12-6-77

EEE BRANCH REVIEW

DATE: IN _____ OUT _____ IN 11/22/77 OUT 12/6/77 IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 100-EUP-59

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED _____

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): I, D, (H,) F, N, R, S _____

PRODUCT MGR. NO. SRS - L. Zink

PRODUCT NAME(S) Dual 8E

COMPANY NAME CIBA - GEIGY

SUBMISSION PURPOSE EUP for corn, alone and in combination with Bladex, Bannel, AAtrex, Paraquat and Roundup.

CHEMICAL & FORMULATION Metolachlor (2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetaminde)

1.0 Introduction

1.1 Metolachlor, Dual

1.2 Percent Active: 86.5

Contains 8 lbs active/gallon

1.3 This permit involves the use of Dual in combinations with other chemicals, they are listed below:

Herbicide(s)	
Dual 8E	AAtrex 80W + Paraquat or Roundup + Dual 8E
Bladex 80W + Dual 8E	AAtrex Nine-O™ + Paraquat or Roundup + Dual 8E
Bladex 4L + Dual 8E	AAtrex 4L or 4LC + Paraquat or Roundup + Dual 8E
Banvel + Dual 8E	

1.4 A total of 261 gals (2088 lbs ai) are to be shipped, (Dual 8E) covering 1044 A in 48 states. The amount of other products to be used in combination are: (in lbs ai)

339.2	Atrazine	(AAtrex 80W)
348.2	Atrazine	(AAtrex Nine-O)
339.2	Atrazine	(AAtrex 4L)
14.9	Paraquat Cation	(Paraquat CL).
56.25	Glyphosate Acid	(Roundup)
50.00	Cyrnazine	(Bladex 80W)
100.00	Cyrnazine	(Bladex 4L)

2.0 Directions for Use

Dual 8E Applied Alone

Application: Apply preplant incorporated or preemergence using rates from Table 1. Preplant Incorporated: Incorporate into the top 2 inches before planting using a disk, harrow, rolling cultivator, or similar implement. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application can reasonably be expected. If corn is planted on beds, apply and incorporate Dual 8E after bed formation. Preemergence: Apply to the soil surface at planting, or after planting but before weeds or corn emerge.

Table 1: Dual 8E Alone

	Broadcast rate per acre	
Soil texture	Less than 3% organic matter	3% or more organic matter
COARSE Sand, loamy sand, sandy loam	1.5-2 pts.	2 pts.
MEDIUM Loam, silt loam, silt	2-2.5 pts.	2-2.5 pts.
FINE Sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay	2-2.5 pts.	2.5-3 pts.
muck or peat soils	NOT RECOMMENDED	

Rotational Crops: (1) If replanting is necessary, corn or soybeans may be replanted immediately. Do not make a second broadcast application of Dual 8E. If the original application was banded and the second crop is replanted in the untreated row middles, a second band treatment may be applied. (2) Corn may be planted the year following treatment. Other crops may be planted 18 months following application.

Tank Mixture of Dual 8E Plus Bladex 80W or Bladex 4L

Application: Apply preplant incorporated or preemergence using the rates from Table 2. Preplant Incorporated: Incorporate into the top 2 inches before planting using a disk, harrow, rolling cultivator, or similar implement. Use a preplant incorporated application if furrow irrigation is used or when a period of dry weather after application can reasonable be expected. If corn is planted on beds, apply and incorporate the tank mixture after bed formation. Preemergence: Apply to the soil surface at planting or after planting but before weeds or corn emerge.

Table 2: Dual 8E + Bladex Tank Mixture

Soil texture	Broadcast rate per acre for soils with less than 3% organic matter				
	Dual 8E		Bladex 80W		Bladex 4L
COARSE Sand*, loamy sand*, sandy loam	1.25 pts.	+	1.5 lbs.	or	2.4 pts.
MEDIUM Loam, silt loam, silt	1.5 pts.	+	2 lbs.	or	3 pts.
FINE Sandy clay loam, silty clay loam, clay laom, sandy clay, silty clay, clay	1.75 pts.	+	2.2 lbs.	or	3.5 pts.

Soil texture	Broadcast rate per acre for soils with 3% or more organic matter				
	Dual 8E		Bladex 80W		Bladex 4L
COARSE Sand, loamy sand, Sandy loam	1.5 pts.	+	2 lbs.	or	3 pts.
MEDIUM Loam, silt loam, silt	1.75 pts.	+	2.2 lbs.	or	3.5 pts.
FINE Sandy clay loam, silty clay loam, clay loam sandy clay, silty clay, clay	2-2.25 pts.	+	2.5-2.8 lbs.	or	4-4.5 pts.
muck or peat soils	NOT RECOMMENDED				

*Not recommended for use on sand or loamy sand soils with less than 1% organic matter.

Rotational Crops: (1) If replanting is necessary, corn may be replanted immediately. Do not make a second broadcast application. If the original application was banded and the second crop is replanted in the untreated row middles, a second band treatment may be applied. (2) Corn may be planted the year following treatment. Other crops may be planted 18 months following application.

Tank Mixture of Dual 8E Plus Banvel

Use this tank mixture only on field corn which is flat-planted (no furrows) in Illinois, Indiana, Iowa, Minnesota, Nebraska, Ohio, South Dakota, and Wisconsin.

Application: Apply preemergence using the rates from Table 3. This tank mixture should be applied to the soil surface at planting or after planting but before the corn emerges. Avoid drift to soybeans or other desirable plants. Do not apply with aircraft. Plant corn at least 1.5 inches deep and apply behind planting equipment avoiding incorporation by the planter wheel or other seed covering device. Do not incorporate prior to corn emergence. If it is necessary to rotary hoe to break the soil crust, do not disturb the soil more than one-half inch deep.

Table 3: Dual 8E + Banvel Tank Mixture

	Broadcast rate per acre for soils with more than 2.5% organic matter		
Soil texture	Dual 8E		Banvel
MEDIUM Loam, silt loam, silt	2 pts.	+	1 pt.
FINE Sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay	2-2.5 pts.	+	1 pt.
muck or peat soils	NOT RECOMMENDED		

* Do not use on coarse soils or on soils with less than 2.5% organic matter.

Rotational Crops: (1) If replanting is necessary, corn may be replanted immediately provided it is planted at least 1.5 inches deep with minimum disturbance of the soil. Do not make a second broadcast application. If the original application was banded and the second crop is replanted in the untreated row middles, a second band application may be applied. (2) Corn may be planted the year following treatment. Other crops may be planted 18 months following application.

Tank Mixture of Dual 8E plus AAtrex plus Paraquat CL or Roundup for Reduced-Tillage Systems

In reduced-tillage systems where corn is planted directly into a cover crop, established sod, or previous crop residues, the contact herbicides Paraquat CL or Roundup may be added to a tank-mix of Dual 8E + AAtrex.

Application: Apply before, during, or after planting, but before the corn emerges, at the rates in Table 4. Add Paraquat CL or Roundup at the following broadcast rates:

Paraquat CL: 1-2 pts. per acre plus 8 oz. of X-77 Spreader per 100 gals. of spray mixture, for control of existing weeds.

Roundup: 1.5 qts. per acre for existing annual weeds, or 2-4 qts. per acre for existing perennial weeds.

Apply in 20-60 gals. of spray mixture per acre with ground equipment.

Table 4: Dual 8E + AAtrex for Reduced-Tillage Corn

	Broadcast rate per acre			
Soil Texture	Dual 8E	AAtrex 80W	AAtrex Nine-O	AAtrex 4L or AAtrex 4LC
COARSE Sand, loamy sand, sandy loam	1.5 pts.	+ 1.5 lbs. or	1.3 lbs. or	2.4 pts.
MEDIUM Loam, silt loam, silt	2 pts.	+ 2 lbs. or	1.8 lbs. or	3.2 pts.
FINE Sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay	2-2.5 pts.	+2-2.5 lbs. or	1.8-2.2 lbs or	3.2-4 pts.
Muck or peat soils	NOT RECOMMENDED			

Rotational Crops: (1) If replanting is necessary, corn may be replanted immediately. Do not make a second broadcast application. (2) Corn may be planted the year following treatment. Other crops may be planted 18 months following application.

Tank Mixture of Dual 8E + AAtrex Postemergence

Dual 8E + AAtrex applied early postemergence controls weeds not controlled by preplant incorporated or preemergence applications of Dual 8E alone.

Application: Apply early postemergence using the rates from Table 5. This tank mixture can be applied up to the time grass and broadleaf weeds are 2 inches tall and the corn has no more than 4 leaves. Applications to weeds larger than 2 inches will generally not give satisfactory control and applications made beyond the 4-leaf stage of corn may injure the crop. Occasionally some corn leaf burn may result, but this should not affect subsequent growth or yield. Post-emergence applications of this tank mixture should not be made in fluid fertilizer or injury may occur.

Table 5: Dual 8E + AAtrex Postemergence

	Broadcast rate per acre			
Soil Texture	Dual 8E	AAtrex 80W	AAtrex Nine-0	AAtrex 4L or AAtrex 4LC
COARSE Sand, loamy sand, sandy loam	1.5 pts.	+ 1.5 lbs.	or 1.3 lbs.	or 2.4 pts.
MEDIUM Loam, Silt loam silt	2 pts.	+ 2 lbs.	or 1.8 lbs.	or 3.2 pts.
FINE Sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay	2 pts.	+ 2 lbs.	or 1.8 lbs.	or 3.2 pts.

Observe all cautions and limitations on labeling of all products used in tank mixtures.

Rotational Crops: (1) If replanting is necessary, corn may be replanted immediately. Do not make a second application. (2) Corn may be planted the year following treatment. Other crops may be planted 18 months following application. Observe the crop rotation suggestions on the AAtrex labels for additional crop rotation statements.

2.1 Disposal

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container. Pesticide, spray mixture, or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides or buried in a safe place away from water supplies. Triple rinse (or equivalent) and dispose of in an approved landfill or bury in a safe place. Consult federal, state, or local disposal authorities for approved alternative procedures.

3.0 Discussion of Data

The following listed data is new data (tank mix) and we will review it for hazards only. The data will not be validated for registration, ZBB does not allow that time for EUP's.

1. Acc. #232193, Vol. 4 of 14. Report # ABR-77067. Tab: Summaary, AG303, Dicamba method, AG-A-4141, AG-A-4156, Craven lab 76-1-D (Metachlor + Dicamba Tank Mix).

2. Report # ABR-77068. Tab: Summary, AG303, GAAC-6014, DAM method, AG-4085, ORTHO-T-4048, ORTHO-T-4089, AG-A-4084. (Metachlor + Atrazine _-Paraquat Tank Mix.)

4.0 Conclusion

No hazards (increased persistence) found in the cursory review of the data cited in Sect. 3.0. We note that the applicant has placed on the label an 18 mo. crop rotation restriction, except corn, and soybeans (Dual alone) which is dated can be replanted immediately. For the treated crop corn, this is fine, but for soybeans, the 12 mo. interval would have to conform to the 18 mo. interval.

5.0 Recommendations

5.1 We cannot concur with the proposed use under the EUP for Dual alone and in combination with Bladex, Banvel, AAtrex, Paraquat, and or Roundup; unless the interval for soybeans on Dual alone is changed from replanting immediately to follow the 18 mo. crop rotation interval.

5.2 All Environmental Chemistry Data in Section 3 Regulations is needed prior to Registration. See attached sheet for data requirements.

Ronald E. Ney, Jr. 12/6/77
Robert F. Carsel 12/6/77
Environmental Chemistry Section
Efficacy and Ecological Effects Branch

Table 1 - Summary of environmental chemistry data requirements by intended use pattern

Fate Process / Use Patterns	Terrestrial Uses: Domestic Outdoor	Greenhouse	Forestry	Tree Fruit-Nut Crop	Field Vine Crop	Aquatic Food Crop	Aquatic Non-Food Crop	Terrestrial/Aquatic Uses: Forest	Aquatic Impact Uses: Direct Application	Indirect Discharge	Wastewater Treatment	To Support Registration of: Manufacturing Use Product	End-use Product
HYDROLYTIC DEGRADATION													
pH 5 tests	X	X	X	X	X	X	X	X	X	X	X	X	X
Photodegradation			X	X	X	X	X	X	X				X
METABOLISM													
Aerobic soil	X	X	X	X	X			X					X
Anaerobic soil					X								X
Anaerobic aquatic						X		X	X				X
Aerobic aquatic						X	X		X				X
Leaching and adsorption/desorption			X	X	X	X	X	X	X				X
Effects of pesticides on microbes		X	X	X	X	X	X	X[e]	X				
Activated sludge										X	X	X	X
MOBILITY													
Leaching			X	X	X			X[f]					X
Volatility		X											X
Adsorption						X	X	X	X				X
Water dispersal						X	X		X				X
DISSIPATION													
Soil	X		X	X	X	X		X					X
Water						X	X	X[c]					X
Fecundity (X^d combined study with X^a, X^b, X^c)								X[d]					X
ACCUMULATION													
Rotational crop					X	X							X
Estuarine crop						X	X						X
Fish			X	X		X	X	X	X			X	X

[illegible] Fish study