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Init.: JASC

To: Richard Mountfort
Product Manager 23
Registration Division (TS-767)

From: Carolyn K. Offutt *Carolyn K. Offutt*
Chief, Environmental Processes and Guidelines Section
Exposure Assessment Branch, HED (TS-769)

Attached, please find the environmental fate review of:

Reg./File No.: 707-145, 707-174

Chemical: Oxyfluorfen

Type Product: Herbicide

Product Name: GOAL 2E & 1.6E

Company Name: Rohm & Haas

Submission Purposes: Review phytotoxicity study with
respect to aerial drift study

ZBB Code: ??

Action Code: 306

Date In: 28 September 1984

EFB#: 4576-4577

Date Completed: _____

TAIS (Level II) Days

63 1.5

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

(1)

Oxyfluorfen

I. Introduction.

Rohm and Haas has submitted an aeriually applied spray drift field evaluation and accompanying phytotoxicity study for GOAL 2E and GOAL 1.6E for review. The intended use pattern is for fallow bed preparation of cotton fields in California and Arizona only.

II. Chemical/Physical Characteristics.

Common Name: Oxyfluorfen

Trade Name: GOAL

Chemical Name: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-
4-(trifluoromethyl)benzene

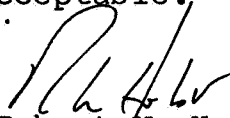
III. Discussion.

Three aeriually applied spray drift field studies and a dosage response curve for lettuce bioassay were submitted for evaluation of the potential of spray drift of GOAL when applied to fallow beds of cotton for pre-plant weed control. The studies were found to be acceptable.

The quantity of material found at downwind distances will decrease with increasing distance. The quantities will be significantly influenced by the height of application and the wind velocity. Oxyfluorfen was detected up to 800 meters downwind but only quantifiable (0.004 lb a.i./A) up to 100 meters using the lettuce bioassay provided.

IV. Recommendation.

The labelling as proposed is acceptable.


Robert W. Holst, Ph.D.
Plant Physiologist
Exposure Assessment Branch
HED/OPP (TS-769)

DATA EVALUATION RECORD

Chemical: Oxyfluorfen
 Formulation: GOAL 2E & 1.6E (emulsifiable concentrate)

Citation: Holmdal, J.A. 1984. Field drift loss studies from aerial application of GOAL herbicide. Submitted by Rohm & Haas Co., Philadelphia PA (EPA Acc. No. 253548 & 254654)

Reviewer: Robert W. Holst, PhD 10 October 1984
 Plant Physiologist
 Hazard Evaluation Division (TS-769)

Title: Spray Drift and Phytotoxicity of GOAL

Materials and Methods: GOAL 1.6E was applied to three fallow fields in California as noted below to evaluate the extent of drift when aerially applied to fields being readied for cotton planting.

	<u>818407</u>	<u>858406</u>	<u>818406</u>
Study No:	818407	858406	818406
Date of Appl:	31JAN84	1FEB84	31JAN84
Location:	Kern County	Fresno County	Kern County
	CA	CA	CA
Temp: F	78	63	78
Relative Hum. %	25	52	25
Soil Temp: F	82	62	82
Wind Spd: mph	5	5-10	12
Wind Dir: True	NW	SE	N
Noz. Type:	D-10	D-8,D-10	D-6 w/46 swirls
Noz. Ort:	Back	Back	Down (90°)
Press: psi	35	24	35
Height: ft	10	10	3
A/C Spd: mph	110	110	63 (helo)
Appl Dir.:	Crosswind	Crosswind	Crosswind
Pesticide: ai/A	0.5 lb	0.5 lb	0.5 lb
Additives:	----- Triton AS-98 at 0.25%	-----	-----
GPA:	10	10	10

These were full field applications with collection bioassays of lettuce around the field edges. A diagram of the field layout is provided.

The lettuce field bioassay was compared numerically to lettuce grown in flats in Pennsylvania. GOAL 1.6E was applied with adjuvant at 0.5, 0.25, 0.12, 0.062, 0.031, 0.016, 0.008, and 0.004 lb a.i./acre to the response curve bioassay lettuce in the flats. Assessments of phytotoxicity were made three days following application.

Results: Results of the visual crop injury ratings for the dosage response curve assay are given in the attached table (Table I from the Rohm & Haas report). The LC50 was calculated to be 0.014 lb a.i./A.

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The injury ratings for the lettuce bioassay in the fields are given in the attached table (Table VII from the Rohm & Haas report). Fifty percent crop injury was found up to 100 meters downwind with fixed-wing aircraft flying at 10 feet and at 25 meters for rotary-winged aircraft flying at 3 feet. A barely discernable effect was found at 200 meters for all tests.

An extrapolation of data by Rohm & Haas from the dosage response curve studies to the field plants was provided where it was stated that field plants under the aircraft received 0.5 lb a.i./A as did the highest dosage of the greenhouse study. However, in the report on the field study, it was stated that plants were placed not in the swath, i.e., not under the plane, but up- and down-wind from the target site beginning at 25 meters from the swath. This would account for the lower injury ratings in the field study at the closest point to the swath. Therefore, the injury to the plants at 25 meters downwind in the field cannot be equated to that injury received by plants given the full 0.5 lb a.i./A in the laboratory.

Conclusion: The dosage response curve showed that lettuce (var. Great Lakes) responds to oxyfluorfen with an calculated LC50 of 0.014 lb a.i./A.

Extrapolations as performed by Rohm & Haas should not be made unless plant bioassays are placed directly under the aircraft. Also chemical samples should be collected on cards or plates that are then analyzed for chemical content. The extrapolation provided here gives an overestimation of the quantity of oxyfluorfen that may be found in an aquatic system. The wind and height of application have a significant effect on the quantity of deposition as each test gave different injury ratings at specific distances. The relation of injury ratings to distance is a little difficult for this study because no quantities below 0.004 lb a.i./A were tested in the dosage response study. The following was derived from these tests:

Test	818407	858406	818406
Height	10 ft	10 ft	3 ft
Wind	1-5 mph	6-10 mph	10 mph
Distances		(lb a.i./A)	
25 meters	0.004	0.016	0.004
50	<0.004	0.014	<0.004
100	<0.004	0.004	<0.004
200	<0.004	<0.004	<0.004
400	<0.004	<0.004	<0.004

Acceptability: This test is acceptable for the evaluation of field spray drift under the conditions tested and for the intended use pattern.

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RIN 0637-00

EFED Review - Oxyfluorfen

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Pages 5 through 7 are not included.

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 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.
