10-4-94

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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

October 4, 1994

MEMORANDUM

SUBJECT: Metolachlor (108801) Addendum to RED
Replacement of Craven Data on rotational alfalfa and clover
[MRID Nos. 43367101; CB No. 14431; DPBarcode D207867]

FROM: Susan V. Hummel, Chemist
Special Review Section II
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THRU: Francis B. Suhre, Section Head
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Health Effects Division (7509C)

TO: Jane Mitchell/W. Waldrop, PM#71
Reregistration Branch
Special Review and Reregistration Division (7508W)

Ciba Geigy has submitted field trial data on rotational clover and alfalfa (non-grass animal feeds) to replace data submitted earlier from Craven Laboratories. The data have been screened for information which would affect the risk assessment for metolachlor. The registrant provided a summary of the data which indicates that the study was conducted at an appropriate rate, the 3 lb ai/A rate, and that all residues were reported to be within tolerance. The study will be reviewed in full as time permits.

The Metolachlor Residue Chemistry RED Chapter has been revised to acknowledge receipt and initial screening of these data. Changes to the RED Chapter since its completion 6/28/93 are shown in redline and strikeout text. Rotational crop requirements (GLN 165-1) were included in the EFED Chapter. Followup reviews will be done by HED.

cc: R.F., circu, S.F., S. Hummel, Metolachlor Reg. Std. F., L. Kutney

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RDI:MM:9/29/94:EZ:09/29/94
7509C:CBII:SVH:svh:RM:804:CM#2:10/04/94

METOLACHLOR
(Shaughnessy No. 108801)
(Case No. 0001)

TASK 2B

Reregistration Eligibility Document: Residue Chemistry Considerations

June 28, 1993
Revised October 4, 1994

Contract No. 68-DO-0142

Submitted to:

U.S. Environmental Protection Agency
Arlington, VA 22202

Submitted by:

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METOLACHLOR

REREGISTRATION ELIGIBILITY DOCUMENT

RESIDUE CHEMISTRY CONSIDERATIONS

(Shaughnessy No. 108801; Case 0001)

TASK 2B

INTRODUCTION

Metolachlor [2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide; Chemical Code 108801] is a selective herbicide registered for preplanting incorporated or preemergence use on alfalfa; almonds; apples; apricots; succulent and dried-type beans; beech nuts; black walnuts; big and little bluestems; Brazil nuts; butternuts; cabbages; carrots; cashews; cherries; chestnuts; citron; citrus fruits; field, pop, and sweet corn; cotton; figs; filberts; fruit trees; grapefruit; grapes; hickory nuts; indiangrass; Japanese artichokes; kumquats; lemons; lentils; limes; lupines; Macadamia nuts; mung beans; nectarines; nut crops; olives; oranges; peaches; peanuts; pears; peas; pecans; peppers; pistachio nuts; plums; potatoes; prunes; radishes; safflower; seed and pod vegetables; side-oats grama; sorghum; soybeans; stone fruits; strawberries; switchgrass; tabasco peppers; tangeloes; walnuts; and western wheatgrass. It is also registered for use on numerous ornamental plants and trees; greenhouse environs and equipment (empty); highway rights-of-way; and recreational areas. Single or split applications are permitted using ground or aerial (including ULV) equipment. Chemical irrigation is prohibited for certain formulations, however, formulations containing metolachlor as the sole active ingredient may be applied using center pivot irrigation equipment [*Source: REFS search dated 2/23/93*]. A summary of the registered use patterns is presented in Table 1 [*Source: Ciba-Geigy product labels, EPA Reg Nos. 100-590, -597, -638, -645, -673, -677, -688, -691, -710, -711, -712, -716, -731, -748*]. We note numerous discrepancies between the use sites listed by chemical and by product in REFS and the use sites for which directions are provided on the current product labels. According to REFS (6/24/93), two new products containing a new type of formulation for metolachlor (DF) have been registered (EPA Reg. No. 100-748, 3/26/93, and 100-747, 5/6/93). EPA Reg. No. 100-747 was registered after Table 1 was prepared. Additional residue data will not be required to support these new products, provided the use patterns on the DF labels allow **only** applications early in the growth season or applications directed to the soil, as opposed to the crop itself, after the crop has emerged (R. Loranger, 5/20/91). Metolachlor DF labels should also include appropriate restrictions. Numerous 24(c) registrations also exist. Most have not been reviewed by the Chemistry Branches.

Metolachlor was the subject of a Registration Standard dated 9/80, a Final Registration Standard and Tolerance Reassessment (FRSTR) dated 8/86, and a Reregistration Standard Guidance Document dated 1/87. A Residue Chemistry Reregistration Standard Update was not prepared for metolachlor. The information contained in this document outlines the Residue Chemistry Science Assessments with respect to the reregistration of metolachlor.

Table 1. Labeled food/feed use directions for metolachlor end-use products registered to Ciba-Geigy.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Cabbage	8 lb/gal EC	NY90000100[4]	Pre- and Post-transplant Do not incorporate. Do not apply to direct seeded cabbage.	2	2
		WI89000200[5]		3	3
Potatoes[6]	8 lb/gal EC	100-597 100-673 100-688 100-711	Pre- and Postplant Incorporated Broadcast application incorporated prior to crop emergence	3	5.5
	25% G	100-638 100-712	Preemergence Broadcast application following drag-off or hilling, but prior to weed emergence	3 (<6% OM) 4 (6-20% OM)	
	8 lb/gal EC	100-597 100-673 100-688	After hilling/lay-by Broadcast application after hilling/at lay-by	2.5	
	25% G	100-638			
Seed radish (excluding daikon)[7]	8 lb/gal EC	WA91000400[8]	Preplant incorporated Broadcast application incorporated prior to planting	2	n/s

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Pod crops (excluding soybeans)[9,10]	8 lb/gal EC	100-597 100-673 100-688 100-711	Preplant incorporated Broadcast application incorporated within 14 days of planting	2.5 (<3% OM) 3 (3-20% OM)	n/s
			Preemergence Broadcast application during or after planting	2.5 (<3% OM) 3 (3-20% OM)	
Peas	8 lb/gal EC	ID90000200	Preplant incorporated or Preemergence	1.5	n/s
Soybeans	8 lb/gal EC	100-597 100-673 100-688 100-711	Preplant surface (minimum- and no-till) Single or split (2/3 + 1/3 of the single rate) broadcast applications before or at planting	Single: 3 (<6% OM) 4 (6-20% OM)	4
	25% G	100-638 100-712	Preplant incorporated Broadcast application incorporated within 14 days of planting	2.5 (<3% OM) 3 (3-6% OM) 4 (6-20% OM)	
			Preemergence Broadcast application during or after planting	2.5 (<3% OM) 3 (3-6% OM) 4 (6-20% OM)	
	4 lb/gal EC	100-677	Preemergence Broadcast application during or after planting	1.5 (0.5-3% OM) 2 (3-6% OM)	

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Chili peppers[11]	8 lb/gal EC	NM85000400[12]	Preplant incorporated Broadcast application incorporated before, during, or after planting	2	2[13]
			Postemergence directed spray Once pepper plants shade soil surface	2	
			Over-the-top Broadcast spray once 2 true leaves have developed	2	
Tabasco peppers[14]	8 lb/gal EC	LA88000500[15]	Postemergence Directed spray at lay-by following the last cultivation (midseason)	4	4[16]
Citrus (nonbearing)[17]	8 lb/gal EC	100-597 100-673 100-688 100-711	Broadcast application to weed-free soil	4	n/s
Stone fruits[18]	8 lb/gal EC	100-597 100-673 100-688 100-711	Broadcast application to weed-free soil	4	n/s
Grapes (nonbearing)[19]	8 lb/gal EC	100-597 100-673 100-688 100-711	Broadcast application to weed-free soil	4	n/s

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Tree nuts[20]	8 lb/gal EC	100-597 100-673 100-688 100-711	Broadcast application to weed-free soil	4	n/s
Corn (field, pop, sweet)[21]	2.5 lb/gal EC	100-590	<u>Minimum- and no-till: Preplant surface</u> Single or split (2/3 + 1/3 of the single rate) broadcast applications before or at planting	Single: 3	6
	3.3 lb/gal EC	100-731			
	8 lb/gal EC	100-597[22] 100-673 100-688 100-711			
	25% G	100-638 100-712			
	3.3 lb/gal EC	100-645		Single: 2.5	
	3.3 lb/gal SC/L	100-710			
	31% DF	100-748			

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Corn (field, pop, sweet) continued	2 lb/gal EC 31% DF	100-716 100-748	Single application 30-45 days preplanting	1.5 (<1% OM) 2 (1-2.5% OM) 2.25 (2.5-4% OM) 2.5 (4-20% OM)	6
	3.3 lb/gal EC	100-731	<u>Minimum- and no-till: Preemergence</u> Broadcast application before, during, or after planting but prior to emergence	3	
	2.5 lb/gal EC 3.3 lb/gal EC 3.3 lb/gal SC/L 31% DF	100-590 100-645 100-710 100-748		2.5	
	3.3 lb/gal EC	100-731	<u>Preplant surface or incorporated</u> Broadcast application within 14 days of planting	2 (<3% OM) 3 (3-20% OM)	
	3.3 lb/gal EC 3.3 lb/gal SC/L 31% DF	100-645 100-710 100-748		2 (<3% OM) 2.5 (2-20% OM)	

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Corn (field, pop, sweet) continued	8 lb/gal EC 25% G	100-688 100-711 100-597 100-638 100-712	<u>Preplant incorporated</u> Broadcast application incorporated within 14 days of planting	2.5 (<3% OM) 3 (3-6% OM) 4 (6-20% OM)	6
	3.3 lb/gal EC	100-645		2.5 (<3% OM) 3 (3-20% OM)	
	2.5 lb/gal EC 31% DF	100-590 100-748		2 (<3% OM) 2.5 (3-20% OM)	
	2 lb/gal EC	100-716		1.7 (<1% OM) 2.3 (1-2.5% OM) 2.5 (2.5-4% OM) 3 (4-20% OM)	
	8 lb/gal EC 25% G	100-688 100-597 100-711 100-638 100-712	<u>Preemergence</u> Broadcast application during or after planting but prior to weed emergence	2.5 (<3% OM) 3 (3-6% OM) 4 (6-20% OM)	

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Corn (field, pop, sweet) continued	3.3 lb/gal EC	100-731	<u>Preemergence</u> Broadcast application during or after planting but prior to weed emergence	2 (<3% OM) 3 (3-20% OM)	6
	3.3 lb/gal EC	100-645		2.5 (<3% OM) 3 (3-20% OM)	
	2.5 lb/gal EC 3.3 lb/gal EC 3.3 lb/gal SC/L	100-590 100-645 100-710		2 (<3% OM) 2.5 (3-20% OM)	
	2 lb/gal EC 31% DF	100-716 100-748		1.5 (<1% OM) 2 (1-2.5% OM) 2.3 (2.5-4% OM) 2.5 (4-20% OM)	
	2.5 lb/gal EC 3.3 lb/gal EC 31% DF	100-590 100-645 100-731 100-748[23]	<u>Postemergence broadcast</u> Broadcast application before weeds exceed 2-leaf stage, before corn exceeds 5 inches in height	2.5	

Continued

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Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Corn (field, pop, sweet) continued	2.5 lb/gal EC 3.3 lb/gal EC 31% DF	100-590 100-645 100-731 100-748[23]	Postemergence directed Directed application before weeds exceed 2-leaf stage, while corn is 5-12 inches in height	2.5	6
	8 lb/gal EC 25% G	100-597 100-673 100-688 100-638	Lay-by Directed application to corn between 5-40 inches tall	3 2.5 (<3% OM) 3 (3-6% OM) 4 (3-20% OM)	
	8 lb/gal EC	FL93000100	Preplant incorporated or Preemergence Use on Muck Soils	4	
Sorghum (grain or forage)	2 lb/gal EC	100-716	Minimum- and no-till: Preplant surface Single or split (2/3 + 1/3 of the single rate) broadcast applications before or at planting	Single: 1.7 (<1% OM) 2.2 (1-2.5% OM) 2.3 (2.5-4% OM) 2.6 (4-20% OM)	2.6[24]

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Sorghum (grain or forage), continued	2.5 lb/gal EC 3.3 lb/gal EC 8 lb/gal EC 3.3 lb/gal SC/L 31% DF	100-590 100-645 100-731 100-597 100-673 100-688 100-711 100-710 100-748	<u>Minimum- and no-till: Preplant surface</u>, continued Single or split (2/3 + 1/3 of the single rate) broadcast applications before or at planting	Single: 2.5	
	2.5 lb/gal EC 3.3 lb/gal EC 3.3 lb/gal SC/L	100-590 100-645 100-731 100-710	<u>Minimum- and no-till: Preemergence</u> Broadcast application before, during, or after planting but prior to emergence	1.5 (1-1.5% OM) 2 (1.5-20% OM)	
	2 lb/gal EC	100-716	<u>Preplant surface or incorporated</u> Broadcast application within 14 days of planting	1.5 (<1% OM) 1.9 (1-2.5% OM) 2 (2.5-4% OM) 2.3 (4-20% OM)	2.6

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Sorghum (grain or forage), continued	31% DF	100-748	<u>Preplant surface or incorporated</u> Broadcast application within 14 days of planting	2.5 lb/A	2.6
	3.3 lb/gal EC 3.3 lb/gal SC/L	100-645 100-731 100-710		2 (1-20% OM)	
	8 lb/gal EC 31% DF	100-597 100-673 100-688 100-711 100-748	<u>Preplant incorporated</u> Broadcast application incorporated within 14 days of planting	2.5	
	2.5 lb/gal EC	100-590		1.5 (1-1.5% OM) 2 (1.5-20% OM)	
	8 lb/gal EC 31% DF	100-597 100-673 100-688 100-711 100-748	<u>Preemergence</u> Broadcast application during or after planting but prior to emergence	2.5	

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Sorghum (grain or forage), continued	2 lb/gal EC	100-716	<u>Preemergence</u> Broadcast application during or after planting but prior to emergence	1.5 (<1% OM) 1.9 (1-2.5% OM) 2 (2.5-4% OM) 2.3 (4-20% OM)	2.6
	3.3 lb/gal EC 3.3 lb/gal SC/L	100-645 100-731 100-710		2 (1-20% OM)	
	2.5 lb/gal EC	100-590		1.5 (1-1.5% OM) 2 (1.5-20% OM)	
Alfalfa Grown for Seed	8 lb/gal EC	OR91000700[25]	<u>Broadcast Incorporated</u>[26] Apply surface broadcast application to established alfalfa prior to weed emergence. Incorporate uniformly into top 3" of soil.	5	n/s

Continued

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Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Peanuts[27]	8 lb/gal EC	100-597 100-673 100-688 100-711	Preplant and Postplant incorporated Broadcast application incorporated within 14 days of planting	2	6
	25% G	100-638 100-712	Preemergence Broadcast application during or after planting	2 (3)[28]	
			Lay-by Broadcast application made immediately after last cultivation	2	
Safflower	8 lb/gal EC	100-597 100-673 100-688 100-711	Preplant incorporated Broadcast application incorporated within 14 days of planting	2.5 (<3% OM) 3 (3-20% OM)	n/s
			Preemergence Broadcast application during or after planting	2.5 (<3% OM) 3 (3-20% OM)	

Continued

Table 1. Continued.

Crop	Formulation	EPA Reg. No.[1] or SLN No.	Timing and Method of Application	Maximum application rate (lb ai/A)[2]	Maximum seasonal rate (lb ai/A)[3]
Cotton	8 lb/gal EC	100-597[29] 100-673[30] 100-688 100-711 VA92000400 VA92000500 NC92000400 NC92000500	Preemergence Broadcast application during or after planting Preplant incorporated Broadcast application incorporated immediately before, during, or after planting	2	n/s
		AZ83000500 NM86000400 OK86000300 TX83001100	Postemergence Apply over the top or directed to the soil surface in the first true leaf stage before cotton is 6" tall. Cultivate if weeds develop	2	2

[1] The date of EPA acceptance for labels in the above table are as follows: 100-590, 7/7/91; 100-597, 7/15/92; 100-638, 7/9/92; 100-645, 12/1/92; 100-673, 7/15/92; 100-688, 7/15/92; 100-710, 11/30/92; 100-711, 7/30/92; 100-712, 6/17/92; 100-716, 11/5/92; and 110-731, 11/30/92.

[2] Application rates listed are for the maximum use rate on any soil type; OM - soil organic matter.

[3] Maximum seasonal rate listed on any label for a given commodity; n/s - not specified.

[4] Parent product is EPA Reg. No. 100-597.

Table 1. Continued.

5	Parent product is EPA Reg. No. 100-597.
6	PHIs of 60 days (following preemergence applications) and 40 days (following lay-by applications) have been established for potatoes.
7	A restriction has been established to prohibit the use of any plant parts grown from treated seed for human or animal consumption (including hay, forage, seed, seed screenings, and stubble). However, this restriction is not considered practical. Use is a food use requiring establishment of a tolerance. No tolerance has been established.
8	Parent product is EPA Reg. No. 100-673.
9	A restriction has been established prohibiting the cutting of hay within 120 days of treatment.
10	SLN No. ID90000200 (parent product EPA Reg. No. 3125-266) is registered for a preemergence (after planting) use on peas at 1.2 lb ai/A.
11	A 65-day PHI has been established for chili peppers.
12	Parent product is EPA Reg. No. 100-597.
13	Maximum of 1 application per crop cycle.
14	A 7-day PHI has been established for tabasco peppers.
15	Parent product is EPA Reg. No. 100-597.
16	Maximum of 1 application every 45 days.
17	A 12-month PHI has been established for citrus, and a feeding/grazing restriction has been established for treated areas.
18	A grazing/feeding restriction has been established for treated areas.
19	A 12-month PHI has been established for grapes.

Continued

Table 1. Continued.

[20] A grazing/feeding restriction has been established for treated areas.

[21] A 30-day grazing/feeding restriction has been established for corn.

[22] EPA Reg. No. 100-597 lists use directions for corn, and is also the parent label for EPA SLN No. FL93000100 for sweet corn.

[23] No data have been submitted to support post emergence uses of Bicep DF on corn.

[24] Maximum of 1 application/year, except for split applications.

[25] Parent product is EPA Reg. No. 100-597.

[26] Application timing is not stated on label. Do not feed or graze alfalfa forage or fodder. Do not cut alfalfa for hay or forage. Seeds from treated fields may not be used for sprouts. No portion of the treated field, including seed, seed screenings, hay, forage or stubble may be used for human or animal consumption.

Producers of alfalfa seed who use this product are required to inform, in writing, conditioners receiving seed produced on fields treated with this product. A copy of this labeling is required to be provided to the conditioner by the producer. Processed seed must be labeled "Not for human or animal consumption" at the processing plant. The processor must dispose of all seed screenings in such a way that they cannot be distributed or used for food or feed.

This use can be considered a non-food use. Oregon has recently provided sufficient regulatory control over pesticide use in alfalfa grown for seed. (CB No. 10900, 12/4/92, B. Schneider, OR-900020, Naled on alfalfa grown for seed.)

[27] A 30-day grazing/feeding restriction and a 90-day PHI have been established for peanuts. There is a limit of 1 application per season except in the Southeast US (AL, FL, GA, NC, SC, VA).

[28] Maximum preemergence rate is 2 lb ai/A except in the Southeast, where the maximum rate is 3 lb ai/A.

Continued

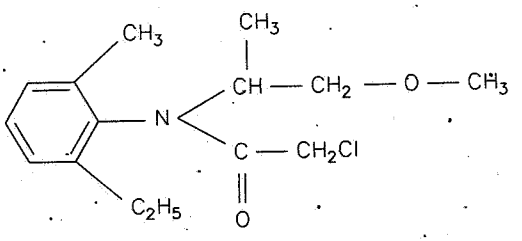
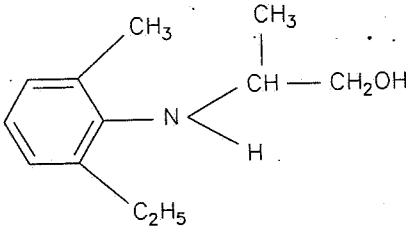
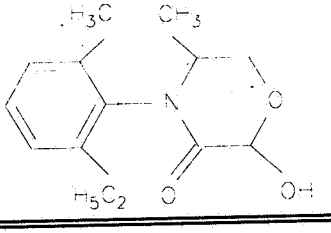
Table 1. Continued.

[29] EPA Reg. No. 100-597 lists use directions for cotton, and is also the parent label for SLN Nos. AZ83000500, NC92000500, NM86000400, OK86000300, TX83001100, and VA92000400 for cotton.

[30] EPA Reg. No. 100-673 lists use directions for cotton, and is also the parent label for SLN Nos. NC92000400 and VA92000500 for cotton.

Tolerances for residues of metolachlor in or on food/feed 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 the 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 [*Source: 40 CFR §180.368 (a), (b), and (c)*]. Adequate enforcement methods are available for the determination of these residues.

The molecular structures of metolachlor and its derivatives CGA-37913 and CGA-49751 are given below:

Names: **Common**, Chemical, (others)	Chemical Structure
Metolachlor 2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide	
2-[(2-ethyl-6-methylphenyl)amino]-1-propanol (CGA-37913)	
4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone (CGA-49751)	

SUMMARY OF SCIENCE FINDINGS

§165-1 and 165-2: Confined Rotational Crop and Field Rotational Crop: Rotational crop data requirements were addressed in the EFED RED Chapter.

§171-4 (a): Plant Metabolism: The qualitative nature of the residue in plants is adequately understood. The Metolachlor Registration Standard dated 3/80 concluded that the qualitative nature of the residue is adequately understood in corn and soybeans. Metabolism of metolachlor involves conjugation with glutathione, breakage of this bond to form the mercaptan, conjugation of the mercaptan with glucuronic acid, hydrolysis of the methyl ether, and conjugation of the resultant alcohol with a neutral sugar. A minor pathway may involve sugar conjugation of metolachlor directly to the corresponding oxo-compounds. Residues of concern in corn and soybeans are metolachlor and its metabolites, determined as the derivatives CGA-37913 and CGA-49751.

§171-4 (b): Animal Metabolism: The Metolachlor Registration Standard dated 3/80 concluded that 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 excreta or tissues.

§171-4 (c) and (d): Residue Analytical Methods- Plants and Animals: Adequate methods for purposes of data collection and enforcement of tolerances for metolachlor residues are available. Methods for determining the combined residues of metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, are described in PAM, Vol. II, as Method I (plants; GC-NPD) and Method II (animals; GC-MS).

§171-4 (e): Storage Stability: Storage stability studies have been conducted using fortified samples of beef muscle, beef liver, milk, eggs, peanut nutmeats, potatoes, corn forage, corn grain, and corn oil. Residues of CGA-37913 are stable in frozen storage ($\leq$ -10 °C) in beef muscle for up to 52 days, in corn oil for up to 102 days, and in or on the remaining animal and plant commodities for up to 1 year. Residues of CGA-49751 are stable in frozen storage ($\leq$ -10 °C) in the animal commodities for up to 1 year, and in or on the plant commodities for up to 2 years. The registrant has reported the storage intervals for a sufficient number of the treated samples from existing studies used to support proposed and established tolerances. The outstanding plant and animal magnitude of residue studies must report the storage conditions and intervals for all samples; samples should be stored under the conditions and analyzed within the intervals of demonstrated residue stability.

§171-4 (f-l): Magnitude of the Residue in Plants and Animals: Data generated at Craven laboratories and used to support proposed or established tolerances were identified (see Table A, footnote 2; CB No. 8398, 10/10/91, S. Koepke, and 5/4/93 and 5/20/93, S. Hummel); replacement magnitude of the residue data ~~are~~ were required for non-grass animal

feeds (alfalfa and clover), field corn (grain, forage and fodder), fresh corn (sweet corn K+CWHR), cotton seeds, soybeans (seed, forage and hay), seed and pod vegetables (except soybeans), peanuts (nuts, hulls, forage, and hay), and replacement processing data are required for safflower. CB concluded that enough non-Craven magnitude of residue data are available to support extensions of the existing tolerances on an interim basis until the Craven data are replaced. Ciba-Geigy has committed to replacing these data. Sufficient replacement data have been submitted to support registered uses on field corn, cottonseed, and legumes. Partial replacement data have been submitted for cottonseed and peanuts. Additional data on alfalfa and clover have been received and screened and will be reviewed as time permits. Available processing studies, supported by non-Craven data, indicate that food/feed additive tolerances are needed for peanuts, meal; potatoes, dry peel; potatoes, wet peel; potatoes, granules; potatoes, waste from processing; and soybean hulls (see Tolerance Reassessment Summary below). A new product, Bicep DF (EPA Reg. No. 100-748), the first metolachlor dry flowable formulation, was registered without review by Chemistry Branches and without supporting residue data. The dry flowable formulation is substantially different than the previously registered EC and G formulations, which are supported by residue data. However, no additional residue data will be required for the uses of Bicep DF prior to crop emergence (on corn and sorghum). Residue data are required to support the post emergence uses of Bicep DF on corn. Bicep DF is registered for preplant incorporated and preemergence uses on corn and sorghum. Feeding studies are available for ruminants and poultry. Residues determined as CGA-37913 will be corrected for the loss in frozen storage.

TABLE A. RESIDUE CHEMISTRY SCIENCE ASSESSMENTS FOR REREGISTRATION OF METOLACHLOR

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
§171-4 (a): Plant Metabolism	N/A	No	00015423, 00015424, 00015652, 00015653, 00022872, 00022873, 00022874, 00022879, 00022880, 00074898, 00074900, 40766601[33] 42644301[34], 42652101[34]

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
§171-4 (b): Animal Metabolism	N/A	No	00015413, 00015425, 00015695, 00015696, 00015697, 00022885, 00022886, 00022887, 00039181, 00039192, 00039193
§171-4 (c) and (d): Residue Analytical Methods	N/A	No	00015432, 00015466, 00015543, 00015698, 00016306, 00039176, 00111693, 00125227
§171-4 (e): Storage Stability	N/A	Yes	00015469, 40980702[35], 40980703[35],41425502[36], 41506401[37],42384401[38], 42502901[39],42810601[40]
§171-4 (k) (l): Magnitude of the Residue in Plants			
Root and Tuber Vegetables Group			
- Potatoes	0.2 [§180.368(a)]	No	00105957, 00106191, 00109613
- Radishes grown for seed	none[41]	Yes	none
Bulb Vegetables (*Allium* spp.) Group			
- Onions	pending[42]	No	43000101
Leafy Vegetables (except *Brassica* vegetables) Group			
- Celery	--	No	41551201[43,44]
Brassica (cole) Leafy Vegetables Group			
- Cabbage	1.0 [§180.368(a)]	No	40644901[45,46]
Legume Vegetables (succulent or dried) Group			
- Beans (succulent and dried)	0.3 [Seed and pod vegetables (except soybeans)] [§180.368(a)]	No[47]	00064182, 00128731, 432957014[48]

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Peas (succulent and dried)	0.3 [Seed and pod vegetables (except soybeans)] [§180.368(a)]	No[47]	00064182, 00128731, 43295701[48]
- Soybeans	0.2 [§180.368(a)]	No	00015399, 00015400, 00015401, 00015402, 00015403, 00015404, 00015405, 00015406, 00015407, 00015408, 00015409, 00015410, 00015411, 00015540, 00015541, 00015542, 00015706, 00015719, 00015721, 00015722, 00015723, 00015725, 00015726, 00015727, 00015728, 00015729, 00015735, 00015736, 00015737, 00015760, 00015761, 00015762, 00015763, 00015764, 00015765, 00015766, 00015767, 00015768, 00015769, 00015770, 00015771, 00015772, 00015773, 00015774, 00015777, 00015778, 00015779, 00015780, 00016248, 00016427, 00016604, 00039174, 43178401[49]
- Lupine	0.3 [Seed and pod vegetables (except soybeans)] [§180.368(a)]	No[50]	
<u>Foliage of Legume Vegetables</u> - Bean vines and hay	15.0 [Legume vegetables group foliage (except soybean forage and soybean hay)] [§180.368(a)]	No[47]	00128731, 43295701[48]

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Pea vines and straw	15.0 [Legume vegetables group foliage (except soybean forage and soybean hay)] [§180.368(a)]	No[47]	00128731, 43295701[48]
- Soybean forage and hay	8.0 [§180.368(a)]	No	00015399, 00015400, 00015401, 00015402, 00015403, 00015408, 00015540, 00015541, 00015542, 00015706, 00015719, 00015721, 00015722, 00015725, 00015726, 00015727, 00015728, 00015729, 00015731, 00015732, 00015733, 00015734, 00015736, 00015737, 00015760, 00015761, 00015762, 00015763, 00015764, 00015765, 00015766, 00015767, 00015768, 00015769, 00015770, 00015771, 00015772, 00015773, 00015774, 00015775, 00015777, 00039174, 43178403[49]
Fruiting Vegetables (except cucurbits) Group			
- Peppers	0.1 (bell) [§180.368(a)] 0.5 (chili) [§180.368(c)] 0.1 (Cubanelle) [§180.368(c)] 0.5 (tabasco) [§180.368(c)]	No	00150180, 00156573[51], 40557301[52,53,54], 40899301[55,56]
Stone Fruits Group	0.1 [§180.368(a)]	No	00131376[57]
Tree Nuts Group	0.1 [§180.368(a)]	No[58]	
- Almonds, hulls	0.3 [§180.368(a)]	No	
Cereal Grains Group			
- Barley	0.1 [§180.368(b)]	No	00078297

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Buckwheat	0.1 [§180.368(b)]	No	00078297

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Corn, field and fresh	0.1 (grain) [§180.368(a)] 0.1 [fresh (inc. sweet K + CWHR)] [§180.368(a)]	Yes[59,60,61,62]	00015428, 00015429, 00015430, 00015570, 00015571, 00015572, 00015586, 00015587, 00015588, 00015589, 00015590, 00015591, 00015592, 00015593, 00015594, 00015595, 00015597, 00015598, 00015599, 00015600, 00015601, 00015602, 00015676, 00015677, 00015678, 00015679, 00015680, 00015681, 00015682, 00015683, 00015684, 00015685, 00015686, 00015687, 00015688, 00015689, 00015690, 00015691, 00015692, 00015693, 00015694, 00015704, 00015705, 00015707, 00015708, 00015709, 00015710, 00015711, 00015712, 00015713, 00015714, 00015715, 00015716, 00015717, 00015718, 00015739, 00015740, 00015741, 00015742, 00015743, 00015744, 00015745, 00015746, 00015747, 00015748, 00015749, 00015750, 00015751, 00015752, 00015753, 00015754, 00015755, 00015756, 00015757, 00015786, 00015787, 00015950, 00015954, 00015955, 00016392, 00016393, 00016394, 00016395, 00016396, 00016397, 00016398, 00016399, 00016435,

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TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Corn, field and fresh, continued			43178401[62]
- Millet	0.1 [§180.368(b)]	No	00078297
- Milo	0.1 [§180.368(b)]	No	00078297
- Oats	0.1 [§180.368(b)]	No	00078297
- Rice	0.1 [§180.368(b)]	No	00078297
- Rye	0.1 [§180.368(b)]	No	00078297
- Sorghum	0.3 [§180.368(a)]	Yes[61]	00015548, 00015549, 00015550, 00015551, 00015552, 00016607, 00016608, 00016609, 00016610, 00016990, 00016991, 00016992, 00111693
- Wheat	0.1 [§180.368(b)]	No	00078297
Forage, Fodder, and Straw of Cereal Grains Group			
- Barley, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Buckwheat, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Corn, forage and fodder	8.0 (forage and fodder) [§180.368(a)]	Yes[59,60,61,62]	identical to corn grain
- Millet, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Milo, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Oats, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Rice, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Rye, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
- Sorghum, forage and fodder	2.0 [§180.368(a)]	Yes[61]	identical to sorghum grain
- Wheat, forage and straw	0.5 (fodder) [§180.368(b)] 0.5 (forage) [§180.368(b)]	No	00078297
Grass forage, fodder, and hay Group	--[63]		
Non-grass Animal Feeds (forage, fodder, straw, and hay) Group	3.0 [§180.368(b)]	Yes[64,65]	43367101[65]
Miscellaneous Commodities			
- Cotton, seed	0.1 [§180.368(a)]	Yes[66]	00065048, 00129058, 40980707[67], 43178402[68]
- Peanuts	0.5 [§180.368(a)]	Yes[69]	00015553, 00015554, 00015555, 00015556, 00015557, 43263101[70]
- Peanuts, forage and hay	30.0 [§180.368(a)]	Yes[69]	
- Peanuts, hulls	6.0 [§180.368(a)]	Yes[69]	
- Safflower, seed	0.1 [§180.368(a)]	No	
§171-4 (l): Magnitude of the Residue in Processed Food/Feed			
- Beans (succulent and dried)	--	--	
- Corn, field	--	No	40980705[71,72,73]
- Corn, fresh	--	No	40980705[71]
- Cotton	--	No	40980707[74]
- Peanuts	--	No	40980708[75]
- Potato	--	No	40980704[76]
- Safflower	--	Yes[77]	
- Sorghum, grain	--	--	
- Sorghum, sweet	--	--	
- Soybeans	--	Yes	40980706[78], 41506501[79]

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
§171-4 (j): Magnitude of the Residue in Meat, Milk, Poultry, and Eggs		No[80]	00015413, 00022885, 00022887, 00106041
- Cattle	0.02 (fat) 0.2 (kidney) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except kidney and liver)] [§180.368(a)]		
- Eggs	0.02 [§180.368(a)]		
- Goats	0.02 (fat) 0.2 (kidney) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except kidney and liver)] [§180.368(a)]		
- Hogs	0.02 (fat) 0.2 (kidney) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except kidney and liver)] [§180.368(a)]		
- Horses	0.02 (fat) 0.2 (kidney) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except kidney and liver)] [§180.368(a)]		
- Milk	0.02 [§180.368(a)]		
- Poultry	0.02 (fat) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except liver)] [§180.368(a)]		

TABLE A. *(Continued)*

Data Requirements	Tolerances, ppm [40 CFR]	Must Additional Data Be Submitted?	References[31,32]
- Sheep	0.02 (fat) 0.2 (kidney) 0.05 (liver) 0.02 (meat) 0.02 [mbyp (except kidney and liver)] [§180.368(a)]		
§171-4 (f): Nature and Magnitude of the Residue in Drinking and Irrigation Water	N/A		
§171-4 (g): Magnitude of the Residue in Fish	N/A		
§171-4 (h): Magnitude of the Residue in Plants Resulting from the Use of Irrigation Water	N/A		
§171-4 (i): Magnitude of the Residue in Food Handling Establishments	N/A		
§171-5: Reduction of Residues	N/A		

31. Unless otherwise noted, references were cited in the Metolachlor Guidance Document dated January, 1987. References containing data generated by Craven Laboratories do not appear in Table A, but are listed separately under footnote 31 below.

32. The Agency (CB No. 8398, 10/10/91, S. Koepke) evaluated the impact on metolachlor reregistration of analytical data generated at Craven laboratories to support proposed or established tolerances. MRID numbers for those studies identified as containing Craven data are not listed in the table above, but are listed as a group here and individually under the relevant crop footnote below. Three of the identified studies were submitted to support proposed amended uses [MRIDs 00131860 (sorghum), 00148514 (tree nuts), and 41425501 (cotton)]. In each case, Ciba-Geigy withdrew the amended use proposal, and CB concluded that no further EPA action was required for those data. Seven of the identified studies were used to support proposed or established tolerances [MRIDs 00064181 (legume seed and pod vegetables), 00065047 (cotton), 00084006 (safflower), 00106039 (corn grain, forage and fodder), 00106049 (peanut nut, hulls, forage and hay), 00109662 (soybean seed, forage and hay), and 40516501 (alfalfa and clover)]. Additional magnitude of the

residue data were required to replace the Craven data as individually noted below.

33. CB No. 4931 (Metolachlor FRSTR follow-up), 6/14/89, R. Quick.

34. CB No. 11378, 5/10/93, S. Hummel

35. CB No. 4931, 6/14/89, R. Quick.

36. CB No. 8317, 4/16/92, B. Cropp-Kohlligian.

37. CB No. 9261, 8/6/92, S. Funk.

38. CB No. 10305, 4/15/93, F. Suhre. Adequate storage interval data were submitted for corn oil (treated samples were stored frozen ≤ the demonstrated 3-month storage stability interval).

39. CB No. 10787, 4/15/93, F. Suhre. Storage intervals are adequate to support the existing residue data. Additional storage stability data are required for peanut or soybean processed commodities, and potato processed commodities.

40. CB No. 12111, 11/17/93, F. Suhre. Storage stability studies are still needed for processed commodities of soybeans, peanuts and potatoes.

41. This use is registered under SLN WA910004. This application was reviewed by the Chemistry Branches. This use is a food use which requires the establishment of a tolerance. The current label restriction is not considered practical or enforceable.

42. A tolerance for combined residues of metolachlor in onions (dry bulb) is pending (PP#4E4286, CB 12970, 7/28/94, M. Bradley.

43. CB Nos. 6887 and 6888, 9/40/90, F. Griffith. Label amendments were required.

44. CB No. 7080, 10/23/90, F. Griffith. Petitioner revised their Direction for Use as indicated in CB Nos. 6887 and 6888. No deficiencies remain to be resolved for the proposed tolerance of 0.1 ppm in or on celery.

45. CB No. 3966, 8/11/88, S. Willett. PP#8E3637; MRID No. 40644901.

46. CB No. 6181, 2/5/90, F. Toghrol, FL890042.

47. CB No. 4931, 6/14/89, R. Quick. CB recommended that data requirements for field trials for the granular formulation of metolachlor on beans and peas (dried and succulent) be waived, dependent upon the registrant removing these uses from the Dual 25G label (25% G formulation, EPA Reg. No. 100-638). A revised Dual 25G label, EPA-accepted 3/13/92, does not list uses for beans or peas.

48. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional magnitude of residue data required to replace Craven data submitted in MRID 00064181. Ciba-Geigy has committed to conduct six field trials on snap beans (1), green peas (1), dry beans (2), and dry peas (2), in WI, WA, and CO. Field trials are currently in progress (CB No. 11474, 5/20/93, S.

Hummel).
CB No. 14160, 9/16/94, D. Miller. Residue data (MRID 43295701) are adequate to support tolerances in or on peas and beans. Appropriate tolerances must be proposed.

49. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional magnitude of residue data required to replace Craven data submitted in MRID 00109662. Ciba-Geigy has committed to replace the data. Additional studies are currently in progress (CB No. 11474, 5/20/93, S. Hummel).
CB No. 13482, 6/23/84, S. Hummel. Adequate Craven-replacement data have been submitted to support uses on soybeans.

50. No CB No., 5/6/87, F. Suhre. The seed and pod vegetables tolerance is applicable to lupine. The additional magnitude of residue data required for beans to replace the Craven data will translate to lupine.

51. CB No. 701, 4/14/86, M. Firestone.

52. CB No. 3588, 5/19/88, M. Kovacs. Additional data were required.

53. CB No. 4561, 3/24/89, M. Kovacs. Response to CB No. 3588; additional data were again required.

54. CB No. 5184, 7/13/89, M. Kovacs. Adequate response received to CB No. 4561.

55. CB No. 4727, 3/13/89, M. Nelson. Amended use directions were required.

56. CB No. 5185, 5/15/89, M. Nelson. The petitioner responded to deficiencies cited in CB No. 4727.

57. No CB No., 12/15/83, K. Arne. A label change was required.
No CB No., 1/26/84, A. Smith. Recommend for the proposed tolerance.

58. CB No. 8398, 10/10/91 , S. Koepke. Impact of Craven analytical data. Non-Craven data support only one application per year.

59. CB No. 8398, 10/10/91, S. Koepke, Impact of Craven analytical data. Additional magnitude of residue data needed to replace Craven data submitted in connection with PP#2F2720. Ciba Geigy has committed to replace the data.

60. No. CB No., 5/4/93, 5/27/93, S. Hummel. Additional data are needed to support preemergence plus layby uses on both field corn and sweet corn using both the EC and G formulations

61. Full supporting residue data are needed to support the post emergence uses of the dry flowable formulation of metolachlor (Bicep DF, EPA Reg. No. 100-748). The application for registration was not reviewed by the Chemistry Branches.

62. CB 13482, 6/23/94, S. Hummel. Adequate Craven replacement data have been received for field corn commodities. Craven replacement data are still needed for sweet corn commodities.

63. A petition for tolerances for metolachlor on the grass forage,fodder, and hay group is in reject status. (PP#3F04251, CB 12494, 9/1/94, G. Kramer)

64. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional magnitude of residue data required for alfalfa or clover to replace Craven data submitted in MRID 40516501. Ciba-Geigy has committed to replace these data. Additional studies are currently in progress (CB No. 11474, 5/20/93, S. Hummel).

A 24(c) registration for use on alfalfa grown for seed (OR910007) can be considered a non-food use due to recently enacted regulatory controls on alfalfa grown for seed in Oregon (CB No. 10900, 12/4/92, B. Schneider, OR900020, Naled on alfalfa grown for seed).

65. CB No. 14431, 10/04/94, S. Hummel. Craven replacement data on rotational alfalfa and clover have been received and screened. No over-tolerance residues were reported. The data will be reviewed in full as time permits.

66. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional magnitude of residue data are required to replace Craven data submitted in MRID 0065047. Ciba-Geigy has committed to replace these data. Additional studies are currently in progress (No CB No., 5/20/93, S. Hummel).

Ciba Geigy has not committed to replace the Craven data supporting post emergence uses on cotton and no replacement field trials are currently in progress. All 24(c)'s for post emergence use on cotton should be canceled (CB No. 11474, 5/20/93, S. Hummel).

67. CB No. 4931, 6/14/89, R. Quick.

68. CB No. 13482, 6/23/94, S. Hummel. The submitted data reflect a single preemergence application to cotton, with analyses of cottonseed only. Residue data are still needed for cotton gin byproducts, which are not under the control of the grower.

69. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional magnitude of residue data are required to replace Craven data submitted in MRID 00106049. Ciba-Geigy has committed to replace these data. Additional studies are currently in progress (CB No. 11474, 5/20/93, S. Hummel).
CB 13875, 9/29/94, S. Hummel. Data have now been submitted to replace Craven data for the G formulation. Data are still needed for the EC formulation.

70. CB No. 13875, 9/29/94, S. Hummel. The data support use of the G formulation. Additional data are needed for the EC formulation.

71. CB No. 4931, 6/14/89, R. Quick.

72. CB No. 8317, 4/16/92, B. Cropp-Kohlligian. Because residues of metolachlor are unstable in corn oil after 3 months when stored frozen, additional information was required concerning the storage conditions and intervals of treated samples.

73. CB No. 10305, 4/15/93, F. Suhre. (MRID 42384401). Treated corn oil samples were stored frozen for intervals $\leq$ 3 months.

74. CB No. 4931, 6/14/89, R. Quick.

75. CB No. 4931, 6/14/89, R. Quick. A feed additive tolerance of 2 ppm should be established for peanut meal.

76. CB No. 4931, 6/14/89, R. Quick. Food/feed additive tolerances are needed for dry potato peel (4 ppm), wet potato peel (0.5 ppm), granules (0.5 ppm), and processed potato waste (4.0 ppm). However, Delaney issues may prevent establishment of 409 tolerances.

77. CB No. 8398, 10/10/91, S. Koepke. Impact of Craven analytical data; additional processing data are required to replace Craven data submitted in MRID 00084006. Ciba Geigy did not commit to replace this study and has not reported that a replacement study is in progress (CB No. 11484, 5/20/93, S. Hummel).

78. CB No. 4931, R. Quick. Additional data were required for soybean hulls (see footnote for CB No. 8317 below). Data are still required depicting the potential for concentration of metolachlor residues in soybean grain dust.

79. CB No. 8317, 4/16/92, B. Cropp-Kohlligian. In response to CB No. 4931, adequate chromatograms were submitted for soybean hulls. A food additive tolerance for metolachlor residues in soybean hulls should be set at 2x the tolerance limit for soybeans (seeds).

80. CB No. 10787, 4/15/93, F. Suhre. The available storage stability data (S. Funk, CB No. 9261, 8/6/92) on metolachlor residues in animal commodities support the sample storage intervals reported for residue samples from animal feeding studies. Samples of meat from dairy cattle and poultry were stored longer than the 2 months for which CGA-37913 is stable in muscle. Residues determined as CGA-37913 in meat will be corrected for the 80% loss in frozen storage.

TOLERANCE REASSESSMENT SUMMARY

Tolerances Listed Under 40 CFR §180.368(a):

The tolerances listed in 40 CFR §180.368(a) are for 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 the 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.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.368(a) for: almonds, hulls; cabbage; corn, field, forage; corn, field, fodder; corn, field, grain; lupine, seed; peppers, bell; potatoes; sorghum, fodder (milo); sorghum, forage (milo); sorghum, grain (milo); stone fruits group; peas and associated vine and hay commodities; beans and associated forage and hay commodities; soybeans; soybeans, forage; and soybeans, hay; and tree nuts group.

Certain analytical data submitted to support the established tolerances listed in 40 CFR §180.368(a) were generated by Craven laboratories. The Agency has evaluated the impact of these data and has determined that sufficient non-Craven data are available to support extensions of the existing tolerances on an interim basis until the Craven data are replaced. Craven replacement data are still needed for: corn, sweet (K + CWHR); ~~corn, field, forage; corn, field, fodder; corn, field, grain;~~ cotton, seed (~~pre~~postemergence uses only); ~~legume vegetables group, foliage of (exc. soybeans, forage and soybeans, hay)~~; peanuts; peanuts, hay; peanuts, vines; peanuts, hulls (EC formulation at layby); safflower, seed (processing data); ~~beans, dry; beans, succulent;~~ lupine, seed; ~~peas, dry; peas, succulent;~~ soybeans; soybeans, forage; and soybeans, hay; provided the post-emergence uses of metolachlor on cotton are canceled.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.368(a) for: eggs; milk; the fat, kidney, liver, meat, and meat byproducts of cattle, goats, hogs, horses, sheep; and the fat, liver, meat, and meat byproducts of poultry. The dietary burden has been recalculated and the residues reported in the livestock feeding studies adjusted for losses in frozen storage.

So that the commodity definitions listed in 40 CFR §180.368(a) will be in accordance with the definitions listed in the Commodity Index Report dated 10/28/92, the tolerances should be revoked for: "corn, forage and fodder" (8.0 ppm); "peanut, forage and hay" (30.0 ppm); "sorghum, forage and fodder" (2.0 ppm), and "soybeans, forage and hay" (8.0 ppm). Separate tolerances should be established in 40 CFR §180.368(a) for: "corn, field, forage" (8.0 ppm); "corn, field, fodder" (8.0 ppm); "peanuts, hay" (30.0 ppm); "peanuts, vines" (30.0 ppm); "sorghum, fodder (milo)" (2.0 ppm); and "sorghum, forage (milo)" (2.0 ppm).

The tolerance for "seed and pod vegetables (except soybeans)" (0.3 ppm) should be revoked, and separate tolerances should be established for "beans, dry" ~~(0.3 ppm)~~ (0.1 ppm), "beans, succulent" ~~(0.3 ppm)~~ (0.5 ppm), "peas, dry" ~~(0.3 ppm)~~ (0.1 ppm), and "peas, succulent" ~~(0.3 ppm)~~ (0.5 ppm)~~, as recommended in the 1/87 Guidance Document~~. In addition, tolerances for bean vines and hay should be replaced with tolerances of 3 ppm for beans, forage, and beans, hay; tolerances for pea vines and hay should be replaced with a tolerance of 15 ppm for peas, vines, and 2 ppm for peas, hay.

Certain other commodity definitions listed in 40 CFR §180.368(a) are not in accordance with the definitions listed in the Commodity Index Report dated 10/28/92; see Table B for additional modifications in commodity definitions.

Tolerances Listed Under 40 CFR §180.368(b):

The tolerances listed in 40 CFR §180.368(b) are for 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 the 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, when present in the raw agricultural commodities listed in 40 CFR §180.368(b) as a result of the application of metolachlor to growing crops listed in 40 CFR §180.368(a).

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.368(b) for: the straw, forage, and grain of barley, buckwheat, oats, rice, rye, and wheat.

Certain analytical data submitted to support the established tolerances listed in 40 CFR §180.368(b) were generated by Craven laboratories. The Agency has evaluated the impact of these data and has determined that sufficient non-Craven data are available to support extensions of the existing tolerances on an interim basis until the Craven data are replaced, for: non-grass animal feeds group. The non-Craven replacement data for alfalfa and clover (non-grass animal feeds group) have been received and screened. The screen indicates that current tolerances will not be exceeded. The data will be reviewed in full as time permits.

So that the commodity definitions listed in 40 CFR §180.368(b) will be in accordance with the definitions listed in the Commodity Index Report dated 10/28/92, the tolerances should be revoked for: "millet, fodder" (0.5 ppm); "millet, forage" (0.5 ppm); "milo, fodder" (0.5 ppm); "milo, forage" (0.5 ppm); and "milo grain" (0.1 ppm). The definitions for millet forage and fodder have been deleted from the Commodity Index Report, and do not appear in Table II of Subdivision O. The definitions for milo will be covered under 40 CFR §180.368(a) as: "sorghum, fodder (milo)" (2.0 ppm); "sorghum, forage (milo)" (2.0 ppm); and "sorghum, grain" (0.3 ppm).

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Tolerances Listed Under 40 CFR §180.368(c):

The tolerances [with regional registration as defined in §180.1(n)] listed in 40 CFR §180.368(c) are for 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 the 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.

Sufficient data are available to ascertain the adequacy of the established tolerances listed in 40 CFR §180.368(c) for: peppers, chili; peppers, Cubanelle; and peppers, tabasco.

The established tolerance listed in 40 CFR §180.368(c) for "peppers, tabasco" (.5 ppm), should include a leading zero (0.5 ppm).

New Tolerances Needed:

Food/feed additive tolerances are needed for the following processed commodities: "potatoes, dry peel" (4.0 ppm); "potatoes, wet peel" (0.5 ppm); "potatoes, granules" (0.5 ppm); and "potatoes, waste from processing" (4.0 ppm), and soybean hulls (0.4 ppm). However, Delaney issues may prevent the establishment of these tolerances.

TABLE B. TOLERANCE REASSESSMENT SUMMARY

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Tolerances listed under 180.368(a)			
Almond hulls	0.3		*Almonds, hulls*
Cabbage	1.0		
Cattle, fat	0.02		
Cattle, kidney	0.2		
Cattle, liver	0.05		
Cattle, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Cattle, mbyp (except kidney and liver)	0.02	0.05	*Cattle, mbyp (exc. liver and kidney)* Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Corn, fresh (inc. sweet K + CWHR)	0.1	TBD	*Corn, sweet (K + CWHR)*
Corn, forage and fodder	8.0	Revoke and establish separate tolerances at 8.0 ppm	*Corn, field, forage* and *Corn, field, fodder*
Corn, grain	0.1		*Corn, field, grain*
Cottonseed	0.1	TBD	*Cotton, seed*
Eggs	0.02		
Goats, fat	0.02		
Goats, kidney	0.2		
Goats, liver	0.05		
Goats, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Goats, mbyp (except kidney and liver)	0.02	0.05	*Goats, mbyp (exc. liver and kidney)* Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Hogs, fat	0.02		
Hogs, kidney	0.2		
Hogs, liver	0.05		

TABLE B. *(Continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Hogs, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Hogs, mbyp (except kidney and liver)	0.02	0.05	*Hogs, mbyp (exc. liver and kidney)* Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Horses, fat	0.02		
Horses, kidney	0.2		
Horses, liver	0.05		
Horses, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Horses, mbyp (except kidney and liver)	0.02	0.05	*Horses, mbyp (exc. liver and kidney)* Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Legume vegetables group foliage (except soybean forage and soybean hay)	15.0	Revoke and establish separate tolerances at 3 ppm for beans, forage; and beans, hay; 15 ppm for peas, vines; and 2 ppm for peas, hay	~~*Legume vegetables group, foliage of (exc. soybeans, forage and soybeans, hay)*~~ beans, forage beans, hay peas, vines peas, hay
Milk	0.02		
Peanuts	0.5	TBD	
Peanut, forage and hay	30.0	Revoke and establish separate tolerances for peanuts, hay at level TBD ~~30.0 ppm~~	*Peanuts, hay* *Peanuts, vines* are no longer a regulated commodity
Peanut, hulls	6.0	TBD	*Peanuts, hulls*
Peppers, bell	0.1		
Potatoes	0.2		
Poultry, fat	0.02		
Poultry, liver	0.05		
Poultry, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.

TABLE B. *(Continued)*.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Poultry, mbyp (except liver)	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Safflower seed	0.1		*Safflower, seed*
Seed and pod vegetables (except soybeans)	0.3	Revoke and establish separate tolerances ~~at 0.3 ppm~~ at 0.1 ppm for beans, dry; 0.5 ppm for beans, succulent; 0.1 ppm for peas, dry; and 0.5 ppm for peas, succulent	*Beans, dry*; *Beans, succulent*; *Peas, dry*; and *Peas, succulent*
Sheep, fat	0.02		
Sheep, kidney	0.2		
Sheep, liver	0.05		
Sheep, meat	0.02	0.05	Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Sheep, mbyp (except kidney and liver)	0.02	0.05	*Sheep, mbyp (exc. liver and kidney)* Changes necessary to correct for losses in frozen storage and 50% radiovalidation in plants.
Sorghum, forage and fodder	2.0	Revoke and establish separate tolerances at 2.0 ppm	*Sorghum, fodder (milo)* and *Sorghum, forage (milo)*
Sorghum, grain	0.3		*Sorghum, grain (milo)*
Soybeans	0.2		
Soybeans, forage and hay	8.0	Revoke and establish separate tolerances at 8.0 ppm	*Soybeans, forage* and *Soybeans, hay*
Stone fruits group	0.1		
Tree nuts group	0.1		
Tolerances listed under 180.368(b)			
Barley, fodder	0.5		*Barley, straw*
Barley, forage	0.5		

TABLE B. *(Continued)*.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Barley, grain	0.1		
Buckwheat, fodder	0.5		*Buckwheat, straw*
Buckwheat, forage	0.5		
Buckwheat, grain	0.1		
Millet, fodder	0.5	Revoke	Commodity not listed in Subdivision O, Table II, and deleted from Commodity Index Report
Millet, forage	0.5	Revoke	Commodity not listed in Subdivision O, Table II, and deleted from Commodity Index Report
Millet, grain	0.1		
Milo, fodder	0.5	Revoke	Covered under "Sorghum, fodder (milo)"
Milo, forage	0.5	Revoke	Covered under "Sorghum, forage (milo)"
Milo, grain	0.1	Revoke	Covered under "Sorghum, grain (milo)"
Non-grass animal feeds (forage, fodder, straw, and hay) group	3.0	TBD	*Non-grass animal feeds group*
Oats, fodder	0.5		*Oats, straw*
Oats, forage	0.5		
Oats, grain	0.1		
Rice, fodder	0.5		*Rice, straw*
Rice, forage	0.5		
Rice, grain	0.1		
Rye, fodder	0.5		*Rye, straw*
Rye, forage	0.5		
Rye, grain	0.1		
Wheat, fodder	0.5		*Wheat, straw*
Wheat, forage	0.5		
Wheat, grain	0.1		

Tolerances listed under 180.368(c)

TABLE B. *(Continued)*.

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Peppers, chili	0.5		
Peppers, Cubanelle	0.1		
Peppers, tabasco	.5	**0**.5	

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TABLE B. *(Continued).*

Commodity	Current Tolerance (ppm)	Tolerance Reassessment (ppm)	Comment/*Correct Commodity Definition*
Food and Feed Additive Tolerances Needed[1]			
potatoes, dry peel		4.0	
potatoes, granules		0.5	
potatoes, waste from processing		4.0	
potatoes, wet peel		0.5	
soybeans, hulls		0.4	

1. Delaney issues may prevent establishment of these tolerances.

CODEX HARMONIZATION

No maximum residue limits (MRLs) for metolachlor have been established by Codex for any agricultural commodity. Therefore, no questions of compatibility exist with respect to U.S. tolerances.

DIETARY EXPOSURE

Anticipated residues were provided in S. Knizner memo of 11/18/93 (CB 12521) and updated in S. Hummel memo of 6/23/94 (CB 13482). The anticipated residues provided are likely to overestimate dietary exposure because tolerance level residues are assumed when non-Craven data were not available.

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AGENCY MEMORANDA CITED IN THIS DOCUMENT

CB No. none
Subject: PP#3F2957 - Metolachlor on Stone Fruits
From: K. Arne
To: R. Mountfort, PM#23
Dated: 12/15/83
MRID(s): 00131376

CB No. None
Subject: PP#3F2957 - Metolachlor on Stone Fruits
From: A. Smith
To: R. Mountfort, PM#23
Dated: 1/26/84
MRID(s): none

CB No. None Update to CB No. 2008
Subject: Amendment to review dated 3-13-87; Section 24(c) SLN:CA860072 To:Registration for Metolachlor on Lupine.
From: F. Suhre
To: R. Mountfort, PM#23
Dated: 5/6/87
MRID(s): None

CB No. 701
Subject: PP#6E3378, Metolachlor on Tabasco Peppers-Evaluation of Analytical Methods and Residue Data
From: M. Firestone
To: H. Jamerson
Dated: 4/14/86
MRID(s): 00156573

CB No. 3588
Subject: PP#8E3616 Metolachlor on Bell Peppers
From: M. Kovacs
To: H. Jamerson
Dated: 5/19/88
MRID(s): 40557300 and 40557301

CB No. 3966
Subject: PP#8E3637 Metolachlor on Cabbage
From: S. Willett
To: H. Jamerson
Dated: 8/11/88
MRID(s): 40644901

CB No. 4561
Subject: PP#8E3616 Metolachlor on Bell peppers
From: M. Kovacs
To: H. Jamerson
Dated: 3/24/89
MRID(s):

CBRS No. 4727
Subject: PP#9E3708 Metolachlor on Cubanelle Peppers
From: M. Nelson
To: H. Jamerson
Dated: 3/13/89
MRID(s): 4089300 and -01

CB No. 4931
Subject: Metolachlor registration standard follow-up.
From: R. Quick
To: L. Schnaubelt
Dated: 6/14/89
MRID(s): 40980702 to 40980708 and 40766601 and 40766602

CB No. 5184
Subject: Metolachlor on Bell Peppers Evaluation of Amendment Dated February 23, 1989 (Information Regarding Bell Pepper Production in Texas)
From: M. Kovacs
To: H. Jamerson
Dated: 7/13/89
MRID(s): None

CBRS No. 5185
Subject: PP#9E3708 Metolachlor on Cubanelle Peppers
From: M. Nelson
To: H. Jamerson
Dated: 5/15/89
MRID(s): none

CB No. 6181
Subject: SLN FL890042 - Metolachlor for use on Cabbage.
From: F. Toghrol
To: J. Miller
Dated: 2/5/90
MRID(s): None

CB Nos. 6887 and 6888
Subject: PP#0E3882 - Metolachlor on Celery
From: F. Griffith
To: H. Jamerson
Dated: 9/4/90
MRID(s): 41551200 and -01

CB No. 7080
Subject: PP#0E3882 - Metolachlor on Celery
From: F. Griffith
To: H. Jamerson
Dated: 10/23/90
MRID(s): 41551201

CB No. 8317
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. 8398
Subject: Impact of Craven Analytical Data on Registrations.
From: S. Koepke
To: J. Miller
Dated: 10/10/91
MRID(s): 00064181, 00065047, 00084006, 00106039, 0106049, 00109662, 00131860, 00148514, 405166501, 41425501

CB No. 9261
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. 10900
Subject: OR900020 - Naled on Alfalfa Grown for Seed
From: B. Schneider
To: J. Miller
Dated: 12/4/92
MRID(s): none

CB No. 10305, 10787
Subject: Metolachlor - Storage Stability and Sample Storage Intervals (D181006, D183896)
From: F. Suhre
To: J. Mitchell
Dated: 4/15/93
MRID(s): 42502901, 42384401

CB No. 11378
Subject: Metolachlor - Plant Metabolism - Potatoes and Corn - Radiovalidation (D188194)
From: S. Hummel
To: J. Mitchell
Dated: 5/10/93
MRID(s): 42644301, 42652101 to -11

CB No. none
Subject: Metolachlor - Reevaluation of Craven Data Base
From: S. Hummel
To: J. Mitchell
Dated: 5/4/93, 5/27/93
MRID(s): none

CB No. 11484
Subject: Metolachlor - Replacement of Craven Data (D188841)
From: S. Hummel
To: J. Mitchell
Dated: 5/20/93
MRID(s): none

CB No. none
Subject: Memorandum of Phone Call: Residue Data Requirements for New Formulations
From: R. Loranger
To: Files
Dated: 5/20/91
MRID(s): none

CB No. 12111
Subject: Metolachlor (108801) Storage Stability Data
From: F. Suhre
To: J. Mitchell
Dated: 11/17/93
MRID(s): 42710601
DPBarcode: D192548

CB No. 12521
Subject: Metolachlor Anticipated Residues
From: S. Knizner
To: J. Mitchell
Dated: 11/18/93
MRID(s): None
DPBarcode: D194942

CB No. 13482
Subject: Metolachlor (108801) Addendum to RED, Replacement of Craven Data on field corn, cottonseed (single application only), and soybeans. Updated Anticipated Residues
From: S. Hummel
To: J. Mitchell
Dated: 6/23/94
MRID(s): 43178401, 43178402, 43178403
DPBarcode: D201438

CB No. 12970
Subject: PP#4E4286. Metolachlor on Dry Bulb Onions
From: M. Bradley
To: J. Miller
Dated: 7/28/94
MRID(s): 43006101
DPBarcode: D197404

CB No. 12494
Subject: PP#3F04251. Metolachlor in or on grasses grown for seed.
From: G. Kramer
To: J. Miller
Dated: 9/1/94
MRID(s): 42885701, 42995702, 42885703, 42885704, 42885705, 42885706, 42885707
DPBarcode: D194844

CB No. 14160
Subject: Addendum to RED: Magnitude of Residue in Legumes (Succulent and Dried)
From: D. Miller
To: Jane Mitchell
Dated: 9/16/94
MRID(s): 43295701
DPBarcode: D206103

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