2-25-97

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

February 25, 1997

MEMORANDUM

SUBJECT: Metolachlor (108801) Reregistration Case No. 0001 Craven Replacement Data for Peanuts treated at layby, Safflower, including processed fractions; Storage stability data on tomato, potato, and soy processed fractions [MRID No. 43881701, 43881702, 43881703, 43944601; CB 16790, 17038; DP BARCODES: D222430, D224237]

FROM: Susan V. Hummel, Chemist
Chemistry Branch II - Reregistration Support
Health Effects Division [7509C]

THRU: Randolph B. Perfetti, Acting Chief
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TO: Michael S. Metzger, Chief
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Health Effects Division [7509C] and

Jane Mitchell/Walter Waldrop, PM#71
Reregistration Branch
Special Review and Reregistration Division [7508W]

Ciba Geigy Corporation has submitted data to replace studies conducted by Craven Laboratories, including field trial data on peanuts treated at layby; field trials on safflower, and data on safflower processed fractions. Storage stability data on tomato, potato, and soy processed fractions were also submitted. These data were reviewed by Dynamac Corporation under supervision of CBRS. The conclusions have been revised to reflect Agency policies.

The storage stability data submitted are adequate and will support the existing field trial data.

The field trial data submitted for peanuts reflect two applications of the EC formulation at 3 lb ai/A, the first preplant incorporated, followed by a treatment at layby. A 90 day PHI

was observed. The treatment regime followed reflects the 1x single and maximum seasonal application rate for metolachlor on peanuts. Additional studies were conducted at the 2x single and maximum seasonal application rate. Concurrent recovery data were provided for metolachlor hydrolysates, CGA-37913 and CGA-49751. Combined residues of metolachlor and its metabolites reported for peanut nutmeats are within the established tolerance of 0.5 ppm. Combined residues of metolachlor and its metabolites reported for peanut hay exceeded the established tolerance of 30 ppm, and ranged up to 40.5 ppm. Ciba Geigy indicates that they intend to reduce the maximum seasonal application rate to 4 lb ai/A and conduct additional field trials at that rate.

The Agency no longer considers peanut forage or hulls to be significant livestock feed items (Table 1, OPPTS 860.1000). Therefore, CBRS recommends that the established tolerances for residues of metolachlor and its metabolites listed under 40 CFR 180.36(a) in/on "peanut, forage and hay" be revised to "peanuts, hay" and that the current tolerance for "peanut, hulls" be revoked.

The submitted Craven replacement data on safflower processed commodities are adequate. Residues of metolachlor and its metabolites found after treatment at up to 5x the maximum application rate (1x rate = 3 lb ai/A) were non-detectable in safflower seed and the meal, crude and refined oil processed from the safflower seed bearing non-detectable residues.

- The following Craven replacement data remain outstanding.

    - All metolachlor end-use products with use directions on tree nuts (EPA Reg. Nos. 100-597, 100-673, 100-688, and 100-711) must be modified to specify a maximum of one application per year since non-Craven data support only a single application to tree nuts.

    - Data depicting metolachlor residues of concern in/on sweet corn (K+CWHR) following 3 lb ai/A preplant incorporated and 3 lb ai/A lay-by application of the EC and G formulations.

    - The 24(c) registrations for postemergence use on cotton (AZ83000500, NM86000400, OK86000300, and TX83001100) must be canceled. Alternatively, data depicting metolachlor residues of concern in/on cottonseed and cotton gin byproducts following postemergence application at 2 lb ai/A must be submitted. [See Table 1, OPPTS 860.1000]. Data for cotton forage are no longer required but data for cotton gin byproducts (commonly called gin trash) are now required.]

Attachment (to all copies): Dynamac review of MRIDs 43881701, 43881702, 43881703, 43944601

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RDI:RBP:02/25/97
7509C:RM:804:CM#2:SVH:svh:305-7689:02/25/97

METOLACHLOR
Shaughnessy No. 108801; Case 0001
(CBRS No. 16790; DP Barcode D222430)
(CBRS No. 17038; DP Barcode D224237)

Registrant's Response to Residue Chemistry Data Requirements

February 24, 1997

Contract No. 68-D4-0010

Submitted to:
U.S. Environmental Protection Agency
Arlington, VA

Submitted by:
Dynamac Corporation
The Dynamac Building
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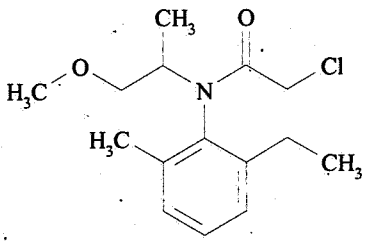
Rockville, MD 20850-3268

3

METOLACHLOR



ADDENDUM TO THE REREGISTRATION ELIGIBILITY DECISION:

RESIDUE CHEMISTRY CONSIDERATIONS

Shaughnessy No. 108801; Case 0001

(CBRS No. 16790; DP Barcode D222430)
(CBRS No. 17038; DP Barcode D224237)

BACKGROUND

In response to the Residue Chemistry Chapter of the Metolachlor RED (CBRS No. 10938, DP Barcode D185209, S. Hummel, 6/28/93), Ciba-Geigy Corporation has submitted data to replace data generated by Craven Laboratories concerning the magnitude of metolachlor residues of concern in/on peanut commodities (1995; MRID 43881701) and a replacement processing study for safflower (1995; MRID 43881702). In addition, supplemental storage stability data for beef muscle, corn oil, cottonseed and cottonseed oil (1995; MRIDs 43881703) and tomatoes, and the processed fractions of soybeans and potatoes (1996; MRID 43944601) have been submitted. These data are reviewed herein to assess their adequacy in fulfilling residue chemistry data requirements for metolachlor reregistration.

The qualitative nature of the residue in plants is adequately understood. The residues of concern in corn and soybeans are metolachlor and its metabolites, determined as the derivatives CGA-37913 and CGA-49751. The qualitative nature of the residue in animals is adequately understood. Metolachlor is rapidly metabolized and almost totally eliminated in the urine and feces of ruminants (goats), non-ruminants (rats), and poultry. Metolachlor *per se* was not detected in any of the tissues or excreta.

Tolerances for residues of metolachlor in/on food/feed and animal commodities are currently expressed in terms of the combined residues (free and bound) of the herbicide metolachlor [2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide] and its metabolites, determined as derivatives, 2-[(2-ethyl-6-methylphenyl)amino]-1-propanol and 4-(2-ethyl-6-

methylphenyl)-2-hydroxy-5-methyl-3-morpholinone, each expressed as the parent compound [40 CFR §180.368 (a), (b), and (c)]. There are no Codex MRLs for metolachlor residues. Therefore, no compatibility questions exist with respect to Codex MRLs.

Adequate methods are available for the purposes of data collection and tolerance enforcement for metolachlor residues in/on plant and animal commodities. The Pesticide Analytical Manual (PAM) Vol. II lists Method I, a GC method, for the determination of residues of metolachlor and its metabolites in/on plant commodities as the derivatives CGA-37913, using a Coulson electrolytic conductivity detector in the nitrogen mode, and CGA-49751, using a Dohrmann microcoulometric detector specific for chloride. Method II, a GC/MS method, is listed for determination of residues of metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, in animal commodities.

CONCLUSIONS AND RECOMMENDATIONS

Storage Stability

1a. The supplemental storage stability data are acceptable and may be used to partially satisfy reregistration requirements for OPPTS 860.1380. The data indicate that residues of the metolachlor metabolite derivative CGA-37913 are relatively stable under frozen storage conditions (-20 C) for at least 37 months in/on corn oil and cottonseed; 29 months in cottonseed oil; 25 months in/on potato wet peel and flakes; 24 months in/on soybean hulls and meal, and tomatoes; and 12 months in beef muscle. The data indicate that residues of the metolachlor metabolite derivative CGA-49751 are relatively stable under frozen storage conditions (-20 C) for at least 37 months in/on cottonseed and cottonseed oil; 25 months in/on potato wet peel and flakes; and 24 months in/on soybean hulls and meal, and tomatoes.

1b. Although no data were included in the current submission depicting the stability of the CGA-49751 in corn oil, previously submitted storage stability data (CB No. 8317, DP Barcode D166637, B. Cropp-Kohlligian, 4/16/92) indicated that this metabolite derivative was stable in corn oil stored at -15 C for up to 25 months. Data from the same study indicated that CGA-37913 was only stable in corn oil stored at -15 C for up to 102 days (~3 months); however, the current storage stability study indicates that residues of CGA-37913 are relatively stable under frozen storage conditions (-20 C) for up to 37 months. The registrant found no explanation for the difference in the results of the current study compared to the previous study.

1c. CBRS had previously concluded that the storage stability data for processed products of soybeans/peanuts and potatoes should include the following processed commodities: potato wet peel and flakes, and soybean meal, hulls, and oil, and that two years of storage stability data would support the existing processing studies (CB No. 12111, DP Barcode

D192548, F. Suhre, 11/17/93). The submitted storage stability data are adequate to support the storage intervals of the processing studies for soybeans and potatoes. Although storage stability data were not submitted for soybean oil, the available data for cottonseed oil and supplemental data for corn oil reviewed herein together with data previously reviewed for corn oil will replace outstanding requirements for soybean oil.

1d. In an Agency review (CB No. 9261, DP Barcode D173437, S. Funk, 8/6/92) of storage stability data for animal commodities, it was concluded that CGA-49751 is stable in beef muscle stored at -15 C for up to 25 months, but that CGA-37913 is only stable in beef muscle for up to 2 months with <10-36% decline after 3 months of storage under the same conditions. The submitted storage stability data indicate that residues of CGA-37913 are relatively stable under frozen storage conditions (-20 C) for up to 12 months in beef muscle with 32% decline following 18 months of storage. The registrant found no explanation for the difference in the results of the current study compared to the previous study. On reviewing preliminary results of the current study (CB No. 12111, DP Barcode D192548, F. Suhre, 11/17/93), CBRS had previously concluded that the original storage stability studies for beef muscle were more representative of the conditions encountered during the corn processing study and the feeding study, and that the original studies would be assumed to be valid when correcting for loss of CGA-37913 during frozen storage of beef muscle tissue.

2. Although no storage stability data were submitted with the current peanut field trial data, previously reviewed storage stability studies indicated that CGA-37913 and CGA-49751 were stable during storage at -15 ± 5 C for up to 2 years in/on peanut nutmeats, potatoes, corn grain, and corn forage (CB No. 8317, DP Barcode No. D166637, B. Cropp-Kohlligian, 4/16/92). No additional storage stability data are required to support the submitted field residue trials for peanuts.

3. Although no storage stability data were submitted with the safflower processing study, the available storage stability data for cottonseed, soybean meal, and cottonseed and corn oil, are adequate to support the submitted study.

Magnitude of the Residue in Peanuts

4a. The submitted peanut field trial data are acceptable and indicate that the combined residues of metolachlor and its metabolites will not exceed the established tolerance of 0.5 ppm in/on peanut nutmeats harvested 90-95 days following a single preplant incorporated application followed by a postemergence application at lay-by of the 8 lb/gal EC formulation at 1x the maximum seasonal application rate (3 + 3 lb ai/A). The combined residues were 0.061-0.176 ppm in/on nutmeats, 2.100-40.548 ppm in/on hay, and 0.262-0.977 ppm in/on hulls.

6

4b. The submitted data also indicate that the combined residues of metolachlor and its metabolites exceeded the established tolerance of 30.0 ppm in/on peanut hay harvested 90-95 days following a single preplant incorporated application followed by a postemergence application at lay-by of the 8 lb/gal EC formulation at 1x the maximum seasonal application rate (3 + 3 lb ai/A). The registrant has indicated that they intend to amend product labels to reflect a 4 lb ai/A maximum use rate, and that additional peanut field trials will be conducted at the maximum use rate of 4 lb ai/A to provide more realistic residue values based on actual use practices.

4c. The Agency no longer considers peanut forage or hulls to be significant livestock feed items (Table 1, OPPTS 860.1000). Therefore, CBRS recommends that the established tolerances for residues of metolachlor and its metabolites listed under 40 CFR §180.368(a) in/on "peanut, forage and hay" be revised to "peanuts, hay" and that the current tolerance for "peanut, hulls" be revoked.

Magnitude of the Residue in Safflower Processed Commodities

5. The submitted safflower processing study is adequate to satisfy reregistration data requirements. No tolerances are required for the processed commodities of safflower. The study indicates that the combined residues of metolachlor and its metabolites were nondetectable (<0.08 ppm) in/on safflower seed following a single preplant incorporated application of the 8 lb/gal EC formulation at 3.0, 6.0, 9.0, or 15.0 lb ai/A (1x, 2x, 3x, or 5x the maximum application rate). The combined residues of metolachlor and its metabolites were also nondetectable (<0.08 ppm) in meal, crude oil, and refined oil processed from safflower seed bearing nondetectable residues.

6. The following Craven replacement data remain outstanding:

- All metolachlor end-use products with use directions on tree nuts (EPA Reg. Nos. 100-597, 100-673, 100-688, and 100-711) must be modified to specify a maximum of one application per year since non-Craven data support only a single application to tree nuts.

- Data depicting metolachlor residues of concern in/on sweet corn (K+CWHR) following 3 lb ai/A preplant incorporated and 3 lb ai/A lay-by application of the EC and G formulations.

- The 24(c) registrations for postemergence use on cotton (AZ83000500, NM86000400, OK86000300, and TX83001100) must be canceled. Alternatively, data depicting metolachlor residues of concern in/on cottonseed and cotton gin byproducts following postemergence application at 2 lb ai/A must be submitted. [See Table 1, OPPTS 860.1000]. Data for cotton forage

are no longer required but data for cotton gin byproducts (commonly called gin trash) are now required.]

DETAILED CONSIDERATIONS

Residue Analytical Methods

Samples of peanut vines, hay, nutmeats, and hulls from the current peanut field trials and samples of safflower seed, meal, and crude and refined oil from the submitted safflower processing study were analyzed for the combined residues of metolachlor and its metabolites, as derivatives CGA-37913 and CGA-49751, by Ciba-Geigy Corporation (Greensboro, NC) using a GC method (Method AG-612) with nitrogen-phosphorous detection (GC/NPD). Method AG-612 is similar to Method I (PAM Vol. II) and to method AG-338 which was previously described (CB No. 13875, DP Barcode D204467, S. Hummel, 9/29/94). Method AG-612 differs from method AG-338 in that it specifies an initial hexane:acetonitrile partition step for oil-based samples, and that metabolite derivative CGA-49751 is cleaned up on a silica Sep-Pak column eluted with 5% methanol:acetonitrile instead of on an alumina column.

Concurrent method recoveries were provided to determine the adequacy of the method for data collection purposes. Samples of untreated peanut vines, hay, nutmeats, and hulls from the current residue field trials and processed fractions from the safflower processing study were fortified separately with CGA-37913 at 0.02-80 ppm and with CGA-49751 at 0.05-80 ppm, and analyzed concurrently with the treated samples. The results of concurrent method analyses of fortified untreated samples are detailed in Table 1. Chromatograms and sample calculations were provided. The method recovery data indicate that method AG-612 is adequate for collecting data on residues of metolachlor and its metabolites in/on peanut vines, hay, and nutmeats, and the processed commodities of safflower; method AG-612 is marginally acceptable for collecting data on residues of metolachlor and its metabolites in/on peanut hulls.

8

Table 1. Concurrent method recovery of metolachlor and its metabolites, as derivatives CGA-37913 and CGA-49751, from samples of untreated peanut commodities and the processed commodities of safflower separately fortified with each analyte and analyzed by GC/NPD.

Matrix Residue of Concern	Fortification Level (ppm)	Number of Samples	% Recovery (Number of Samples) [a]
Peanut, vines			
CGA-37913	2.00-80.00	8	64, 66 (2); 71-96 (6)
CGA-49751	2.00-80.00	8	68 (1); 73-99 (7)
Peanut, hay			
CGA-37913	1.00-50.00	5	70-88 (5)
CGA-49751	1.00-50.00	5	69 (1); 79-99 (3); 121 (1)
Peanut, nutmeats			
CGA-37913	0.04-0.50	4	70-98 (4)
CGA-49751	0.10-0.50	4	79-110 (4)
Peanut, hulls			
CGA-37913	0.40-1.00	4	66, 67 (2); 78, 85 (2)
CGA-49751	0.40-1.00	4	56-60 (4)
Safflower, seed			
CGA-37913	0.02-0.2	4	90-107
CGA-49751	0.05-0.2	4	75-97
Safflower, meal			
CGA-37913	0.02, 0.2	2	111, 119
CGA-49751	0.05, 0.2	2	73, 99
Safflower, crude oil			
CGA-37913	0.02, 0.2	2	103, 111
CGA-49751	0.05, 0.2	2	74, 96
Safflower, refined oil			
CGA-37913	0.02, 0.1	2	96, 99
CGA-49751	0.05, 0.1	2	95, 102

[a] Recovery values outside the 70-120% range are listed separately.

Storage Stability Data

Discussion of the data: The registrant has submitted supplemental storage stability data (1995; MRID 43881703) for beef muscle, corn oil, cottonseed, and cottonseed oil, and (1996; MRID 43944601) for tomatoes, and processed fractions of soybeans and potatoes.

9

Briefly, store-bought samples of beef muscle, corn oil, cottonseed oil, potatoes (wet peel and flakes), and tomatoes, samples of untreated cottonseed obtained from a field trial, and samples of untreated soybean hulls and meal obtained from an oilseed processing plant were fortified with CGA-49751 and/or CGA-37913 at 0.5 ppm each, with the exception of tomatoes, which were fortified at 1.0 ppm. The fortified and unfortified (control) samples were stored at -20 C. Replicate samples were removed from storage and analyzed after up to 37 months of frozen storage for beef muscle, corn oil, cottonseed, and cottonseed oil, up to 25 months of frozen storage for potato wet peel and flakes, and up to 24 months of frozen storage for soybean hulls and meal, and tomatoes. Samples were analyzed using GC/NPD methods AG-338 (modified) or AG-612. The limits of detection (LOD) were 0.03 ppm for CGA-37913 in metolachlor equivalents and 0.05 ppm for CGA-49751 in metolachlor equivalents.

Apparent residues of CGA-37913 were less than the LOD (<0.03 ppm) in/on eight unfortified samples each of corn oil and cottonseed oil, seven unfortified samples each of potato wet peel, potato flakes, soybean hulls, soybean meal, and tomatoes, six unfortified samples of beef muscle, and two unfortified samples of cottonseed. Apparent residues of CGA-49751 were less than the LOD (<0.05 ppm) in/on eight unfortified samples each of cottonseed and cottonseed oil, seven unfortified samples each of potato flakes, soybean hulls, soybean meal, and tomatoes, and six unfortified samples of potato wet peel. Detectable residues of CGA-37913 were observed in/on six unfortified samples of cottonseed (0.033-0.099 ppm), two unfortified samples each of beef muscle (0.033 and 0.056 ppm) and cottonseed oil (0.036 and 0.082 ppm), and one unfortified sample of corn oil (0.54 ppm). Detectable residues of CGA-49751 were observed in/on one unfortified sample of potato wet peel (0.06 ppm). The storage stability recoveries of fortified samples are presented in Table 2.

Peanuts: The RAC samples from the peanut field trials were frozen after harvest and then shipped via freezer truck to Ciba-Geigy Corporation (Greensboro, NC). After sample preparation, samples were stored frozen (<-15 C) until analysis. The peanut commodity samples from the current field trials were stored frozen for maximum periods of 269 days (~9 months) for vines, 165 days (~5 months) for hay, and 171 days (~6 months) for nutmeats and hulls prior to completion of residue analysis. No supporting storage stability data were submitted by the registrant.

Safflower: The processed safflower fractions were shipped frozen on dry ice to the analytical laboratory (Ciba-Geigy Corporation, Greensboro, NC). The safflower commodity samples from the current processing study were stored frozen (<-15 C) for 208-220 days (~7 months) for safflower seed, 214-226 days (~7 months) for meal, 217-224 days (~7 months) for crude oil, and 209-228 days (~7-8 months) for refined oil prior to completion of residue analysis. No supporting storage stability data were submitted by the registrant.

Table 2. Storage stability and concurrent method recovery (fresh fortification recovery) from samples of beef muscle and various RACs fortified separately with CGA-49751 and/or CGA-37913 at 0.5 or 1.0 ppm and stored frozen at -20 C.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
Beef muscle					
0	CGA-37913	0.50	93, 93 (93)	--	--
30	CGA-37913	0.50	51, 63 (57)	44, 55	77, 96
79	CGA-37913	0.50	84, 91 (88)	62, 65	70, 74
182	CGA-37913	0.50	58, 69 (64)	46, 59	72, 92
373	CGA-37913	0.50	85, 88 (87)	68, 70	78, 80
542	CGA-37913	0.50	89, 90 (90)	61 [c]	68
738	CGA-37913	0.50	90, 90 (90)	57, 60	49, 63
1113	CGA-37913	0.50	96, 105 (101)	23, 62	23, 61
Corn oil					
0	CGA-37913	0.50	69, 73 (71)	--	--
81	CGA-37913	0.50	84, 96 (90)	73, 87	81, 97
188	CGA-37913	0.50	73, 82 (78)	18, 64	23, 82
243	CGA-37913	0.50	69, 93, 94 (85)	68, 80	80, 94
371	CGA-37913	0.50	67, 77 (72)	23, 83	32, 115
377	CGA-37913	0.50	68, 80 (74)	68, 82	92, 111
538	CGA-37913	0.50	81, 88 (85)	60, 62	71, 73
743	CGA-37913	0.50	58, 88 (73)	77, 80	105, 110
1133	CGA-37913	0.50	70, 86 (78)	67 [c]	86
Cottonseed					
0	CGA-37913	0.50	66, 76 (71)	--	--
	CGA-49751	0.50	81, 87 (84)	--	--
43	CGA-37913	0.50	56, 67 (62)	56, 58	90, 94
	CGA-49751	0.50	81, 82 (82)	102, 109	124, 133
80	CGA-37913	0.50	84, 107 (96)	89, 90	93, 94
	CGA-49751	0.50	78, 79 (79)	90, 99	114, 125
182	CGA-37913	0.50	67, 71 (69)	36, 87	52, 126
	CGA-49751	0.50	53, 95 (74)	81, 106	109, 143

(continued; footnotes follow)

11

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
370	CGA-37913	0.50	66, 73 (70)	68, 71	97, 101
	CGA-49751	0.50	82 [c] (82)	73, 79	89, 96
Cottonseed (continued)					
541	CGA-37913	0.50	78, 91 (85)	83, 92	98, 108
	CGA-49751	0.50	85, 89 (87)	53, 86	61, 99
734	CGA-37913	0.50	82, 97 (90)	70, 84	78, 93
	CGA-49751	0.50	66, 66 (66)	71, 74	108, 112
1127	CGA-37913	0.50	79, 84 (82)	84, 88	102, 107
	CGA-49751	0.50	65, 68 (67)	58, 67	87, 100
Cottonseed oil					
0	CGA-37913	0.50	56, 58 (57)	--	--
	CGA-49751	0.50	74, 99 (87)	--	--
44	CGA-37913	0.50	65, 75 (70)	36, 44	51, 63
	CGA-49751	0.50	93, 99 (96)	86, 107	90, 111
82	CGA-37913	0.50	62, 114 (88)	59, 74	67, 84
	CGA-49751	0.50	89, 90 (90)	107, 111	119, 123
188	CGA-37913	0.50	84, 87 (86)	33, 72	38, 84
	CGA-49751	0.50	-- [d]	-- [d]	--
216	CGA-37913	0.50	NA	NA	NA
	CGA-49751	0.50	124, 151 (138)	124, 141	90, 102
240	CGA-37913	0.50	59, 62, 62 (61)	52, 65	85, 107
	CGA-49751	0.50	NA	NA	NA
371	CGA-37913	0.50	97, 102 (100)	90, 93	90, 93
	CGA-49751	0.50	47, 59 (53)	55, 89	104, 168
375	CGA-37913	0.50	69, 69 (69)	52, 78	75, 113
	CGA-49751	0.50	NA	NA	NA
540	CGA-37913	0.50	82 [c] (82)	66, 87	80, 106
	CGA-49751	0.50	77, 79 (78)	77, 77	99, 99
736	CGA-37913	0.50	116, 145 (131)	103, 130	79, 99

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
	CGA-49751	0.50	79, 116 (98)	94, 118	96, 120
894	CGA-37913	0.50	74, 91 (83)	92, 104	111, 125
	CGA-49751	0.50	NA	NA	NA

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
Cottonseed oil (continued)					
1134	CGA-37913	0.50	-- [d]	-- [d]	--
	CGA-49751	0.50	101, 111 (106)	103, 106	97, 100
Potato wet peel					
0	CGA-37913	0.50	116, 117, 119, 126 (120)	--	--
	CGA-49751	0.50	116, 120, 125, 128 (122)	--	--
33	CGA-37913	0.50	115, 120 (118)	114, 133	97, 113
	CGA-49751	0.50	124, 131 (128)	124, 134	97, 105
89	CGA-37913	0.50	104, 120 (112)	111, 114	99, 102
	CGA-49751	0.50	108, 117 (113)	118, 122	104, 108
216	CGA-37913	0.50	113, 114 (114)	110, 121	96, 106
	CGA-49751	0.50	98, 104 (101)	102, 107	101, 106
382	CGA-37913	0.50	93, 111 (102)	78, 110	76, 108
372	CGA-49751	0.50	101, 117 (109)	113, 131	104, 120
580	CGA-37913	0.50	122, 130 (126)	118, 130	94, 103
	CGA-49751	0.50	122, 133 (128)	123, 128	96, 100
748	CGA-37913	0.50	92, 98 (95)	87, 94	92, 99
	CGA-49751	0.50	104, 111 (108)	97, 116	90, 107
Potato flakes					
0	CGA-37913	0.50	101, 111, 114, 125 (113)	--	--
	CGA-49751	0.50	106, 107, 112, 113 (110)	--	--
35	CGA-37913	0.50	113, 122 (118)	114, 117	97, 99
	CGA-49751	0.50	118, 127 (123)	115, 118	93, 96
95	CGA-37913	0.50	100, 112 (106)	116, 117	109, 110
	CGA-49751	0.50	101, 103 (102)	99, 106	97, 104
204	CGA-37913	0.50	94, 95 (95)	73, 92	77, 97

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
	CGA-49751	0.50	95, 103 (99)	92, 105	93, 106

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
Potato flakes (continued)					
365	CGA-37913	0.50	92, 100 (96)	102, 114	106, 119
	CGA-49751	0.50	116, 125 (121)	117, 123	97, 102
573	CGA-37913	0.50	112, 121 (117)	115, 123	98, 105
	CGA-49751	0.50	100, 118 (109)	117, 118	107, 108
747	CGA-37913	0.50	79, 80 (80)	74, 81	93, 101
	CGA-49751	0.50	63, 107 (85)	90, 90	106, 106
Soybean hulls					
0	CGA-37913	0.50	93, 93, 101, 101 (97)	--	--
	CGA-49751	0.50	92, 97, 105, 111 (101)	--	--
36	CGA-37913	0.50	90, 99 (95)	111, 116	117, 122
	CGA-49751	0.50	109, 114 (112)	95, 114	85, 102
91	CGA-37913	0.50	99, 104 (102)	95, 98	93, 96
	CGA-49751	0.50	127, 128 (128)	124, 125	97, 98
195	CGA-37913	0.50	117, 122 (120)	108, 115	90, 96
	CGA-49751	0.50	130, 133 (132)	130, 139	98, 105
366	CGA-37913	0.50	62, 67 (65)	79, 85	122, 131
	CGA-49751	0.50	106, 107 (107)	97, 117	91, 109
553	CGA-37913	0.50	95, 99 (97)	103, 106	106, 109
	CGA-49751	0.50	76, 95 (86)	92, 104	107, 121
729	CGA-37913	0.50	92, 101 (97)	93, 104	96, 107
	CGA-49751	0.50	96, 104 (100)	86, 103	86, 103
Soybean meal					
0	CGA-37913	0.50	127, 128, 129, 130 (129)	--	--
	CGA-49751	0.50	107, 118, 118, 124 (117)	--	--
29	CGA-37913	0.50	135, 136 (136)	122, 128	90, 94

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
	CGA-49751	0.50	102, 108 (105)	96, 111	91, 106

(continued; footnotes follow)

Table 2 *(continued)*.

Storage Period (days)	Fortified Compound	Fortification Level (ppm)	Fresh Fortification Recovery (%) [a]	Storage Stability Recovery (%)	Corrected Storage Stability Recovery (%) [b]
Soybean meal (continued)					
98	CGA-37913	0.50	90, 97 (94)	86, 87	91, 93
	CGA-49751	0.50	146, 155 (151)	156, 156	103, 103
188	CGA-37913	0.50	113, 118 (116)	120, 125	103, 108
	CGA-49751	0.50	111, 115 (113)	109, 115	96, 102
363	CGA-37913	0.50	80, 92 (86)	81, 83	94, 97
	CGA-49751	0.50	113, 129 (121)	110, 123	91, 102
552	CGA-37913	0.50	91, 98 (95)	108, 113	114, 119
	CGA-49751	0.50	101, 105 (103)	101, 115	98, 112
723	CGA-37913	0.50	86, 91 (89)	107, 113	120, 127
	CGA-49751	0.50	89, 90 (90)	93, 94	103, 104
Tomatoes					
0	CGA-37913	1.0	98, 104, 105, 110 (104)	--	--
	CGA-49751	1.0	110, 115, 116, 117 (115)	--	--
34	CGA-37913	1.0	105, 109 (107)	102, 108	95, 101
	CGA-49751	1.0	121, 141 (131)	109, 115	83, 88
105	CGA-37913	1.0	77, 98 (88)	79, 81	90, 92
89	CGA-49751	1.0	152, 167 (160)	133, 147	83, 92
180	CGA-37913	1.0	106, 119 (113)	110, 122	97, 108
	CGA-49751	1.0	88, 92 (90)	95, 100	106, 111
369	CGA-37913	1.0	69, 71 (70)	50, 81	71, 116
	CGA-49751	1.0	124, 132 (128)	90, 117	70, 91
566	CGA-37913	1.0	120, 127 (124)	123, 123	99, 99
	CGA-49751	1.0	111, 113 (112)	88, 117	79, 104
740	CGA-37913	1.0	92, 100 (96)	92, 98	96, 102
	CGA-49751	1.0	80, 95 (88)	72, 89	82, 101

[a] Fresh fortification recovery values were corrected for control values by the registrant; the average fresh fortification recovery is noted in parentheses.

(continued; footnotes follow)

Table 2 *(continued)*.

[b] Calculated by dividing the storage stability recovery by the average fresh fortification recovery.
[c] Second sample was rejected due to a problem with sample work-up.
[d] Samples were rejected due to low recovery values.

Study summary: The supplemental storage stability data are acceptable and may be used to partially satisfy reregistration requirements for OPPTS 860.1380. The data indicate that residues of CGA-37913 are relatively stable under frozen storage conditions (-20 C) for at least 37 months in/on corn oil and cottonseed; 29 months in cottonseed oil; 25 months in/on potato wet peel and flakes; 24 months in/on soybean hulls and meal, and tomatoes; and 12 months in beef muscle. The data indicate that residues of CGA-49751 are relatively stable under frozen storage conditions (-20 C) for at least 37 months in/on cottonseed and cottonseed oil; 25 months in/on potato wet peel and flakes; and 24 months in/on soybean hulls and meal, and tomatoes.

Although no data were included in the current submission depicting the stability of CGA-49751 in corn oil, previously submitted storage stability data (CB No. 8317, DP Barcode D166637, B. Cropp-Kohlligian, 4/16/92) indicated that this metabolite derivative was stable in corn oil stored at -15 C for up to 25 months. Data from the same study indicated that CGA-37913 was only stable in corn oil stored at -15 C for up to 102 days (~3 months); however, the current storage stability study indicates that residues of CGA-37913 are relatively stable under frozen storage conditions (-20 C) for up to 37 months. The registrant found no explanation for the difference in the results of the current study compared to the previous study.

CBRS had previously concluded that the storage stability data for processed products of soybeans/peanuts and potatoes should include the following processed commodities: potato wet peel and flakes, and soybean meal, hulls, and oil, and that two years of storage stability data would support the existing processing studies (CB No. 12111, DP Barcode D192548, F. Suhre, 11/17/93). The submitted storage stability data are adequate to support the storage intervals of the processing studies for soybeans and potatoes. Although storage stability data were not submitted for soybean oil, the available data for cottonseed oil and supplemental data for corn oil reviewed herein together with data previously reviewed for corn oil will replace outstanding requirements for soybean oil.

In an Agency review (CB No. 9261, DP Barcode D173437, S. Funk, 8/6/92) of storage stability data for animal commodities, it was concluded that CGA-49751 is stable in beef muscle stored at -15 C for up to 25 months, but that CGA-37913 is only stable in beef muscle for up to 2 months with <10-36% decline after 3 months of storage under the same conditions. The submitted storage stability data indicate that residues of CGA-37913 are relatively stable under frozen storage conditions (-20 C) for up to 12 months in beef muscle with 32% decline following 18 months of storage. The registrant found no explanation for the difference in the results of the current study compared to the previous study. On reviewing preliminary results of the current study (CB No. 12111, DP Barcode D192548, F. Suhre, 11/17/93), CBRS had previously concluded that the original storage stability studies for beef muscle were more representative of the conditions encountered during the corn processing study and the feeding study, and that the original studies would be assumed to be valid when correcting for loss of CGA-37913 during frozen storage of beef muscle tissue.

20

Although no storage stability data were submitted with the current peanut field trial data, previously reviewed storage stability studies indicated that CGA-37913 and CGA-49751 were stable during storage at -15 ± 5 C for up to 2 years in/on peanut nutmeats, potatoes, corn grain, and corn forage (CB No. 8317, DP Barcode No. D166637, B. Cropp-Kohlligian, 4/16/92). No additional storage stability data are required to support the submitted field residue trials for peanuts.

Although no storage stability data were submitted with the safflower processing study, the available storage stability data for cottonseed, soybean meal, and cottonseed and corn oil, are adequate to support the submitted study.

Magnitude of the Residue in Peanuts

Established tolerance: Tolerances of 0.5, 6.0, and 30.0 ppm have been established for the combined residues (free and bound) of metolachlor and its metabolites, determined as the derivatives CGA-37913 and CGA-49751, each expressed as the parent compound, in/on peanuts, peanut hulls, and peanut forage and hay, respectively [40 CFR §180.368 (a)].

Registered use patterns: The Residue Chemistry Science Chapter for the Metolachlor Reregistration Eligibility Decision (RED), dated 6/28/93, identified six metolachlor end-use products (four 8 lb/gal EC formulations; EPA Reg. Nos. 100-597, 100-673, 100-688, and 100-711; and two 25% G formulations; EPA Reg. Nos. 100-638 and 100-712) registered for use on peanuts. According to REFS (1/21/97), one 8 lb/gal EC formulation (EPA Reg. No. 100-688) and one 25% G formulation (EPA Reg. No. 100-638) have been canceled, and a 55% DF formulation (EPA Reg. No. 100-747) has been registered for use on peanuts. The 8 lb/gal EC formulations and 25% G formulation are registered for a single preplant or postplant incorporated, preemergence, or lay-by application (application at lay-by not permitted for EPA Reg. Nos. 100-711 and 100-712) at 1.25-2 lb ai/A/application (2-3 lb ai/A for preemergence application in AL, FL, GA, NC, SC, and VA). Two of the 8 lb/gal EC formulations (EPA Reg. Nos. 100-597 and 100-673) are also registered for multiple applications to peanuts in the Southeast (AL, FL, GA, NC, SC, and VA) using the following application schedule: a preplant incorporated application at 1.5-2 lb ai/A, followed by an application at 2-3 lb ai/A from preemergence to ground cracking, followed by an application at lay-by at 1.5-2 lb ai/A. A maximum seasonal rate of 6 lb ai/A (from application of a single formulation or from a combination of the G and EC formulations) is in effect. A 30-day grazing or feeding restriction and a 90-day PHI have been established.

Discussion of the data: Ciba-Geigy Corporation submitted replacement data (1995; MRID 43881701) from four tests conducted in 1994 in AL(1), GA(1), NC(1), and TX(1) depicting the magnitude of metolachlor residues of concern in/on peanut commodities treated using a single preplant soil incorporated application followed by a postemergence broadcast application at lay-by of the 8 lb/gal EC formulation (Dual® 8E; EPA Reg No. 100-597). Applications were made

21

at 3 lb ai/A/application (AL, GA, NC, and TX); equivalent to 1x the maximum seasonal application rate of 6 lb ai/A when two applications were made) in 20-32 gal/A using ground equipment. One additional field trial was conducted in GA at a 2x maximum seasonal application rate of 12 lb ai/A/season. Vine samples were harvested 0 and 30-33 days after treatment and samples of nutmeats, hulls, and hay were harvested 90-95 days after treatment and were left in the field to dry for 4-8 days.

Samples were shipped frozen to Ciba-Geigy Corporation (Greensboro, NC) where they were stored frozen for up to ~9 months. Samples of peanut vines, hay, nutmeats, and hulls were analyzed for the combined residues of metolachlor and its metabolites, as derivatives CGA-37913 and CGA-49751, using GC/NPD method AG-612.

The results of the field trials are presented in Table 3. Residue data were not corrected for concurrent method recoveries or apparent residues in untreated samples.

The apparent combined residues of metolachlor and its metabolites were <0.08 ppm (nondetectable) in/on two samples of untreated vines, one sample of untreated hay, four samples of untreated nutmeats, and four samples of untreated hulls. Six samples of untreated peanut vines and four samples of untreated peanut hay bore detectable combined residues of metolachlor and its metabolites at 0.104-1.921 ppm and 0.136-1.007 ppm, respectively; no explanation was provided for these detectable residues.

Geographic representation is adequate since the test states of AL(13%), GA(45%), NC(9%), and TX(13%) accounted for 80% of the 1991 U.S. peanut production (*Agricultural Statistics, 1992, USDA*).

Table 3. Uncorrected residues of metolachlor metabolite derivatives in/on peanut commodities following a preplant incorporated application followed by a postemergence application at lay-by of the 8 lb/gal EC formulation at 3 or 6 lb ai/A/application (6 or 12 lb ai/A).

Total Rate (lb ai/A)	PTI (days)	Test States	Residue values (ppm)		
			CGA-37913	CGA-49751	Combined
Vines					
6	0	AL	42.970, 45.047	1.376, 1.410	44.346, 46.457
	0	GA	31.055, 45.263	8.337, 9.752	39.392, 55.015
	0	NC	81.525, 92.526	10.229, 5.806	91.754, 98.332
	0	TX	22.790, 23.420	36.791, 32.431	59.581, 55.851
6	33	AL	1.532, 2.535	9.254, 3.856	10.786, 6.391
	30	GA	1.042, 1.709	4.903, 5.832	5.945, 7.541
	30	NC	2.922, 3.186	11.436, 10.698	14.358, 13.884
	30	TX	1.827, 2.530	8.429, 4.861	10.256, 7.391
12	0	GA	113.348	9.769	123.117
	30	GA	2.918	7.803	10.721
Hay					
6	95	AL	8.982, 13.396 [a]	31.089, 27.152 [a]	40.071, 40.548 [a]
	90	GA	0.563, 0.833	1.537, 1.366	2.100, 2.199
	92	NC	6.679, 6.693	14.450, 18.708	21.129, 25.401
	90	TX	2.048, 3.879	11.103, 19.846	13.151, 23.725
12	90	GA	1.050	3.206	4.256
Nutmeats					
6	95	AL	0.011, 0.027	0.051, 0.059	0.062, 0.086
	90	GA	0.015, 0.016	0.089, 0.045	0.104, 0.061
	92	NC	0.030, 0.057	0.121, 0.119	0.151, 0.176
	90	TX	0.031, 0.042	0.061, 0.097	0.092, 0.139
12	90	GA	0.031	0.060	0.091
Hulls					
6	95	AL	0.191, 0.196	0.312, 0.277	0.503, 0.473
	90	GA	0.091, 0.191	0.171, 0.239	0.262, 0.430
	92	NC	0.267, 0.301	0.577, 0.676	0.844, 0.977
	90	TX	0.113, 0.130	0.677, 0.474	0.790, 0.604
12	90	GA	0.354	0.423	0.777

[a] The highest residue values determined from triplicate analyses are reported.

23

Study summary (1995; MRID 43881701): The submitted data are acceptable and indicate that the combined residues of metolachlor and its metabolites will not exceed the established tolerance of 0.5 ppm in/on peanut nutmeats harvested 90-95 days following a single preplant incorporated application followed by a postemergence application at lay-by of the 8 lb/gal EC formulation at 1x the maximum seasonal application rate. The combined residues were 0.061-0.176 ppm in/on nutmeats, 2.100-40.548 ppm in/on hay, and 0.262-0.977 ppm in/on hulls.

The submitted data also indicate that the combined residues of metolachlor and its metabolites exceeded the established tolerance of 30.0 ppm in/on peanut hay harvested 90-95 days following a single preplant incorporated application followed by a postemergence application at lay-by of the 8 lb/gal EC formulation at 1x the maximum seasonal application rate (3 lb + 3 lb ai/A). The registrant has indicated that they intend to amend product labels to reflect a 4 lb ai/A maximum seasonal use rate, and that additional peanut field trials will be conducted at the maximum use rate of 4 lb ai/A to provide more realistic residues based on actual use practices.

The Agency no longer considers peanut forage or hulls to be significant livestock feed items (Table 1, OPPTS 860.1000). Therefore, CBRS recommends that the established tolerances for residues of metolachlor and its metabolites listed under 40 CFR §180.368(a) in/on "peanut, forage and hay" be revised to "peanuts, hay" and that the current tolerance for "peanut, hulls" be revoked.

Magnitude of the Residue in Safflower Processed Commodities

Established tolerances: A tolerance of 0.1 ppm has been established for the combined residues of metolachlor (free and bound) and its metabolites, determined as the derivatives CGA-37913 and CGA-49751, each expressed as the parent compound, in/on safflower seed [40 CFR §180.368 (a)]. No tolerances have been established for residues of metolachlor in any safflower processed commodities.

Registered use patterns: The Residue Chemistry Science Chapter for the Metolachlor Reregistration Eligibility Decision (RED), dated 6/28/93, identified four metolachlor end-use products (the 8 lb/gal EC formulations; EPA Reg. Nos. 100-597, 100-673, 100-688, and 100-711) registered for use on safflower. According to REFs (1/21/97), the 8 lb/gal EC formulation (EPA Reg. No. 100-688) has been canceled, and a 55% DF formulation (EPA Reg. No. 100-747) has been registered for use on safflower. The 8 lb/gal EC formulations are registered for preplant incorporated or preemergence broadcast application at 2.5 lb ai/A/application (<3% organic matter) or at 3.0 lb ai/A/application (3-20% organic matter). No maximum seasonal rate or PHI has been established.

Discussion of the data: Ciba-Geigy Corporation submitted replacement data (1995; MRID 43881702) pertaining to the potential for concentration of metolachlor residues of concern in the processed commodities of safflower. In eight tests conducted in CA(4) and ND(4) safflower seed was harvested 174 and 137 days, respectively, following a single preplant soil incorporated application of the 8 lb/gal EC formulation (Dual® 8E; EPA Reg No. 100-597) at 3.0, 6.0, 9.0, or

15.0 lb ai/A (1x, 2x, 3x, or 5x the maximum application rate). Applications were made in 10-20 gal/A using ground equipment.

At crop maturity, samples of treated safflower seed from each application rate and control samples were frozen and sent directly to Ciba-Geigy Corporation (Greensboro, NC) for residue analysis. Samples of treated safflower seed from each application rate and control samples were also shipped frozen to the processor (Food Protein R&D Center, Texas A&M University, Bryan, TX) where they were processed within 120 days of harvest into light impurities, small and large screenings, cleaned seed, meal (solvent-extracted presscake), and oils (crude, refined, refined bleached, and refined bleached deodorized).

At the processing facility, the safflower seed samples were processed according to simulated commercial procedures. Briefly, unprocessed seed samples were dried and cleaned by aspiration and mechanical screening. The whole seed was moistened, flaked, heated, and processed in an expeller to produce crude oil and presscake. The residual oil in the presscake was extracted with hot hexane three times. The hexane/oil fractions were combined and heated to remove hexane. Crude oil fractions were combined, and aliquots were combined with sodium hydroxide and heated in a refining machine; aliquots of the resulting refined oil were decanted, bleached, and deodorized. The registrant submitted adequate descriptions and material balance sheets for the processing procedures.

The processed fractions were shipped frozen on dry ice to the analytical laboratory (Ciba-Geigy Corporation, Greensboro, NC). All samples were stored frozen at Ciba-Geigy for up to 8 months prior to completion of residue analysis. Samples of treated and untreated safflower seed and safflower processed commodities were analyzed for combined residues of metolachlor and its metabolites, as derivatives CGA-37913 and CGA-49751, using GC/NPD method AG-612.

The combined residues of metolachlor and its metabolites were <0.08 ppm (nondetectable) in/on safflower seed shipped directly from the field (12 samples) and from the processor (4 samples) following a single preplant incorporated application of the 8 lb/gal EC formulation at 3.0, 6.0, 9.0, or 15.0 lb ai/A (1x, 2x, 3x, or 5x the maximum application rate).

When the processed commodities from the 1x, 3x, and 5x application rates were analyzed, the combined residues of metolachlor and its metabolites were <0.08 ppm (nondetectable) in/on four samples each of meal, crude oil, and refined oil processed from treated safflower seed. The apparent combined residues of metolachlor and its metabolites were <0.08 ppm (nondetectable) in/on four untreated safflower seed samples, and two samples each of meal, crude oil, and refined oil processed from untreated safflower seed.

Study summary: The submitted safflower processing study is adequate to satisfy reregistration data requirements. No tolerances are required for the processed commodities of safflower. The study indicates that the combined residues of metolachlor and its metabolites were nondetectable (<0.08 ppm) in/on safflower seed following a single preplant incorporated application of the 8 lb/gal EC formulation at either 3.0, 6.0, 9.0, or 15.0 lb ai/A (1x, 2x, 3x, or 5x the maximum application rate). The combined residues of metolachlor and its metabolites were also

nondetectable (<0.08 ppm) in meal, crude oil, and refined oil processed from safflower seed bearing nondetectable residues.

EPA MEMORANDA CITED IN THIS REVIEW

CB No.:	8317
DP Barcode:	D166637
Subject:	Soybean Hull Chromatograms and Storage Stability Data Submissions in Response to the Metolachlor Final Registration Standard and Tolerance Reassessment (FRSTR) follow-up (6/14/89).
From:	B. Cropp-Kohlligian
To:	W. Waldrop
Dated:	4/16/92
MRID(s):	41506501 and 41425502

CB No.:	9261
DP Barcode:	D173437
Subject:	Reregistration of Metolachlor. Storage Stability of Metolachlor Metabolites in Animal Commodities.
From:	S. Funk
To:	C. Childress
Dated:	8/6/92
MRID(s):	41506401

CB No.:	10938
DP Barcode:	D185209
Subject:	Metolachlor (108801) - Case No. 0001. Product and Residue Chemistry Chapters for the Reregistration Eligibility Document (RED).
From:	S. Hummel
To:	A. Rathman
Dated:	6/28/93
MRID(s):	None

CB No.:	12111
DP Barcode:	D192548
Subject:	Metolachlor (108801) Storage Stability Data.
From:	F. Suhre
To:	J. Mitchell/W. Waldrop
Dated:	11/17/93
MRID(s):	42810601

CB No.: 13875
DP Barcode: D204467
Subject: Metolachlor (108801) Addendum to RED, Partial Replacement of Craven Data on Peanuts.
From: S. Hummel
To: J. Mitchell/W. Waldrop
Dated: 9/29/94
MRID(s): 43263101

MASTER RECORD IDENTIFICATION NUMBERS

The citations for the MRID documents referred to in this review are presented below.

43881701 Oakes, T. (1995) Metolachlor--Magnitude of Residues In or On Peanuts Following PPI Plus Lay-By Applications of Dual 8E:(Data Submitted as Alternate to Craven Laboratories Generated Data): Lab Project Number: ABR-95066: 49-94: 130372. Unpublished study prepared by Ciba Crop Protection. 217 p.

43881702 Grunenwald, M. (1995) Metolachlor--Magnitude of the Residues In or On Safflowers, Including Processed Fractions, Following a PPI Application of Dual 8E: (Data Submitted as Alternate to Craven Laboratories Generated Data): Lab Project Number:ABR-95079: 130383: 200-94. Unpublished study prepared by Ciba Crop Protection. 251 p.

43881703 Rollins, R. (1995) Residue Stability Study for Metolachlor Residues Determined as CGA-37913 and CGA-49751 in Beef Muscle, Corn Oil, Cottonseed and Cottonseed Oil Under Freezer Storage Conditions: (Data Submitted as Alternate to Craven Laboratories Generated Data): Lab Project Number: ABR-94028: 130987: 13-91. Unpublished study prepared by Ciba Crop Protection. 86 p.

43944601 Eudy, L. (1996) Stability of CGA-37913 and CGA-49751 (Metolachlor Hydrolysates) in Tomatoes and Processed Soybean and Potato Fractions Under Freezer Storage Conditions: Lab Project Number: ABR-96011: 245-93: 130925. Unpublished study prepared by Ciba-Crop Protection. 88 p.