

US EPA ARCHIVE DOCUMENT

FILE COPY

Shaughnessy No.: 125601

Date Out of EAB: AUG 29 1985

To: Robert Taylor
Product Manager 25
Registration Division (TS-757)

From: Samuel Creeger, Chief *SM*
Review Section #1
Exposure Assessment Branch
Hazard Evaluation Division (TS-769)

Attached, please find the EAB review of...

Reg./File #: 10182-EUP-34

Chemical Name: Paclbutrazol

Type Product : Growth Regulator

Product Name : PARLAY

Company Name : Scotts

Purpose : New chemical, EUP for use on turf

Action Code(s): 724

EAB #(s) : 5831

Date Received: 8/6/85

TAIS Code: _____

Date Completed: AUG 29 1985

Total Reviewing Time: 3.5 days

Deferrals to: _____ Ecological Effects Branch

_____ Residue Chemistry Branch

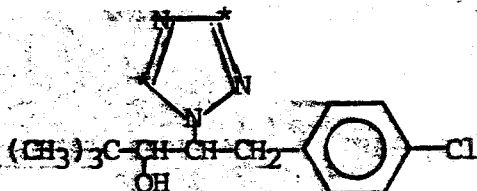
_____ Toxicology Branch

1.a. CHEMICAL:

(2RS, 3RS)-1-(4-chlorophenyl)-4,4-dimethyl-2-(1H-1,2,4-triazol-1-yl)pentan-3-ol.

Paclobutrazol

CLIPPER™, BONZI™, PARLAY™



1.b. Physical Properties:

See earlier reports.

2. TEST MATERIAL:

Please note the above structure- * for the radiolabeled carbons.

3. STUDY/ACTION TYPE:

Additional data in support of registration of Paclobutrazol for use on turf as a growth regulator.

Registration Division has requested an expedited review of this action with attention to potential of the pesticide residues to reach ground water.

A copy of the expedite request is attached to this review.

4. STUDY IDENTIFICATION:

PP333 and PP333 Ketone Residue Dissipation in US Soils

5. REVIEWED BY:

Akiva D. Abramovitch, Ph.D.

Chemist

Environmental Chemistry Review Section 1/EAB/HED/OPP

6. APPROVED BY:

Samuel M. Creeger, Chief

Supervisory Chemist

Environmental Chemistry Review Section 1/EAB/HED/OPP

Abramovitch
Date: AUG 29 1985

Samuel M. Creeger
AUG 29 1985

Date: / / 85

7. CONCLUSIONS:

The field dissipation study does not satisfy the EAB data requirement. According to the results, PP333 dissipated with a half life of less than 26 weeks (PP333+PP333 Ketone dissipated with a half life of 32 weeks. However, the possibility that leaching occurred to depths greater than 12 inches in high sand content soils could not be excluded because soil sampling was not done to depths sufficient to determine the extent of leaching. (Leaching beyond 12 inches may explain why there was better accountability of residues in some of the soils).

8. RECOMMENDATIONS: |by the reviewer|

Since sampling was not done to depths sufficient enough to define the extent of leaching and it appears that rainfall was not supplemented with irrigation to simulate worst-case precipitation, the question of leachability is not addressed by the data. We also note that any leaching displayed by the data is exaggerated by this field data since actual use of paclobutrazol is to turf and not bare soil (the presence of turf should impede leaching). If the registrant chooses to repeat these studies, we recommend that the test protocol be submitted to us for comment before the studies are initiated. We would also like to receive explanations with regard to the much shorter dissipation half life for PP333 in the Visalia soil in spite of the very low rainfall. Leaching of paclobutrazol cannot be excluded based on this data.

9. BACKGROUND:

- A. Introduction: ICI submitted additional data to support registration of Paclobutrazol (active ingredient) for use on turf as a growth regulator.
- B. Directions for Use: The trial description calls for a single application of 2 lb per acre (formulation GFU029, 50% WP) to single fallow plots in spray volumes of 25-50 gal/A with ground spray equipment.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

10.1 A. Study Identification: PP333 and PP333 Ketone Residue Dissipation in US Soils.

The studies were conducted by ICI Americas Inc., Agricultural Chemicals Division, Research and Development Department and reported by Mr. F. J. Pearson in Series: TMU1760/B. The majority of the PP333 analyses and all of the PP333 Ketone analyses were performed by Analytical BioChemistry Laboratories Inc., of Columbia, MO.

B. Materials and Methods:

Single applications of 2 lb PP333 per acre were made to four plots in spray volumes of 25-50 gal/A with ground spray equipment. The chosen plots were:

Location:	Goldsboro, NC	Champaign, IL	Vicksburg, MS	Visalia, CA
Size (ftxft):	20x40	20x30	25x40	20x40
Soil type:	Norfolk loamy sand	Flanagan silt loam	Commerce silt loam	sandy loam

Detailed description of the soils characteristics are attached to this report. All plots were kept free of vegetation throughout the study by applying herbicides (paraquat, glyphosate, FUSILADE™) that would not interfere with the analyses of PP333 and/or PP333 Ketone. Samples were taken before treatment and at 7, 14, 30, 90, 180, 270, 360 and 540 days after treatment. Composite samples of soils (20-30 one inch cores) were collected from random points within each plot to a depth of 12 inches while trying to minimize cross contamination between soil layers. Sub samples of 0-6 and 6-12 inches were also taken. All samples were marked and kept frozen until analyzed. The analytical methods developed by ICI were later used by both ICI and ARC laboratories for analyzing both PP333 and its ketone analogue. The validity of these methods was established by analyzing soil samples that were fortified with known quantities of authentic samples. Recoveries of PP333 from 20 soil samples fortified with 0.018-0.563 ppm of PP333 ranged from 63.6% - 144% with a mean of 96.5%. Likewise, recoveries of the ketone of PP333 from soil samples fortified with authentic samples of the PP333 Ketone at levels of 0.18-0.50 ppm ranged from 82-122% with a mean value of 101.3%. The analytical method was described as follows: Soil samples were dried at room temperature by breaking the soil into small lumps and circulating air across the surface. The air dried samples were then homogenized using a mortar and pestle. Soil samples (100 gm) were extracted with 150 ml of 90% methanol, filtered and half of the extract was concentrated on a rotary evaporator at <60°C. The remaining aqueous portion was adjusted to pH 11 with 1N NaOH and extracted with 3x75 ml of methylene chloride, dried over anhydrous sodium sulfate, filtered and concentrated on a rotary evaporator to 2 ml. The remaining two ml solution was cleaned through a Florisil column and analyzed on GLC along with calibrated authentic samples of PP333 and its ketone derivative.

Location: Goldsboro, NC Champaign, IL Vicksburg, MS Visalia, CA

PP333 ppm (0 time): 0.64 0.58 0.47 0.86

PP333 Dissipation 25 26 20 3 (?)
(half life, weeks)

PP333+PP333 Ketone 25 29 32 30
Dissipation (half
life, weeks)

Rainfall (inches)

July	5.13	5.51	8.1	None
August	5.55	2.27	4.7	None
Sept.	3.55	2.70	1.32	0.15
Oct.	3.10	2.59	6.38	0.37
Nov.	1.98	4.03	7.64	1.65
Dec.	4.30	4.28	11.47	0.55
Jan.	13.66	10.92	7.36	3.88
Feb.	5.71	0.87	6.73	3.49
March	5.63	3.32	3.19	1.62
April	4.51	4.88	9.57	1.25
May	4.84	5.66	12.43	0.51
June	5.95	4.61	7.99	None
	53.92	41.64	86.88	13.47

C. Reported Results:

Significant residues of the PP333 Ketone were found only in Vicksburg and Visalia soils (less than 0.6 ppm) and less than 0.05 ppm were found in the Champaign and Goldsboro soils. The analysis of the soils to 12 inch depth was attached to this report.

D. Study Author's Conclusions:

According to the author there was no evidence of any movement of the PP333 Ketone through the soils at any of the trial sites. Likewise, all measureable residues of PP333 were found in the top 6 inches of the soils. The author rationalized that the findings of only low amounts of PP333 Ketone in the Champaign and Goldsboro soils was due to the fact that the ketone was not formed or that it degraded as soon as it was formed.

E. Reviewer's Discussion and Interpretation of Results:

The study appeared to provide valid scientific results. This reviewer's concern that the use of pH 11 NaOH solution during work up might have caused degradation of the PP333 Ketone during the analysis, was layed to rest by the author in demonstrating reasonable recoveries of PP333 Ketone with fortified authentic samples. However, the reviewer was not in agreement with the author's conclusions with regard to the mobility of PP333 and PP333 Ketone in sandy soils of low organic content such as the Goldsboro soil. A lower total material balance was observed after 90 days in the Visalia and the Goldsboro sandy soils than in the Vicksburg and the Champaign soils. Therefore, in this reviewer's opinion the material lost might be due to leaching to greater depths than 12 inches. That speculation is also consistent with the conclusion obtained via the column leaching experiment with regard to sandy soils of low organic material content (see March 15, 1984 review).

11. COMPLETION OF ONE LINER:

Not completed.

12. CBI APENDIX:

None

Paclobutrazol scientific review

Page _____ is not included in this copy.

Pages 6 through 10 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
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 - 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) _____
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-

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

AUG 28 1985

MEMORANDUM

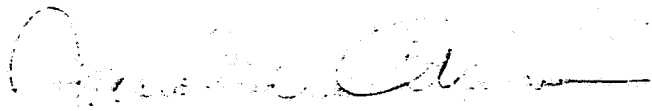
SUBJECT: Expedited Review for Paclobutrazol

TO: John Melone, Director
Hazard Evaluation Division (TS-769)

This Division needs an expedited review for the soil dissipation data for paclobutrazol. The data were developed by ICI, but will be used to support the pending turf uses for O.M. Scott's registrations.

I have already discussed this request with Mr. Creeger in EAB. There is a concern over the leaching potential for the turf uses of paclobutrazol and possible groundwater contamination.

Record Number: 156134.


James W. Akerman, Acting Director
Registration Division