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

JUL 17 1987

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: 45639-EUP-36. EUP Request to use Thidiazuron and Diuron on cotton as a defoliant. MRID Nos. 401783-02, 401783-03, 401783-04, 401783-05, and 402033-03. RCB No. 2396.

FROM: Linda S. Propst, Chemist
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Linda S. Propst

THRU: Andrew R. Rathman, Section Head
Residue Chemistry Branch
Hazard Evaluation Division (TS-769)

TO: Richard Mountfort, Product Manager #23
Herbicide-Fungicide Branch
Registration Division (TS-767)

NOR-AM Chemical Company is requesting an Experimental Use Permit to ship and use 94 gallons (108 lbs. a.i.) of SN 597 1.2 EC for defoliation purposes on 725 acres of cotton grown in the states of Arizona, Arkansas, California, Georgia, Louisiana, Mississippi, North Carolina and South Carolina. This request is for August 15, 1987 through November 30, 1987.

A tolerance of 1 ppm has been established on cottonseed to cover residues of the herbicide diuron (3-(3,4-dichlorophenyl)-1,1-dimethylurea) (40 CFR 180.106).

A tolerance of 0.4 ppm has been established on cottonseed for the combined residues of the defoliant thidiazuron (N-phenyl-N'-1,2,3-thiadiazol-5-ylurea) and its aniline containing metabolites (40 CFR 180.403).

Conclusions

1. We conclude that adequate analytical methods are available for the enforcement of the established tolerances.

2. Providing the registrant impose a 5 day PHI on the label, we can conclude that the established tolerances of 1 ppm and 0.4 ppm will be adequate to cover all residues of diuron and thidiazuron, respectively, which may occur on cottonseed as a result of this proposed use.

3. Providing the registrant imposes a 5 day preharvest interval and restricts the grazing or feeding of treated cotton foliage to livestock, we can conclude that existing tolerances established to cover residues of diuron and thidiazuron in meat and milk will be adequate to cover all secondary residues which may occur from the ingestion of hulls and cottonseed meal processed from cotton which has been treated as proposed.

Recommendations

We can recommend favorably for this Experimental Use Permit providing the registrant imposes a 5 day preharvest interval on the label and restricts the grazing or feeding of treated cotton foliage to livestock.

Detailed Considerations

Manufacturing Process and Formulation

SN 597 1.2 EC is a combination formulation of thidiazuron and diuron containing 1.2 lbs. active ingredients per gallon. The manufacturing process and the Confidential Statement of Formula for SN 597 1.2 EC is presented in the Confidential Appendix (See Attachment).

Currently Registered Uses

The currently registered use allows for diuron to be applied to cotton as a pre-plant application, or as a preemergence application, or as a post emergence application. During a single crop season, do not exceed the following amounts of diuron per acre.

Loamy sand:	0.8 lbs/A	Sandy loam:	1.2 lbs/A
Clay loam:	1.6 lbs/A	Clay:	2.2 lbs/A

Diuron is applied pre-plant to cotton in Arizona and California either alone at 0.8 to 2.0 lbs/A or as separate preplant application following trifluralin (pre-plant) at 0.5 to 1.0 lbs/A depending on soil texture. Apply as broadcast spray after beds are formed, preirrigated, and final seedbeds prepared.

Diuron is applied preemergence as broadcast or band application either alone at 0.5 to 1.6 lbs/A (depending upon soil texture) after planting but before cotton emerges or as a separate operation at above rate following trifluralin. For band treatment, use proportionately less. Use preemergence in U.S. except in Arizona, California, and areas west of Interstate 35 or 35W in Texas and Oklahoma. For postemergence use, apply as directed spray to weed foliage, keeping contact with cotton foliage to a minimum. Do not spray over top of cotton. For early season application use diuron at 0.20-0.40 lbs/A and 2 applications may be needed. For control of johnsongrass or nutsedge apply

with 2 to 3 1/2 lbs of disodium methyl arsonate (DMSA). For late season layby application apply 0.8 to 1.2 lb/A (0.8 to 1.6 lbs in California and Arizona). In case of initial crop failure, do not retreat field with second preplant or preemergence application as injury may result.

There is a restriction against livestock grazing treated cotton.

Thidiazuron is currently registered for use on cotton as a defoliant to be applied at rates of 0.1-0.2 lbs act/A when 70% or more of the bolls are open. For rank cotton, two applications may be necessary, but no more than 0.3 lb act. per acre per season is allowed. A preconditioning application of 0.005 - 0.025 lb act/A may be used.

No harvest is to occur earlier than 5 days after application, and foliage from treated plants is not to be fed to livestock.

Proposed Use

SN 597 1.2 EC will be applied at rates ranging from 0.075 to 0.225 lb. a.i. per acre. (This is a maximum of 0.075 lb. a.i. of diuron and 0.15 lb. a.i. of thidiazuron). Apply specified dosages in 10-25 gallons of spray per acre with ground equipment or 2-10 gallons per acre by aircraft. Applications are to be made prior to harvest when 60-80% of bolls are open. This will generally occur during the period late August through early November, depending on the area of the country and season earliness.

Make one application of SN 597 1.2 EC per season. Do not exceed 1.5 pts (0.225 lb a.i.) SN 597 1.2 EC per acre.

The proposed label does not impose a restriction against grazing treated fields or feeding treated foliage. No PHI has been imposed.

Analytical Methodology

Residues of thidiazuron and diuron on cottonseed samples were extracted and converted to aniline and 3,4-dichloroaniline, respectively, by alkaline reflux. The anilines formed were isolated from the sample matrix by continuous steam distillation and trapped in aqueous hydrochloric acid. The acid extract was then derivatized by bromination and quantified as tribromoaniline and dibromoaniline by high resolution gas chromatography with electron capture detection.

Validation data consists of control check samples fortified at levels ranging from 0.05 to 0.20 ppm for each compound. Recoveries for thidiazuron ranged from 94% to 113%. Recoveries for diuron ranged from 73% to 106%. Representative chromatograms

were submitted with this request. The limit of determination for thidiazuron and diuron is reported to be 0.05 ppm.

We conclude that adequate analytical methods are available for the enforcement of the established tolerances.

Residue Data

Data submitted in support of this request reflect two seasons of residue data from cottonseed grown in 5 locations of California, 1 location in Florida, 1 location in Georgia, and 1 location in Mississippi. The cotton was defoliated with SN 597 1.2 EC at application rates ranging from 0.10-0.27 lb. a.i./acre. The cotton was harvested by hand between 5 and 20 days posttreatment and ginned before being frozen and shipped for analysis.

Residues of thidiazuron on cottonseed ranged from <0.05 to 0.15 ppm. All residues of diuron were 0.05 ppm or less with the exception of 0.06 ppm occurring 5 days after treatment.

Providing the registrant impose a 5 day PHI on the label, we can conclude that the established tolerances of 1 ppm and 0.4 ppm will be adequate to cover all residues of diuron and thidiazuron, respectively, which may occur on cottonseed as a result of this proposed use.

Meat, Milk, Poultry, and Eggs

Providing the registrant imposes a 5 day preharvest interval and restricts the grazing or feeding of treated cotton foliage to livestock, we can conclude that existing tolerances established to cover residues of diuron and thidiazuron in meat and milk will be adequate to cover all secondary residues which may occur from the ingestion of hulls and cottonseed meal processed from cotton which has been treated as proposed.

Attachment (Confidential Appendix, copies to Reading File, Reviewer, PM 23, and PMSD/ISB only).
cc: Circulation, Reading File, Reviewer, Subject File, Diuron Registration Standard File, PMSD/ISB
RDI: A. R. Rathman, 7/16/87; R. D. Schmitt, 7/16/87
TS-769:RCB:LSP:lsp:CM-2:Rm810:557-7324:7/16/87

RIN 6976-94

CHEMISTRY REVIEW FOR THIDIAZURON

Page 5 is not included in this copy.

Pages _____ through _____ 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.
