

US EPA ARCHIVE DOCUMENT

D170931  
DPBARCODE (RECORD)  
128969  
SHAUGHNESSY NO

REVIEW NO.

EEB REVIEW

DEC 20 1991

DATE IN: 11-7-91 OUT: \_\_\_\_\_

ASSIGNED: 11-7-91

CASE # : 192401

REREG CASE #: \_\_\_\_\_

SUB. # : S406554

LIST

A, B, C, D

ID # : 100-TNR

DATE OF SUBMISSION 11-5-91

DATE RECEIVED BY EFED 11-7-91

SRRD/RD REQUESTED COMPLETION DATE 3-6-92

EEB ESTIMATED COMPLETION DATE 3-6-92

SRRD/RD ACTION CODE/TYPE OF REVIEW 101 RESUBMISSION

MRID #(S) \_\_\_\_\_

DP TYPE 001

PRODUCT MANAGER, NO. ROBERT TAYLOR 25 VICKIE WALTERS

PRODUCT NAME(S) TRIASULFURON, AMBER HERBICIDE

TYPE PRODUCT HERBICIDE

COMPANY NAME CIBA-GEIGY

SUBMISSION PURPOSE REQUEST BY CIBA-GEIGY TO RETAIN AERIAL

APPLICATION ON LABEL WITHOUT SPRAY

DRIFT DATA USE RATE 0.02625 16 ai/Acre

COMMON CHEMICAL NAME AMBER

REVIEWER: CHARLES LEWIS

File

DP BARCODE: D170931

CASE: 192401  
SUBMISSION: S406554

DATA PACKAGE RECORD  
BEAN SHEET

DATE: 11/07/91  
Page 1 of 1

\*\*\* CASE/SUBMISSION INFORMATION \*\*\*

CASE TYPE: REGISTRATION ACTION: 101 RESB NC-FOOD/FEED USE  
CHEMICALS: 128969 Triasulfuron

ID#: 000100-TNR Amber Herbicide  
COMPANY: 000100 CIBA-GEIGY CORP.  
PRODUCT MANAGER: 25 ROBERT TAYLOR 703-557-1800 ROOM: CM2 245  
PM TEAM REVIEWER: VICKIE WALTERS 703-557-0704 ROOM: CM2 253  
RECEIVED DATE: 11/05/91 DUE OUT DATE: 05/13/92

\*\*\* DATA PACKAGE INFORMATION \*\*\*

DP BARCODE: 170931 EXPEDITE: N DATE SENT: 11/07/91 DATE RET.: / /

CHEMICAL: Unknown

DP TYPE: 001 Submission Related Data Package

ADMIN DUE DATE: 03/06/92

CSF: N

LABEL: Y

| ASSIGNED TO | DATE IN  | DATE OUT |
|-------------|----------|----------|
| DIV : EFED  | 11/07/91 | / /      |
| BRAN: EEB   | / /      | / /      |
| SECT: IO    | / /      | / /      |
| REVR :      | / /      | / /      |
| CONTR:      | / /      | / /      |

\*\*\* DATA REVIEW INSTRUCTIONS \*\*\*

Attn: Charlie Lewis  
Request by Ciba-Geigy to retain aerial application on label  
without spray drift data.

\*\*\* ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION \*\*\*

| DP BC | BRANCH/SECTION | DATE OUT | DUE BACK | INS | CSF | LABEL |
|-------|----------------|----------|----------|-----|-----|-------|
|-------|----------------|----------|----------|-----|-----|-------|



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

DEC 20 1991

OFFICE OF  
PESTICIDES AND TOXIC  
SUBSTANCES

MEMORANDUM

SUBJECT: Nontarget Plant Hazard from the Aerial Application of Triasulfuron (Amber) and Use of Triasulfuron Contaminated Irrigation Water. DP BARCODE D170931.

FROM: Douglas J. Urban, Acting Chief Ecological Effects Branch Environmental Fate and Effects Division (H7507C) *Douglas J. Urban 12/18/91*

TO: Robert J. Taylor, PM 25 Herbicide/Fungicide Branch Registration Division (H7505C)

The Ecological Effects Branch (EEB) has reviewed the nontarget plant data for triasulfuron (Amber) and compared these data to the results of drift studies conducted for primisulfuron (Beacon). In addition, an attempt has been made to predict the impact of using water contaminated with triasulfuron for irrigation purposes.

Nontarget aquatic and terrestrial plant data for triasulfuron, see EEB review dated June 27, 1989, for the most sensitive of the species tested, are as follows:

Most Sensitive Aquatic Species

Lemna gibba Day-14 EC50 0.19 ppb (fc)

Terrestrial Species - Seed Germination

Most sensitive monocot----onion (rl), EC25 = 0.05 g/ha  
Most sensitive dicot----cucumber (rl), EC25 = 0.21 g/ha

Terrestrial Species - Seedling Emergence

Most sensitive monocot----onion (ph), EC25 = 0.187 g/ha  
Most sensitive dicot----lettuce (ph), EC25 = 0.095 g/ha

## Terrestrial Species - Vegetative Vigor

Most sensitive monocot----onion (ph), EC25 = 0.495 g/ha  
Most sensitive dicot----lettuce (ph), EC25 = 0.038 g/ha

[(ph)plant height, (rl)radicle length, (fc)frond count]

### DRIFT

The drift studies for primisulfuron were reviewed June 19, 1991 by the Environmental Fate and Ground Water Branch (EFGWB). Assuming that one can extrapolate the drift results of a study conducted with primisulfuron to triasulfuron, the following information is provided.

#### Drift - Terrestrial Species

Comparing the most sensitive terrestrial nontarget plant EC25 values (lettuce vegetative vigor EC25 = 0.038 g/ha) to the maximum percent drift that occurred during the drift studies evaluated by EFGWB for Beacon, adverse affects from Amber could be expected to occur approximately 450 feet from the site of application utilizing 0.026 lb ai/A (0.129% of the application). This conclusion is based on the Pennsylvania data (Penn. 2) which utilized a helicopter with D6-45 nozzles operating approximately 10 feet off the ground during an average wind speed of 6.6 mph. See attached EFGWB report and EEB table.

#### Drift Plus Runoff - Aquatic Species

Nontarget aquatic plants are also expected to be adversely affected from aerial application. Assuming 4.5% drift 100 feet from the site of application (Penn. 2), an application of 0.026 lb ai/A could result in 0.0012 lb ai falling on an adjacent pond. In addition, runoff expected from the application to 10 acres, could result in 0.0079 lb ai running into the pond. Total loading from both runoff and drift could then equal 0.0091 lb ai. This could result in a water concentration of 6.66 ppb in a 1 acre pond 6 inches deep or 0.55 ppb in a 1 acre pond 6 feet deep. Estimated environmental concentrations (EEC's) for both 6 inches and 6 feet, exceed the EC50 for the most sensitive test species Lemna gibba (EC50 = 0.19 ppb). See attached work sheet and EEB table.

#### Endangered Species

Based on nontarget plant data and drift data currently available, aerial application of Amber for weed control in barley and wheat could adversely affect endangered or threatened plant species. Consequently, EEB will request a

formal consultation with the US Fish and Wildlife Service, Office of Endangered Species.

### IRRIGATION

EEB has attempted to predict the possible nontarget plant effects from the use of irrigation water containing 4 ppb triasulfuron. The 4 ppb value was provided by EFGWB. Our conclusions are based on the following assumptions:

- 1) One acre inch of irrigation water is applied.
- 2) One acre inch of water contains 27,154 gallons.
- 3) 27,154 gallons of water contaminated with 4 ppb triasulfuron would contain 0.0009 lbs triasulfuron.
- 4) 0.0009 lbs ai applied to 1 acre would equal 1.01 gms ai/ha.
- 5) 1.01 gms ai/ha exceeds the EC25 values for the most sensitive plant species tested at TIER II for seed germination, seedling emergence, and vegetative vigor.
- 6) water containing 4 ppb exceeds the EC50 for the most sensitive nontarget aquatic species tested at TIER II.

Assuming that one can extrapolate the nontarget plant data collected under laboratory conditions to the field, triasulfuron contaminated irrigation water could adversely affect nontarget plants.

In order for the contaminated irrigation water not to have an adverse affect, it could contain no more than 0.15 ppb.  $[(1.01 \text{ gms/ha} / 4 \text{ ppb} = 0.038 \text{ gms ai/ha} / x) = (1.01x = 0.152) x = 0.15 \text{ ppb}]$ . This value, 0.15 ppb, would then equal the theoretical maximum concentration level (MCL).

### Endangered Species

Based on nontarget plant data, drift during sprinkler irrigation, using water contaminated with triasulfuron, could adversely affect endangered or threatened plant species if these plants were growing within close proximity to the site of application. Consequently, EEB will request a formal consultation with the US Fish and Wildlife Service, Office of Endangered Species.

### OUTSTANDING DATA REQUIREMENTS

Terrestrial and aquatic Tier III testing for Amber has been triggered for both aerial and ground application. In addition, drift studies using Amber are required.

*expected exposure*

*in 52 gms/ha*

*from 4 ppb = 1.01 gms/ha*

*1.01 is 26x bigger*

*than 0.038 gms/ha*

*the EC25*

*if 4 ppb is defined by*

*26, it = 0.15*

*in other words, if*

*the concentration of the ground water was*

*just 0.15, it would still have an effect.*

## CONCLUSIONS

Based on the available nontarget plant data and the extrapolated data from the primisulfuron drift study, aerial application of Amber for broadleaf weed control in wheat and barley is expected to dramatically increase the potential for adverse effects to terrestrial and aquatic nontarget plants. Endangered or threatened plant species are also expected to be placed at increased risk from the aerial application of Amber. Consequently, EEB does not recommend that Amber be applied with aircraft, mistblower, or through sprinkler irrigation systems.

Irrigation water contaminated with 4 ppb triasulfuron could also be expected to adversely affect certain crop species if irrigated with the contaminated water. Drift of this contaminated water could also cause adverse affects to nontarget plants.

Our calculations for both the drift and irrigation scenarios are attached. If you have questions regarding this review, please contact Charles Lewis at 305-7463.

Nontarget affects from irrigation water

$$8.32 \text{ lbs} \times 27,154 \text{ gal} = 225,921.28 \text{ lbs}$$

$$X \text{ lbs} / 225,921.28 \text{ lbs is to } 0.004 \text{ ppm} \times 1,000,000 \text{ ppm}$$

$$X = 0.0009 \text{ lbs}$$

$$0.0009 \text{ lbs} \times 16 \text{ ozs} = 0.0145 \text{ ozs}$$

$$0.0145 \text{ ozs/a} \times 70.05 = 1.01 \text{ gms/ha}$$

Drift from aerial application - terrestrial species

$$0.026 \text{ lb ai/a} \times 16 \text{ ozs} = 0.416 \text{ ozs ai/a application}$$

$$0.416 \text{ ozs ai/a} \times 70.05 = 29.4 \text{ gms ai/ha application}$$

$$\text{EC50 of } 0.038 \text{ gms ai/ha} / 29.4 \text{ gms ai/ha} = 0.129 \%$$



Nontarget affects from irrigation water

$$8.32 \text{ lbs} \times 27,154 \text{ gal} = 225,921.28 \text{ lbs}$$

$$X \text{ lbs} / 225,921.28 \text{ lbs is to } 0.004 \text{ ppm} \times 1,000,000 \text{ ppm}$$

$$X = 0.0009 \text{ lbs}$$

$$0.0009 \text{ lbs} \times 16 \text{ ozs} = 0.0145 \text{ ozs}$$

$$0.0145 \text{ ozs/a} \times 70.05 = 1.01 \text{ gms/ha}$$

Drift from aerial application - terrestrial species

$$0.026 \text{ lb ai/a} \times 16 \text{ ozs} = 0.416 \text{ ozs ai/a application}$$

$$0.416 \text{ ozs ai/a} \times 70.05 = 29.4 \text{ gms ai/ha application}$$

$$\text{EC50 of } 0.038 \text{ gms ai/ha} / 29.4 \text{ gms ai/ha} = 0.129 \%$$

EEC CALCULATION SHEET

I. Foliar Application

Runoff:

$$\frac{\text{lb.}}{\text{(ai/A)}} \times 0.01 \text{ (1\% runoff)} \times 10 \text{ A (from 10 A drainage basin)} = \text{lb. (total runoff)}$$

EEC in 6 inches of water = \_\_\_ ppb X \_\_\_ lb = \_\_\_ ppb

EEC in 6 feet of water = \_\_\_ ppb X \_\_\_ lb = \_\_\_ ppb

II. Aerial Application

A. Runoff:

$$\frac{0.02625 \text{ lb}}{\text{(ai/A)}} \times 0.6 \text{ (application efficiency)} \times 0.025^5 \text{ (runoff)} \times 10 \text{ A (10 A drainage basin)} = \frac{0.007875 \text{ lb}}{\text{(total runoff)}}$$

B. Drift:

$$\frac{0.02625 \text{ lb}}{\text{(ai/A)}} \times 0.03^{45} \text{ (drift)} = \frac{0.0011812 \text{ lb}}{\text{(total drift)}}$$

Total Loading =  $\frac{0.007875 \text{ lb}}{\text{(runoff)}} + \frac{0.0011812 \text{ lb}}{\text{(drift)}} = 0.0090562 \text{ lb}$

EEC in 6 inches of water = 735 ppb X 0.0090562 lb = 6.656 ppb

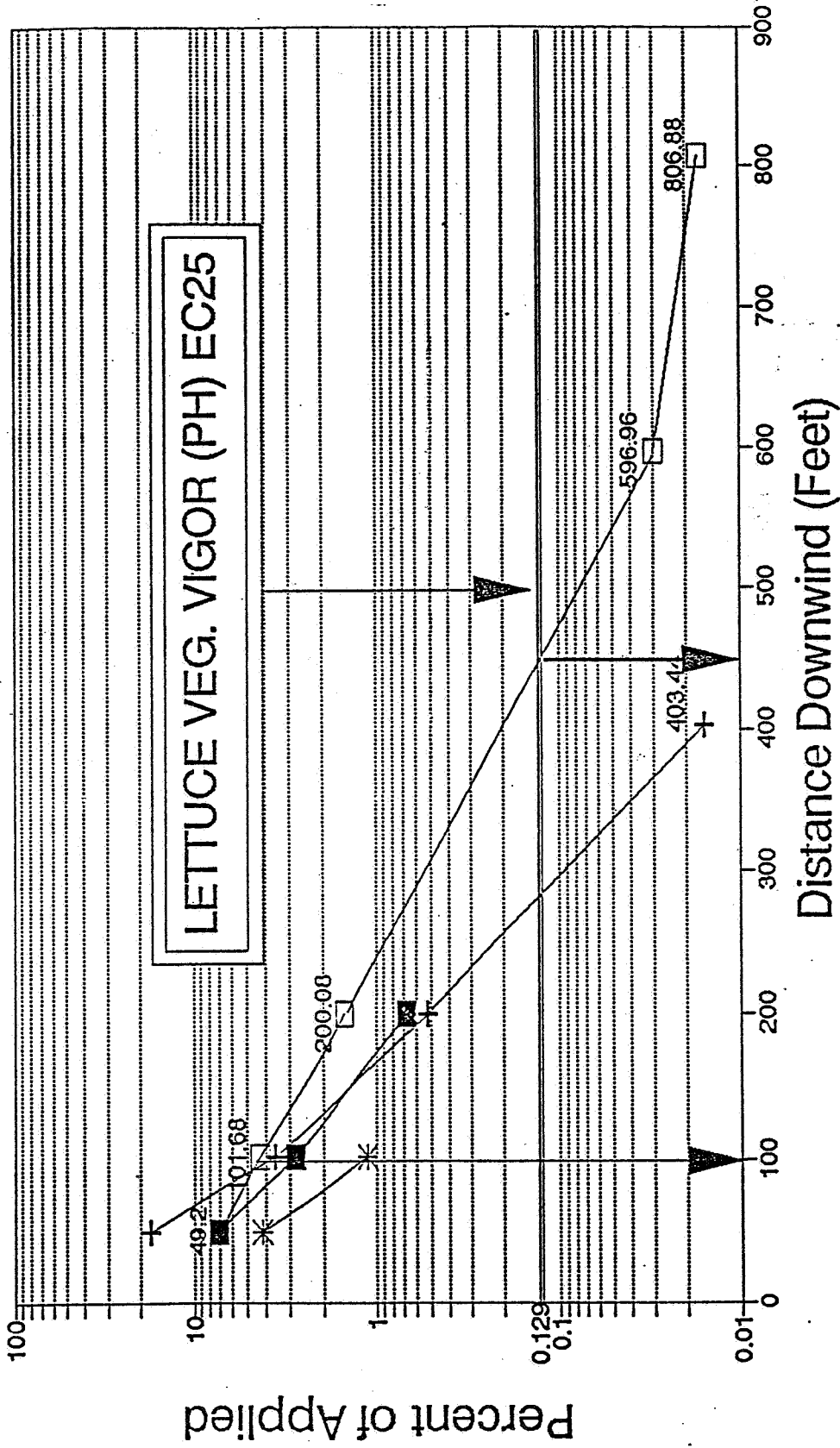
EEC in 6 feet of water = 61 ppb X 0.0090562 lb = 0.5524 ppb

EEC of 0.02625 lb ai direct application to 1 A pond 6 inches deep = 19.29 ppb.

EEC of 0.02625 lb ai direct application to 1 A pond 6 feet deep = 1.60 ppb.

# Amber (extrapolated) Spray Drift

## Pennsylvania and Illinois



—■— Illinois 1 —\*— Illinois 2 —▲— Penn. 1 —□— Penn. 2