ninety percent of the U.S. lettuce production (Agricultural Statistics, 1985. No distinction is made between head and leaf lettuce).

Samples were treated analogously to celery samples. A maximum of 43 months elapsed between harvest and analysis of head lettuce samples. Data are summarized in Table 3.

Table 3
Head Lettuce Residue Data

Test Site	Treatment Dates	Application Rate (lb ai/A)	PHI	Sethoxydim Equivalents DME(ppm)	DME-OH(ppm)
Litchfield Park, AZ	11/15, 12/6/85	2 x 0.3	31	0.25	<0.05
Litchfield Park, AZ	11/15, 12/6/85	2 x 0.3	31	0.19	<0.05
Litchfield Park, AZ	11/15, 12/6/85	2 x 0.3	31	0.19	<0.05
Dinuba, CA	9/27, 10/30/85	2 x 0.3	30	0.16±0.02 (n = 3)	<0.05
Chualar, CA	4/7, 5/3/84	2 x 0.3	12	0.35	<0.05
Santa, Maria, CA	4/27, 5/3/84	2 x 0.3	31	0.15	<0.05
Soledad, CA	4/20, 5/26/83	2 x 0.3	30	0.17	<0.05
Soledad, CA	8/10, 8/29/85	2 x 0.3	14	0.21, 0.13	<0.05
Belle Glade FL	3/29, 4/4/83	2 x 0.3	30	<0.05	<0.05
Belle Glade FL	4/25, 5/2/83	2 x 0.3	30	<0.05	<0.05
Amherst, MA	6/10, 6/30/85	2 x 0.3	31	0.15	<0.05
Amherst, MA	6/10, 6/30/85	2 x 0.3	31	<0.05	<0.05
Haslett, MI	5/17, 6/7/83	2 x 0.3	30	0.41	<0.05
Hollandale, MN	7/7, 7/25/85	2 x 0.3	30	<0.05	<0.05
Centerton, NJ	6/6, 6/23/83	2 x 0.3	31	<0.05	<0.05
Great Meadows, NJ	6/16, 6/29/83	2 x 0.3	28	<0.05	<0.05
Corvallis, OR	8/1/84	1 x 0.5	19	0.28, 0.25	<0.05
Scholls, OR	7/16, 8/15/83	2 x 0.3	30	0.15	<0.05
Uvalde, TX	3/13, 5/7/84	2 x 0.3	22	0.10	<0.05
Weslaco, TX	12/14/83, 1/12/84	2 x 0.3	32	0.20	<0.05
Prosser, WA	7/18, 8/12/83	2 x 0.3	28	<0.05	<0.05

It is apparent that the data from Arizona refer to three samples from one field trial rather than independent samples from three field trials.

No 5-OH metabolites were detected (as DME-OH).

Based on the submitted data, the proposed tolerance of 1.0 ppm is appropriate. However, the petitioner should verify that the whole rac was actually analyzed. This means that only obviously wilted or decomposed wrapper leaves may be removed prior to analysis.

Leaf lettuce and Endive. Fifteen field trials were conducted in nine states: Arizona, California, Florida, Massachusetts, Michigan, Minnesota, New Jersey, Oregon and Washington.

Samples were treated analogously to celery and head lettuce samples. A maximum of 44 months elapsed between harvest and analysis of leaf lettuce samples and 33 months between harvest and analysis of endive samples. Data are summarized in Table 4. Samples from the two field trials at Amherst, MA were received "cool but not frozen" about 1 1/2 months after sampling. These data are included in Table 4 but are noted with an asterisk (*).

Table 4
Leaf Lettuce and Endive Residue Data

Test Site	Treatment Dates	Application Rate (lb ai/A)	PHI	Sethoxydim Equivalents DME(ppm)	DME-OH(ppm)
Litchfield Park, AZ	11/15, 12/22/85	2 x 0.3	15	0.72, 0.81	<0.05
Litchfield Park, AZ	11/15, 12/22/85	2 x 0.3	15	0.53	<0.05
Santa Maria, CA	4/23/83	1 x 0.3	36	<0.05	<0.05
Soledad, CA	4/20/83	1 x 0.3	39	<0.05	<0.05
Soledad, CA	4/4, 5/1/84	2 x 0.3	16	0.23	<0.05
Belle Glade FL	3/2, 3/16/83	2 x 0.3	14	0.10	<0.05
Gainesville, FL (endive)	3/29/84	1 x 0.3	30	<0.05-0.17 (n = 4)	<0.05
Zellwood, FL (endive)	4/10, 4/25/85	2 x 0.3	29	<0.05	<0.05
Amherst, MA*	6/10, 6/27/83	2 x 0.3	15	0.19	<0.05
Amherst, MA*	6/10, 6/27/83	2 x 0.3	15	0.23	<0.05
Haslett, MI	5/17, 6/15/83	2 x 0.3	15	0.28	<0.05
Hollandale, MN	7/7, 7/18/83	2 x 0.3	18	0.14	<0.05
Great Meadows, NJ	6/29, 7/14/83	2 x 0.3	13	<0.05	<0.05
Scholls, OR	7/16, 8/19/83	2 x 0.3	14	0.54	<0.05
Prosser, WA	6/23, 7/7/83	2 x 0.3	14	0.36	<0.05

As in the head lettuce residue studies, it is apparent that the residue data from Arizona are from one field trial only.

No 5-OH metabolites were detected (as DME-OH).

In this case we do not consider the proposed tolerance to be adequate. When the highest residue value from the Arizona field trial is corrected for recovery (82±10%), the proposed tolerance is exactly met. (If the undetected 5-OH-metabolites are arbitrarily given a value of 0.05 ppm and added to 0.81 ppm, the corrected residue exceeds the tolerance.) We note that there

are no residue data from exaggerated applications. A more appropriate tolerance would be 2.0 ppm. The petitioner should submit a revised Section F proposing this tolerance. Alternatively, additional field trials should be conducted in Arizona, California and Oregon. The trials should include applications at exaggerated rates.

Spinach. Eighteen field trials were conducted in ten states: Arkansas, California, Colorado, Mississippi, New Jersey, New York, Oklahoma, Texas, Tennessee and Washington. No production data are listed in Agricultural Statistics; but according to Foods and Food Production Encyclopedia, 1982 edition, California produces over 50% of the U.S. spinach followed in order by Texas, Arkansas, Oklahoma, Maryland/Virginia, New Jersey and Colorado.

Samples were harvested and treated in similar fashion to the other crops of this petition. A maximum of 43 months elapsed between harvest and analysis of spinach samples. Results are summarized in Table 5.

Table 5
Spinach Residue Data

Test Site	Treatment Dates	Application Rate (lb ai/A)	PHI	Sethoxydim Equivalents DME(ppm)	DME-OH(ppm)
Fayetteville, AR	4/10, 5/3/85	2 x 0.3	14	0.68±0.08 (max = 0.77)	0.14±0.03 (max = 0.18)
Dinuba, CA	11/13, 12/18/84	2 x 0.3	15	0.67±0.08 (max = 0.76)	0.05
Escalon, CA	8/14, 9/4/86	2 x 0.3	12	2.6	0.24, 0.42
			12	2.2	0.25,0.29
	8/14, 9/16/86	2 x 0.3	33	1.1	0.13
Greenfield, CA	3/19, 4/10/85	2 x 0.3	14	0.67±0.11 (max = 0.78)	0.07±0.02 (max = 0.09)
Porterville, CA	3/5, 12/29/86	2 x 0.3	13	0.15	<0.05
Watsonville, CA	6/10/86	1 x 0.3	10	0.23±0.03	<0.05
	5/29, 6/10/86	1 x 0.3	10	0.34±0.03	0.05
Severence, CO	6/26, 7/22/86	2 x 0.3	16	0.16	<0.05
			42	0.25	<0.05
Greenville, MS	5/6/83	1 x 0.3	14	0.24	<0.05

Bridgeton, NJ	10/2/86	1 x 0.3	14	0.17	<0.05
	10/2, 10/16/86	2 x 0.3	14	1.2	0.06
Bridgeton, NJ	10/7/86	1 x 0.3	14	<0.05	<0.05
	9/23, 10/7/86	2 x 0.3	14	1.2	0.06
Freeville, NY	6/18/86	1 x 0.3	14	0.22	<0.05
	5/30, 6/18/86	2 x 0.3	14	0.34	<0.05
Eakley, OK	5/2/86	1 x 0.3	10	0.82	0.06
	4/3, 5/2/86	2 x 0.3	10	0.97	0.05
Bells, TN	5/16/86	1 x 0.3	10	0.66	0.05
	4/14, 5/16/86	2 x 0.3	10	0.68	0.06
Donna, TX	11/26/86	1 x 0.3	12	0.72	<0.05
	10/6, 11/26/86	2 x 0.3	12	1.2	0.07
Uvalde, TX	1/9/86	1 x 0.3	14	1.2	0.07
	12/9/86, 1/19/87	2 x 0.3	14	1.4	0.07
Weslaco, TX	11/15/84	1 x 0.3	42	<0.05	<0.05
Prosser, WA	5/16/84	1 x 0.3	15	0.45	<0.05

In contrast to the residues found on the other crops of this petition, measurable levels of 5-OH metabolites were found in/on spinach. A high of 0.42 mg/kg was measured in the Escalon, CA trial. When this value is added to the 2.6 mg/kg determined for parent in the same trial, the proposed tolerance is equalled; when corrected for percent recoveries (88%), the tolerance is exceeded. The petitioner should therefore propose a tolerance of 4.0 ppm for the combined residues of sethoxydim and metabolites (revised Section F).

Residue data on sugarbeet tops are consistent with but not strictly comparable to the data submitted here. Data were obtained in seven states and Canada at a use level of 0.5 lbs ai/A and PHI 56-98 days. The maximum residue was 2.5 ppm (PP#6F3405, memo of V.F. Boyd, 4/1/87).

Meat, Milk, Poultry and Eggs

Because none of the racs of this petition is an animal feed item, no sethoxydim residues are expected in animal products from the proposed use (40 CFR 180.6(a)(3)).

Other Considerations

An International Residue Limit (IRL) Status Sheet is appended to this review. No IRL has been established for

residues of sethoxydim/metabolites in or on any of the racs of this petition. Therefore, compatibility of tolerance levels is not an issue.

Attachments: two

Attachment 1: Structures of Sethoxydim and Three of Its Typical Metabolites.

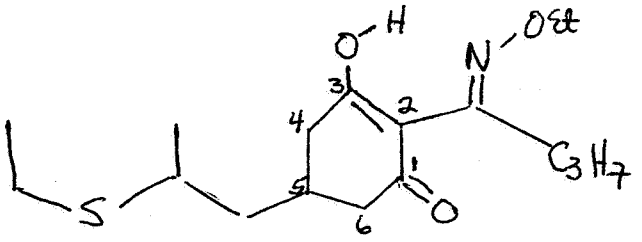
Attachment 2: International Residue Limit Status Sheet.

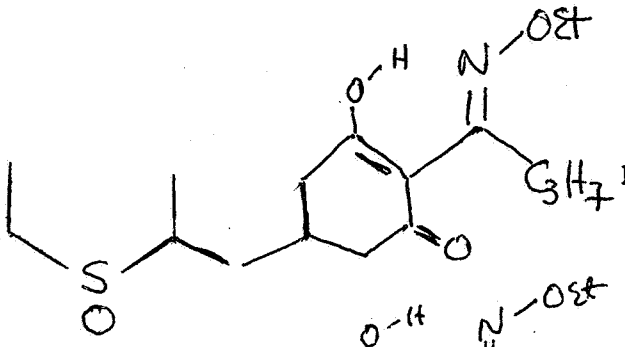
cc: Reviewer (Mike Flood), RF, Circu., TOX, PM#25, PP#8F3577, ISB,/PMSD(Eldridge).

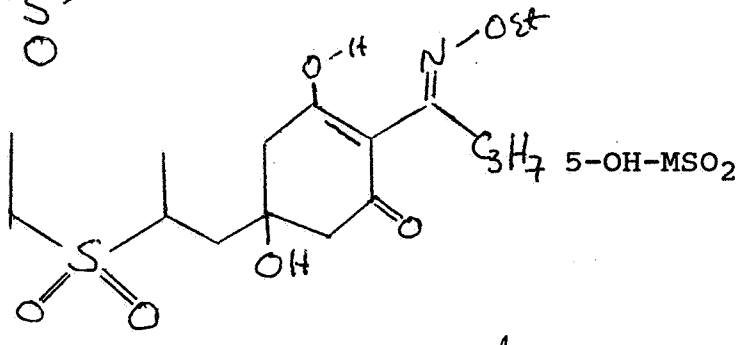
TS-769C:MTF:CM#2:Rm810:557-4362:mtf:01/26/88.
RDI:SectionHead:RSQuick:01/26/88:Deputy Chief:RDSchmitt:01/26/88.

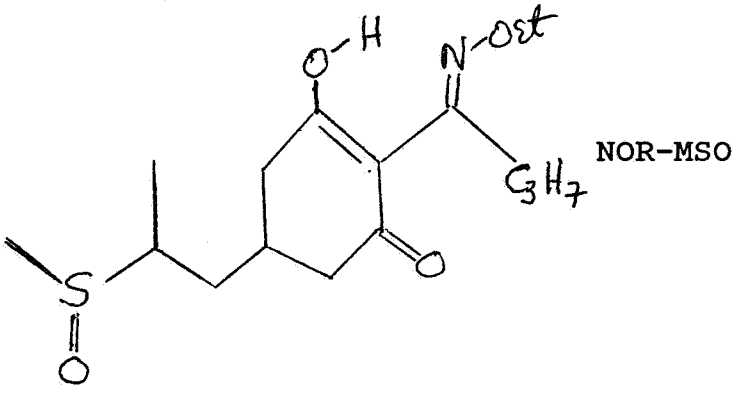
Attachment 1

Structures of Sethoxydim and Three of Its Typical Metabolites









Attachment II

INTERNATIONAL RESIDUE LIMIT STATUS

L. Shaw 11/16/87

CHEMICAL Sethoxydim

CODEX NO. ____

CODEX STATUS:

☑ No Codex Proposal Step 6 or above

Residue(if Step 8): ____

Crop(s)	Limit (mg/kg)

PROPOSED U.S. TOLERANCES:

Petition No. 8F3577

RCB Reviewer FLOOD

Residue: Sethoxydim and its metabolites containing the 2-cyclohexen-1-one moiety

Crop(s)	Limit (mg/kg)
Celery	1.0
Head Lettuce	1.0
Leaf Lettuce	1.0
Spinach	3.0

CANADIAN LIMITS:

☑ No Canadian limit (on above commodities)

Residue: parent and cyclohex-2-enone containing metabolites (parent-only for negligible residue tolerances.

Crop(s)	Limit (mg/kg)

MEXICAN LIMITS:

☑ No Mexican limit

Residue: ____

Crop(s)	Limit (mg/kg)

NOTES: