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Date Out EFB: FEB 18 1982

To: Robert J. Taylor
Product Manager 25
Registration Division (TS-767)

From: Dr. Willa Garner, Chief
Review Section No. 1
Environmental Fate Branch
Hazard Evaluation Division (TS-769)

Attached please find the environmental fate review of:

Reg./File No.: 7969-EUP-14

Chemical: BAS-9052H (2-[1-(ethoxyimino)butyl]-5-[2-(ethythio)propyl]-3-hydroxy-2-cyclohexen-1-one

Type Product: Herbicide

Product Name: Poast

Company Name: BASF

Submission Purpose: Revised Crop Rotation Restriction

ZBB Code: Sec 5

ACTION CODE: 714

Date In: 12/11/81

EFB # 96

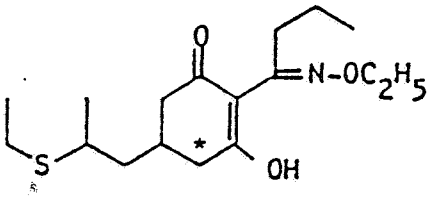
Date Completed: 2/18/82

TAIS (level II)	Days
60	3

1.0 INTRODUCTION

On November 23, 1981, BASF requested an amendment to their Experimental Use Permit No. 7969-EUP-14, waiving the one-year crop rotation restriction for Poast® Herbicide (2-[1-(ethoxyimino)butyl]-5-[2-(ethythio)propyl]-3-hydroxy-2-cyclohexen-1-one, BAS-9052H), based on the results of their Laboratory Report # PM-33 in Accession # 246,346 dated 12/2/81.

2.0 STRUCTURE



3.0 DIRECTIONS FOR USE

A copy of the directions for use is appended to this review.

4.0 REVIEW OF:

Clark, James R. and Stuart N. Adamsbaum. 1981. Uptake of BAS 9052H-^{14}C (NP-55) Residues by Rotational Crops Under Field Conditions. Metabolism Laboratory. BASF Wyandotte Corporation. Agricultural Chemicals Division. 100 Cherry Hill Road, Parsippany, New Jersey 07054. August, 1981. (Proprietary)

4.1 Experimental

BAS 9052H-4-^{14}C was used in this study (see 2.0 for location of the radiolabel), and was found to be >95% radiopure by reverse phase HPLC. It had a specific activity of 10.3 mCi/mMole.

This technical was mixed with various adjuvants sumulate the formulated products as nearly as possible. In the first part of the study (Alpha, NJ in 1979), 108mg of technical was mixed with [redacted] to simulate an application rate of 0.893 lb a.i./A (1 kg a.i./Ha).

In the second (Greenville, MS in 1980) the technical was mixed [redacted]

This would represent a simulated application rate of about 1 lb a.i./A (1.1 kg a.i./Ha).

INERT INGREDIENT INFORMATION IS NOT INCLUDED

INERT INGREDIENT [illegible] IS NOT INCLUDED

In the third (Alpha, NJ in 1981) 125mg of technical was mixed with [redacted] to simulate an applicatin rate of 1 lb a.i/A.

Soil characteristics at these two sites were as follows:

SITE	SILT	SAND	CLAY	TEXTURE	pH	CEC	% ORGANIC MATTER
Alpha, NJ	67.60	11.87	20.53	silt loam	5.5	9.5	2.3
Greenville, MS	57.60	26.20	16.20	silt loam	7.4	14.5	0.6

At approximately 30 days post application, the target plants (soybeans in NJ, soybeans or cotton in MS) were removed from the plots, fertilizer added, and the soil spaded to a depth of 15cm, preparatory to seeding. Rotational crops belonging to the small grain, root crop and leafy vegetable categories were planted (radishes, sorghum, red table beets, oats, cabbage, spinach, lettuce, spring wheat, mustard greens and turnips.

Weather conditions, planting date and other details are summarized in the appendix to this review.

Both soil cores and plant samples were taken during the growing season. Plant samples were taken at random, at various times. Twelve-inch soil cores were sectioned, combined, and composited.

Analysis was by combustion, with radio-CO_2-trapping in Oxyfluor-CO_2 Scintillation Cocktail. Quantification was by LSC (Packard 3385). Results were subjected to statistical evaluation, according to Chauvenet's Criterion, to eliminate abberant numbers. Samples failing the test were reground, and reanalyzed.

4.2 Results and Discussion

Application of BAS 9052H at or near the maximal application rate did not result in accumulation of significant residues in rotational crops planted 30 days after application. Measured residues were all at or below .06 ppm in all vegetative samples, and at or below 0.07 ppm in all soil samples.

4.3 Conclusions

4.3.1 The planting of rotational crops in soil 30 days or more post-treatment with with BAS 9052H does not result in the accumulation of significant residues.

4.3.2 The decline of soil residues appears to be rapid. Previously reported* half-lives ranged from 5 to 11 days.

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*/ Aerobic Soil Metabolism Study (PP OG 2396 "BAS 9052 O H Herbicide, Temporary Tolerance and EUP for Soybeans. Book 4, Section D. Report J5

3

5.0 RECOMMENDATIONS

We concur with the proposed waiver of the 1 year crop rotation restriction.

Emil Regelman
Chemist
EFB/HED (TS-769)
February 18, 1982

Sethoxydim environmental fate review

Page 5 is not included in this copy.

Pages _____ through _____ are not included in this copy.

The material not included contains the following type of information:

___ Identity of product inert ingredients

___ Identity of product impurities

___ Description of the product manufacturing process

✓ Description of product quality control procedures

___ Identity of the source of product ingredients

___ Sales or other commercial/financial information

___ A draft product label

___ The product confidential statement of formula

___ Information about a pending registration action

___ FIFRA registration data

___ The document is a duplicate of page(s) _____

___ The document is not responsive to the request

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Appendix 1

Planting Dates for Rotational Crops

Type of Rotational Study	Location	Type of Crop	Variety	Date Planted
Emergency Replants				
	Greenville, MS	Radish	Sparkler White Tips	July 18, 1980
		Sorghum	DeKalb E 57	July 18, 1980
	Alpha, NJ	Beets	Detroit Dark Red	August 3, 1979
		Oats	Clintland	August 3, 1979
		Cabbage	Wisconsin Golden Acre	August 3, 1979
	Alpha, NJ	Wheat	Rugby Durum	August 4, 1981
		Spinach	Bloomsdale	August 4, 1981
		Beets	Detroit Dark Red	August 4, 1981
		Lettuce	Blackseeded Simpson	August 14, 1981
		Carrots	Danvers Half Long	August 14, 1981
		Radish	Cherry Belle	August 14, 1981
Fall Rotationals				
	Greenville, MS	Winter Wheat	ABE	October 24, 198
		Mustard Greens	Florida Broadleaf	October 24, 198
		Turnips	Red Top	October 24, 198
Annual Rotationals				
	Greenville, MS	Lettuce	Great Lakes	March 18, 1981
		Spring Wheat	Newana	April 3, 1981
		Sugar Beet	SPH 9	March 18, 1981
	Alpha, NJ	Beets	Red Ball	May 16, 1980
		Oats	Noble	May 16, 1980
		Cabbage	Earliana	May 16, 1980
		Corn	DeKalb	June 6, 1980

Appendix 2

Weather at Alpha, New Jersey 1979-81

Monthly Rainfall (mm)

	1979	1981
May	112.5	157.0
June	61.7	128.3
July	188.7	112.0
August	156.2	85.9
September	260.1	85.1
October	139.4	108.7

Monthly Temperatures (^{0}C)

	1979		1981	
	Highest	Lowest	Highest	Lowest
May	32	3	22	8
June	29	6	26	14
July	31	8	29	17
August	32	9	27	15
September	28	3	30	4
October	29	-2	23	-3

Appendix 2 (Continued)

Weather at Greenville, MS 1970-81

Monthly Rainfall (mm)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Jan.	73	118	211	166	281	134	154	105	156	242	87	32
Feb.	99	151	40	146	102	293	107	31	63	113	40	30
Mar.	221	114	98	390	115	250	180	169	35	164	272	78
Apr.	170	84	167	189	239	135	20	116	81	304	206	19
May	81	152	59	125	135	275	131	54	342	233	110	152
June	3	59	74	98	248	184	167	23	104	76	56	79
July	112	180	114	125	134	74	109	71	10	177	18	26
Aug.	61	99	42	38	188	142	2	44	105	51	6	29
Sept.	59	58	50	91	134	92	90	144	49	118	48	53
Oct.	201	11	104	179	100	62	81	64	30	111	57	89
Nov.	74	74	257	249	57	117	66	160	132	202	51	
Dec.	143	182	201	140	115	68	95	84	233	108	11	
Monthly Average	108	107	118	161	154	152	100	89	112	158	80	
Yearly Total	1297	1282	1417	1936	1848	1780	1197	1064	1340	1899	962	

Appendix 2 (Continued)

Weather at Greenville, MS 1971-81

Monthly Average Temperatures (^{0}C)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Jan.	6	7	5	7	9	7	1	2	3	7	5
Feb.	8	7	7	9	8	13	9	3	8	7	11
Mar.	10	11	15	15	8	15	15	12	15	11	15
Apr.	16	17	15	17	12	19	20	21	20	20	22
May	20	20	21	23	22	20	27	24	22	23	22
June	26	24	26	24	25	25	31	27	26	29	29
July	27	24	25	26	22	28	30	29	26	32	30
Aug.	25	25	25	24	26	26	30	29	26	30	27
Sept.	31	23	23	20	21	22	27	27	23	26	23
Oct.	20	18	19	16	18	14	20	20	18	17	18
Nov.	11	7	14	8	13	8	12	17	11	12	
Dec.	10	6	7	12	8	6	8	10	8	11	
Yearly Average	19	17	18	19	17	16	17	17	16	18	

BASF

Poast®

POST-EMERGENCE HERBICIDE

FOR EXPERIMENTAL USE ONLY

Not for sale to any person other than a participant or cooperator of the EPA-approved experimental use program

ACTIVE INGREDIENT

2-[1-(ethoxyimino) butyl]-5-[2-(ethylthio) propyl]-3-hydroxy-2-cyclohexen-1-one*	20.0%
INERT INGREDIENTS	80.0%

*Equivalent to 1.53 pounds per gallon

EPA Experimental Use Permit No. 7969-EUP-14

Keep out of reach of children.

DANGER

See side panel for additional precautionary statements

Net Contents 1 Quart

SEE ATTACHED FOLDER FOR COMPLETE DIRECTIONS FOR USE.

BASF Wyandotte Corporation
Parsippany, New Jersey 07054

YY050281

EPA Est. No.
279 NJ-1

Precautionary Statements

Hazards to Humans and Domestic Animals

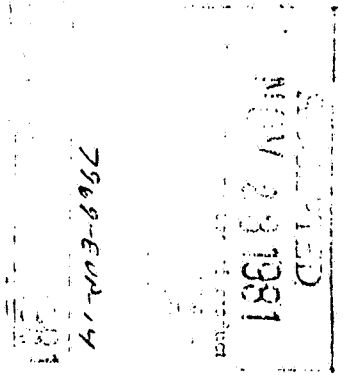
DANGER

Causes eye and skin damage. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed.

If in eyes, immediately flush eyes with plenty of water. Get medical attention. If on skin, immediately flush skin with plenty of water. Get medical attention if irritation persists.

Environmental Hazards

Do not apply directly to lakes, ponds, or streams. Do not contaminate water by cleaning of equipment or disposal of wastes.



Partial list of susceptible grasses:

- Alexandergrass *(Brachiaria plantaginea)*
- Barley, Volunteer *(Hordeum vulgare)*
- Barnyardgrass *(Echinochloa crus-galli)*
- Crabgrass, Large *(Digitaria sanguinalis)*
- Crabgrass, Smooth *(Digitaria ischaemum)*
- Foxtail, Bristly *(Setaria verticillata)*
- Foxtail, Giant *(Setaria faberi)*
- Foxtail, Green *(Setaria viridis)*
- Foxtail, Yellow *(Setaria lutescens)*
- Goosegrass *(Eleusine indica)*
- Johnsongrass, Seedling *(Sorghum halepense)*
- Junglerice *(Echinochloa colonum)*
- Millet, Wild Proso *(Panicum miliaceum)*
- Oats, Volunteer *(Avena sativa)*
- Oats, Wild *(Avena fatua)*
- Panicum, Fall *(Panicum dichotomiflorum)*
- Panicum, Texas *(Panicum texanum)*
- Ryegrass, Italian *(Lolium multiflorum)*
- Rye, Volunteer *(Secale cereale)*
- Shattercane *(Sorghum bicolor)*
- Signalgrass, Broadleaf *(Brachiaria platyphylla)*
- Sorghum, Volunteer *(Sorghum vulgare)*
- Wheat, Volunteer *(Triticum aestivum)*
- Witchgrass *(Panicum capillare)*

For Experimental Use:
This label must be in the possession of the user at the time of pesticide application.

DIRECTIONS FOR USE

Poast® herbicide

[illegible]

Storage and Disposal:

Do not contaminate water, food, or feed by storage or disposal.

Pesticide, spray mixture, or rinsate that cannot be used according to label instructions must be disposed of according to Federal, State, or Local procedures under the Resource Conservation and Recovery Act.

Triple rinse or equivalent and dispose of in a sanitary landfill or by other approved State and Local procedures.

BASF Wyandotte Corporation
100 Cherry Hill Road
Parsippany, New Jersey 07054

BASF

General Information

Poast is a selective [illegible] herbicide to be evaluated for postemergence control of annual and perennial grass weeds in soybeans. Poast does not control sedges or broadleaf weeds. Poast enters the plant mainly through the leaves so good spray coverage of the foliage is important. Poast is not a fast-acting contact herbicide. Control symptoms may take up to three weeks to become visible. Symptoms [illegible] are leaf tip burn [illegible] [illegible] and subsequent burn [illegible] grass [illegible] [illegible] [illegible] necessary [illegible] grass [illegible] [illegible]

Soybeans are tolerant to Poast at all stages of growth.

Since all grass crops are sensitive to Poast, including sorghum, corn, small grains, [illegible] and turf [illegible] [illegible] direct contact with any grass crop.

Timing of Application. [illegible] Poast [illegible] [illegible] grasses before the [illegible] recommended stage of growth found below.

Early applications, as recommended, [illegible] will result in optimum control of grasses present. Applications made later than those recommended may require higher rates and may result in unsatisfactory control.

Water Volume and Spray Pressure. Apply the rates of Poast recommended on this labeling as follows.

Ground Equipment: Use a minimum of 20 gallons of water per broadcast acre with 40 psi pressure. Increase water volume to at least 40 gallons per broadcast acre and increase pressure to at least 60 psi pressure if grass foliage is dense.

Air Equipment: Use a minimum of 5 gallons of water per broadcast acre. Increase water [illegible] per broadcast acre if grass [illegible] is dense.

Aerial Application -- Special Directions. To obtain uniform coverage and to avoid drift [illegible]

equipment and practices should be used.

Nozzle Height. Maximum of 10 feet above crop.

Nozzle Orientation. Nozzles must be oriented so as to discharge at some angle between straight back with the airstream (opposite the direction of travel of the aircraft) and straight down.

Nozzles must not be located further out than three-fourths the distance from the center of the aircraft to the end of the wing or rotor.

Do not apply Poast by aircraft when the wind is blowing at a velocity of 5 mph or greater.

Additives. *Always* add a nonphytotoxic oil concentrate to the spray solution at 1 pint to 1 quart per acre for ground applications and ½ pint to 1 pint per acre for aerial applications. Oil concentrates are sold under many brand names but all have an 80% paraffin base petroleum oil with the remaining 20% composed of various surfactants and inert ingredients.

Rates of Poast Applications

The following rate recommendations for annual grasses are based on the susceptibility of individual grass species. Determine the grass species present and use the rate recommended for the least susceptible grass. Refer to Conversion Table for Determining Rate of Formulated Product to Use.

Annual Grasses. For grasses 4 to 6 inches tall/tillered (stooled), apply 0.1 to 0.2 pounds ai/A. Use the lower rate for the smaller grasses within this size range. Use the higher rate for the larger grasses or older, more mature grasses within this size range. Also use the high rate if conditions are cool or dry.

For grasses 6 to 10 inches tall/tillered (stooled), apply 0.2 to 0.5 pounds ai/A. Use the lower rate for the smaller grasses within this size range. Use the higher rate for the larger grasses or older, more mature grasses within this size range. Also use the high rate if conditions are cool or dry.

Special Grass Problems

Itchgrass *(Rottboellia exaltata)*/Red rice *(Oryza sativa)* — Apply 0.3 to 0.5 pounds ai/A to these grasses when they are not more than 4 to 5 inches tall. Cultivation or a second application of the same rate should control any newly germinating grasses or regrowth of treated grasses.

Volunteer corn *(Zea mays)* — Apply 0.1 to 0.5 pounds ai/A to volunteer corn when it is up to 12 to 15 inches tall. A cluster of corn plants arising from a buried ear of corn may be difficult to control completely due to insufficient spray coverage. If numerous clusters of corn plants are present, increased pressure and spray volume may be beneficial.

Quackgrass *(Agropyron repens)*—Apply 0.3 to 0.5 pounds ai/A to quackgrass plants that have 3 to 4 leaves and/or are 6 to 8 inches tall. If needed, make a second application at the same rate in 2 to 3 weeks or make a timely cultivation.

2X

Rhizome johnsongrass *(Sorghum halepense)*—Apply 0.2 to 0.5 pounds ai/A to johnsongrass with 5 to 7 leaves and/or leaves up to 15 to 18 inches long. The johnsongrass is generally starting to tiller (stool) at this later time. If needed, make a second application at the same rate in 3 to 4 weeks or make a timely cultivation.

2X

Bermudagrass *(Cynodon dactylon)* — Apply 0.3 to 0.5 pounds ai/A to bermudagrass up to 4 inches in height or in stolon (runner) length. The bermudagrass is generally starting to initiate and produce new tillers at this time. If needed, make a second application at the same rate or make a timely cultivation at lay-by. Spray coverage of bermudagrass may be difficult if a large crop canopy and undesirable broadleaf weeds are present.

Conversion Table for Determining Rate of Formulated Product to Use. The following table indicates the pints of formulated product to use to obtain the recommended pounds of active ingredient:

Poast Rate*	
lb ai/A	Pt/A
0.1	0.52
0.2	1.05
0.3	1.57
0.4	2.09
0.5	2.61

*Add Oil Concentrate as recommended in section entitled Additives.

Attention!

Clean Sprayer Thoroughly After Application of Poast. Failure to clean sprayer thoroughly after application of Poast may result in injury to any grass crop subsequently sprayed, such as corn, sorghum, small grains, rice, and turf.

Fill the sprayer with clean water and add a commercial sprayer cleaner or a surfactant adjuvant at the recommended rates on their labels. Circulate through entire sprayer system. Spray approximately half the tank solution through the hoses, booms, and nozzles to clean these parts. Drain the tank and rinse the total system thoroughly several times with clean water.

Restrictions and Limitations

Do not graze treated fields and do not feed treated soybean forage or hay to livestock since grazing or feeding may result in illegal residues.

During periods of drought, applications of Poast may result in unsatisfactory grass control.

If grasses are not actively growing due to cool air temperature (60 degrees F or less), treated grasses may be slow to exhibit symptoms of control which are stunting with no new growth occurring. The degree of control may also be decreased under cool conditions.

Preliminary results indicate rainfall after 4 to 5 hours following application will not reduce grass control.

Do not apply Poast within 70 days of harvest.

Do not replant treated areas to any other crop within 1 year of last application.