MAY 30 1990

MEMORANDUM

SUBJECT: EEB Response to List A DCI for PENDIMETHALIN

TO: Amy S. Rispin, Chief
Science Analysis and Coordination Staff
Environmental Fate and Effects Division

FROM: James W. Akerman, Chief
Ecological Effects Branch
Environmental Fate and Effects Division

We have completed our review of the DCI for the List A pesticide PENDIMETHALIN. You will find our comments in the margins of the attached document submitted to us for review.

If you have any questions concerning this review, please contact the reviewer, Candy Brassard, or her Section Head, Ann Stavola.

ATTACHMENT

LIST A PROJECT

INVENTORY SUMMARY SHEET

SHAUGHNESSY # :108501 CHEM. CASE NAME :Pendimethalin
CASE # :0187 CASE NAME :Pendimethalin
DATE REGISTRATION STANDARD ISSUED :03/01/85 DATE SECD ROUND REVIEW : / /

may be only 1 if LFGND accepts 72-6

SUMMARY OF DATA REQUIREMENTS AND STUDIES

Discipline	Data Req.	Studies Rec'd	Studies Rev'd	Studies Not Rev'd	Data Outstd	New Req.
Prod. Chem.	8	17	8	9	0	0
Eco. Eff.	~~4~~ 3	2	1	1	~~2~~ 2	~~0~~ 3
Tox.	7	16	14	2	0	2
Eco. Eff. P.P.	0	0	0	0	0	3
NDEB	0	0	0	0	0	0
Env. Fate	12	9	0	9	3	0
Res. Chem.	6	8	0	8	3	2
Spl. Stud.	0	0	0	0	0	1
TOTALS(*)	~~37~~ 36	52	23	29	8	~~8~~ 11

* -- A single study may be submitted to support more than one data requirement(guideline), and totals include each occurrence of the study submitted.

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : PRODUCT CHEMISTRY

Data Required :

GR #	Study Name	RS Req.
61-2A	Begin. mat. & mnfg. proc	Yes
61-2B	Discussion of Impurities	Yes
62-1	Preliminary Analysis	Yes
63-8	Solubility	Yes
63-10	Dissociation Constant	Yes
63-11	Oct/Water partition Coef.	Yes
63-12	pH	Yes
63-13	Stability	Yes

New Requirements :

GR #	Study Name	Now Req.
None	None	None

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
61-2A	Begin. mat. & mnfg. proc	00158623	05/01/86
61-2B	Discussion of Impurities	40016001	12/03/86
		40194401	05/12/87
62-1	Preliminary Analysis	41111301	05/26/89
63-8	Solubility	00161758	07/29/86

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : ECOLOGICAL EFFECTS

Data Required :

GR #	Study Name	RS Req.	
~~72-2B~~	~~Invertebrate toxicity - TEP~~	~~Yes~~	
72-6	Aquatic org. accumulation	Yes	DATA OUTSTANDING!
~~72-7A~~	~~Simul. field-aquatic orgs.~~	~~Yes~~	
72-7B	Actual field-aquatic orgs.	Yes	DATA OUTSTANDING

New Requirements :

GR #	Study Name	Now Req.
None	None	None

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd	
72-6	Aquatic org. accumulation	261366	01/30/86	THIS STUDY IS REVIEWED BY EFGWB NOT EEB

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
72-2B	Invertebrate toxicity - TEP	260404	11/06/85	06/24/86	Y

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : TOXICOLOGY

Data Required :

GR #	Study Name	RS Req.
81-6	Dermal sensitization	Yes
82-1A	90-day feeding-rodent	Yes
83-1A	Chronic tox-rodent	Yes
83-2A	Oncogenicity - rat	Yes
84-2A	Gene mutation-ames	Yes
84-2B	Struct. chrom. aberration	Yes
84-4	Other genotoxic effects	Yes

New Requirements :

GR #	Study Name	Now Req.
83-3A	Teratogenicity - rat	Yes
83-4	2-generation repro.-rat	Yes

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
83-1A	Chronic tox-rodent	40174401	04/24/87
83-2A	Oncogenicity - rat	40174401	04/24/87

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LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : TOXICOLOGY
(continued)

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
81-6	Dermal sensitization	00153767	11/06/85	04/08/87	Y
82-1A	90-day feeding-rodent	00156081	01/30/86	07/17/86	Y
84-2A	Gene mutation-ames	00153768	11/06/85	04/08/87	Y
		00153769	11/06/85	04/08/87	Y
		00153770	11/06/85	04/08/87	Y
		00153771	11/06/85	04/08/87	Y
84-2B	Struct. chrom. aberration	00153768	11/06/85	04/08/87	Y
		00153769	11/06/85	04/08/87	Y
		00153770	11/06/85	04/08/87	Y
		00153771	11/06/85	04/08/87	Y
84-4	Other genotoxic effects	00153768	11/06/85	04/08/87	Y
		00153769	11/06/85	04/08/87	Y
		00153770	11/06/85	04/08/87	Y
		00153771	11/06/85	04/08/87	Y

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : ECOLOGICAL EFFECTS - PLANT PROTECTION

Data Required :

GR #	Study Name	RS Req.
None	None	None

New Requirements :

GR #	Study Name	Now Req.
123-1A	Seed germ/seedling emerg	Yes
123-1B	Vegetative vigor	Yes
123-2	Aquatic plant growth	Yes

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
None	None	None	None

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
None	None	None	None	None	None

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : NDEB

Data Required :

GR #	Study Name	RS Req.
None	None	None

New Requirements :

GR #	Study Name	Now Req.
None	None	None

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
None	None	None	None

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
None	None	None	None	None	None

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : ENVIRONMENTAL FATE

Data Required :

GR #	Study Name	RS Req.
161-2	Photodegradation-water	Yes
161-3	Photodegradation-soil	Yes
162-1	Aerobic soil metabolism	Yes
162-2	Anaerobic soil metabolism	Yes
162-3	Anaerobic aquatic metab.	Yes
162-4	Aerobic aquatic metab.	Yes
163-1	Leach/adsorp/desorption	Yes
163-2	Volatility - lab	Yes
164-1	Terrestrial field dissipation	Yes
164-2	Aquatic field dissipation	Yes
165-1	Confined rotational crop	Yes
165-4	Bioaccumulation in fish	Yes

New Requirements :

GR #	Study Name	Now Req.
None	None	None

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : RESIDUE CHEMISTRY

Data Required :

GR #	Study Name	RS Req.
171-4A	Nature of residue - plants	Yes
171-4B	Nature of residue - livestock	Yes
171-4E	Storage stability	Yes
171-4G	Mag. of res. in fish	Yes
171-4J	Mag. meat/milk/poultry/egg	Yes
171-4K	Cropfield trials SOYBEAN FORAGE, HAY & ST TOBACCO	Yes

New Requirements :

GR #	Study Name	Now Req.
171-4F	Mag. of res. potable H2O	Yes
171-4L	Processed food	Yes

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
171-4E	Storage stability	40063201	02/02/87
		40535101	03/02/88
171-4J	Mag. meat/milk/poultry/egg	00143477	05/22/84

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : RESIDUE CHEMISTRY
(continued)

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
171-4K	Cropfield trials		
	SOYBEAN FORAGE, HAY & STRAW	00161761	/ /
		40185101	/ /
		40260601	/ /
		00161759	/ /
		00161760	/ /

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
None	None	None	None	None	None

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : SPECIAL STUDIES

Data Required :

GR #	Study Name	RS Req.
None	None	None

New Requirements :

GR #	Study Name	Now Req.
81-8-SS	ACUTE AND SUBCHRONIC NEUROTOX	Yes

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
None	None	None	None

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
None	None	None	None	None	None

LIST A PROJECT--GUIDELINE LEVEL COMMENTS

ATTACHMENT TO : DETAILED DISCIPLINE REPORT

SHAUGHNESSY # :108501 CHEM. CASE NAME :Pendimethalin
CASE # :0187 CASE NAME :Pendimethalin
DATE REGISTRATION STANDARD ISSUED :03/01/85 DATE SECD ROUND REVIEW : / /

72-7A : Simul. field-aquatic orgs.
72-7a, 72-7b, and 164-2 had a combined protocol which was rejected by EEB on 11/29/89.(jbb 12/19/89)

72-7B : Actual field-aquatic orgs.
72-7a and b were combined in a protocol with 164-2 that was rejected by EEB on 11/29/89. (jbb 12/19/89)

162-4 : Aerobic aquatic metab.

1

164-1 : Terrestrial field dissipation
Studies submitted prior to the Registration Standard were reconsidered at the registrant's request, but rejected in review of 11/29/89. Guideline is still required.(jbb 12/19/89)

165-1 : Confined rotational crop
Studies submitted prior to the Registration Standard were reevaluated at the registrant's request, but rejected by EEB in review of 11/29/89. Guideline is still required.(jbb 12/19/89)

171-4A : Nature of residue - plants
New due date is November, 1990 per R. Taylor to American Cyanamid, 5/10/89. (jbb 12/21/89)

171-4B : Nature of residue - livestock
New due date is November, 1990 per R. Taylor letter to American Cyanamid, 5/10/89. (jbb 12/21/89)

LIST A PROJECT--MRID LEVEL COMMENTS

ATTACHMENT TO : DETAILED DISCIPLINE REPORT

SHAUGHNESSY # :108501 CHEM. CASE NAME :Pendimethalin
CASE # :0187 CASE NAME :Pendimethalin
DATE REGISTRATION STANDARD ISSUED :03/01/85 DATE SECD ROUND REVIEW : / /

164-2 : Aquatic field dissipation
41245601: Protocol combined with 72-7 rejected 11/29/89

171-4(K): Cropfield trials

171-4(L): Processed food

CHEMICAL MANAGEMENT SHEET
SHAUGHNESSY = 108501
as of 04/24/90

FOOD/NON-FOOD USE: FOOD
PIGEONHOLE: DATA CALL-IN

THIS IS A CALIFORNIA CHEMICAL.

TOXICOLOGY
1. THE TERATOLOGY AND REPRODUCTION STUDIES NEED TO BE REDONE PER THE REVIEW DONE FOR THE CALIFORNIA CHEMICALS.
2. NEED TO CHECK ON STATUS OF CHRONIC/ONCO MOUSE STUDY THAT WAS RETURNED TO THE REGISTRANT FOR REFORMATTING. WAS THIS STUDY RESUBMITTED? MRID #40909901
3. A CHRONIC/ONCO RAT STUDY IS CURRENTLY UNDER REVIEW? CHECK ON THIS.

DEB
1. THIS CHEMICAL IS REGISTERED BY MORE THAN ONE COMPANY. CHECK ON PRODUCT CHEMISTRY SUBMISSIONS FOR EACH COMPANY TO SEE IF ALL ARE IN COMPLIANCE.
2. THE METABOLISM STUDIES ARE OUTSTANDING. CHECK ON. 171-4a and 171-4b have due date extended to 11/01/90, per letter of R.Taylor (PM 25) to American Cyanamid,05/10/89.{jbb 12/19/89}
3. REVIEW STUDIES IN-HOUSE FIRST.
4. 171-4g"Magnitude of the Residue in Fish"--waived due to label restriction per letter of R.Taylor to American Cyanamid,04/15/86.{jbb 12/19/89}
5. NEW REQUIREMENT - DATA ON PROCESSED COMMODITIES NEEDED.

ENVIRONMENTAL FATE
1. THERE ARE OUTSTANDING STUDIES RELATED TO THE RICE USE. CHECK ON STATUS OF THIS USE AND THESE STUDIES.
   162-4: not needed per R.Taylor (PM 25) letter to American Cyanamid. 04/18/86.{jbb 12/19/89}
   164-1 and 165-1: old studies were reevaluated at registrant's request but rejected again, guidelines still required,review of 11/29/89.{jbb 12/19/89}
   165-3: reserved pending anaerobic aquatic metabolism study, MRID# 40813501. 72-6 MAY BE REQUIRED AS WELL - CONTACT EFGWB

ECOLOGICAL EFFECTS
1. 72-7 IS RELATED TO RICE; CHECK ON STATUS SAME AS ABOVE.
   Protocol for 72-7 and 164-2 was combined by registrant, but rejected by EEB in review of 11/29/89.{jbb 12/19/89}
2. NEED TIER II PHYTOXICITY STUDIES.

   THESE RESUBMITTED

LIST A PROJECT

DETAILED REPORT OF DATA AND STUDY REQUIREMENTS FOR SHAUGHNESSY = 108501
BY DISCIPLINE

DISCIPLINE : ENVIRONMENTAL FATE
(continued)

Studies to be reviewed :

GR #	Study Name	MRID	Date Rcvd
161-2	Photodegradation-water	00153763	11/06/85
161-3	Photodegradation-soil	00153764	11/06/85
162-1	Aerobic soil metabolism	40185104	05/06/87
162-2	Anaerobic soil metabolism	40185105	05/06/87
162-3	Anaerobic aquatic metab.	40813501	09/02/88
163-1	Leach/adsorp/desorption	00153765	11/06/85
163-2	Volatility - lab	00153766	11/06/85
164-2	Aquatic field dissipation	41245601	08/17/89
165-4	Bioaccumulation in fish	00158235	04/16/86

Studies Reviewed :

GR #	Study Name	MRID	Date Rcvd	Rvwd.	Acpt.
None	None	None	None	None	None

File copy

258835
Record No.

Review No.

108501
Shaughnessey No.

EEB REVIEW

DATE: IN March 1, 1990 OUT March 1, 1990

FILE OR REG. NO. 90-MN-04

PETITION OR EXP. NO.

DATE OF SUBMISSION January 25, 1990

DATE RECEIVED BY EFED February 7, 1990

RD REQUESTED COMPLETION DATA February 22, 1990

EEB ESTIMATED COMPLETION DATE February 22, 1990

RD ACTION CODE/TYPE OF REVIEW 510

TYPE PRODUCTS(S): I, D, H, F, N, R, S Herbicide

MRID NO(S). none

PRODUCT MANAGER NO. J. Tomkins/Rebecca Cool 557-7700

PRODUCT NAME(S) Prowl 4E, Pendimethalin

COMPANY NAME Minnesota Dept of Agriculture

SUBMISSION PURPOSE Section 18 for use on onion field

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	% A.I.
108501	Pendimethalin, emulsifiable	42.3%

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258835
Record No.

108501
Shaughnessy No.

Emergency Use Application
(Section 18)

Pendimethalin (Prowl®)

In onion fields in Minnesota

Ecological Effects Branch Review

100. REASON FOR APPLICATION:

100.1 NATURE AND SCOPE OF THE EMERGENCY:

Applicant and Request- Jim Nichols, Commissioner
Calvin E. Blanchard, Pesticide Advisor
Minnesota Department of Agriculture
90 West Plato Blvd.
St. Paul, MN 55107

Knowledgeable Expert- Dr. Vincent A Fritz
Horticulturist and Assistant Professor
Southern Experiment Station
University of Minnesota
Waseca, MN 56093

Alternatives- Mechanical control methods damage the fragile seedling and their beds. Other herbicides cannot be used in muck soils (Paraquat®), have no residual activity (Roundup®) or give little early weed control (Fusilade® and Goal®).

100.2 TARGET ORGANISMS:

Setaria spp.	Foxtail grasses
Digitaria spp.	Crabgrass
Panicum dichotomiflorum	Fall panicum
Echinochloa crusgalli	Barnyardgrass
Euphorbia supina	Prostrate spurge

100.3 DATE AND DURATION OF THE TREATMENT:

The submission did not give the dates of the treatment, but a telephone conversation revealed that the request is for the 1990 growing season. There will be preemergence application about April 10 and, perhaps, a post emergence treatment 30 days later.

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Aquatic- Pendimethalin is highly toxic to aquatic organisms. The Rainbow trout *(Salmo gairdneri)* LC_{50} is 0.14 ppm (supplemental); the Bluegill sunfish (*Lepomis macrochirus*) LC_{50} is 0.20 ppm (supplemental) and *Daphnia magna*'s LC_{50} is 0.28 ppm.

Plants- Test results are pending.

Discussion- The maximum expected EEC from runoff is 0.2 lbs ai/10 A. If drained directly into a one acre, six inch deep pond it would produce an EC_{50} of 12 ppb.

102.3 ENDANGERED SPECIES:

The endangered plants that occur in the area are not found on cultivated land. Previous, informal consultation with the U.S. Fish and Wildlife Service revealed that the only endangered species, Higgins' eye pearly mussel, would not be affected unless the chemical was toxic to invertebrates at >10 ppb., which it is not.

102.4 ADEQUACY OF LABELING:

The submission had no labeling.

102.4 DISCUSSION:

Pendimethalin is slightly toxic to birds and mammals, but is highly toxic to aquatic organisms. Runoff from treated areas could pose a risk to aquatic nontarget species and endangered species. The possibility of this occurring is small because: 1) herbicide applications do not show a tendency to drift because of their large droplet size, 2) runoff is minimal since onions are grown in former swamp areas, which are level, 3) it binds to the high organic content in the "muck" soil, and 4) the area to be treated is less than 1,000 acres.

103. CONCLUSIONS:

EEB has reviewed the proposed emergency exemption to use Pendimethalin in onion fields in Minnesota and has concluded that the proposed use will not result in hazard to terrestrial nontarget organisms. However, aquatic organisms in freshwater habitats near treatment areas may be at risk from the proposed use.

104. REVIEWED BY:

James J. Goodyear
Biologist, Section 1
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Signature: James Goodyear
Date: March 1, 1990

105. APPROVED BY:

Raymond W. Matheny
Head, Section 1
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Signature: Raymond W Matth
Date: 3/1/90

James W. Akerman
Branch Chief
Ecological Effects Branch
Environmental Fate and Effects Division (H7507C)

Signature:
Date: 3/1/90

253236
RECORD NO.

108501
SHAUGHNESSEY NO

REVIEW NO.

EEB REVIEW

DATE: IN 10-12-89 OUT

FILE OR REG. NO. 108501

PETITION OR EXP. NO.

DATE OF SUBMISSION 8-15-89

DATE RECEIVED BY HED 10-11-89

RD REQUESTED COMPLETION DATE 11-21-89

EEB ESTIMATED COMPLETION DATE 11-21-89

RD ACTION CODE/TYPE OF REVIEW 661

TYPE PRODUCT(S) Herbicide

DATA ACCESSION NO(S)

PRODUCT MANAGER, NO. 74

PRODUCT NAME(S) Prowl

COMPANY NAME American Cyanamid Company

SUBMISSION PURPOSE Registrant response concerning previous EEB review of rice protocol and review of revised protocol

SHAUGHNESSEY NO.	CHEMICAL	% A.I.
	Pendimetholin	42.3%
	Propanil	43.5%

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

SUBJECT: Prowl (Pendimethalin) Herbicide for Rice Use
Response to Registrant's Letter of August 15, 1989
(SN #108501)

FROM: James W. Akerman, Chief
Ecological Effects Branch
Environmental Fate and Effects Division

TO: R. Taylor PM 74
Fungicide-Herbicide Branch
Registration Division

The Ecological Effects Branch (EEB) has reviewed American Cyanamid Company's letter (and field monitoring protocol submission) of August 15, 1989 addressing a number of concerns regarding the reregistration of Prowl herbicide. As stated in our last action on this chemical (monitoring protocol review - 2/8/89), EEB is addressing only the requirements in Section 72-7 of the 1985 Registration Standard; the Environmental Fate and Ground Water Branch should address 164-2 requirements. The registrant, while agreeing to conduct additional monitoring studies, continues to insist that the studies done for 164-2 (MRID # 099889) are sufficient to negate ecological concern for rice uses of Prowl herbicide. EEB has previously responded that data in MRID #099889 is unacceptable and that a field monitoring study is still necessary. The former data are unacceptable for numerous reasons including no study site description, no description of proportion of floodwater level to treated soil area and no inclusion of receiving water residues (see attachment - Touart 1985).

The registrant continues to question EEB's interpretation of a 1977 core fish life-cycle study (MRID # 037940). We maintain exposure to a Prowl concentration of 10 ppb may cause adverse effects in a finfish and do not agree with American Cyanamide that "no adverse effects" result from exposure to 43 ppb and greater. The following explanation taken from the EEB review of the fish life cycle study (Windberg, L. A., 1978) best explains our rational. The submitter may choose to repeat the fish life-cycle assay if they believe our interpretation (of 10 ppb concern level) is based on unreliable data.

CONCURRENCES							
SYMBOL	H7507C	H7507C	H-7507C				
SURNAME	[illegible]	Crowe	Akerman				
DATE	2/8/90	2/13/90	2/14/90				

EPA Form 1320-1 (12-70) OFFICIAL FILE COPY

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"The investigator's interpretation of the egg production and hatchability data for fathead minnows continuously exposed to Prowl for a complete life cycle (Table 8) were questionable. The investigator concluded that there were no adverse effects on spawning of test fish at treatment concentrations of Prowl which were tested (i.e., ≤ 43 ppb). This conclusion was reached although the total number of eggs, eggs per spawn, and eggs per female exposed to 9.8 ppb were lower than those observed in all other treatments. These differences were ignored by the investigator because higher egg numbers were obtained from fish exposed to higher Prowl concentrations (22 ppb and 43 ppb). Yet there was no evidence offered to explain the reduced egg production observed at 9.8 ppb. Egg production by females in the 43 ppb treatment also appeared to be substantially lower than the control groups (Table 8). Although the mean number of eggs per spawn was similar between the 43 ppb treatment and the solvent-control group, the mean number of eggs per female was significantly lower (P=0.04, unpaired $\underline{t}$ - test) for the 43 ppb group (638 eggs per female) than among the solvent-control group (1273 eggs per female). The inconsistent results on spawning of test fish may be attributable to a relatively small number of females (3 to 7) used per treatment (Table 7) instead of 11-12 females per treatment as recommended in EPA protocol.

The investigator also reported that the mean percentages of eggs hatched from fish exposed to the 43 ppb and 22 ppb Prowl treatments were not significantly different from means of the controls and other treatments (Table 8). However, this reviewer checked the statistical comparisons and found evidence that hatchability data from both of the above treatments were significantly lower than the solvent-control group. Individual unpaired $\underline{t}$ - tests using the arc sin $\sqrt{}$percentage transformation showed significantly lower percentages of eggs hatched for the 43 ppb treatment ($P < 0.01$) and for replicate = A of the 22 ppb treatment ($P = -.048$). A second individual comparison using Chi-square tests 12 x 2 contingency table) showed significantly lower percentages of eggs hatched ($P < 0.01$) for both the 43 ppb and 22 ppb treatments. Therefore, the investigator should check his statistical analyses to confirm his initial conclusions." (Windberg, L.A. 1978).

Cyanamid has also requested information used in the EEC calculation (received by EEB from EAB on March 11, 1981) which resulted in an estimated concentration of 7 ppb in a bayou. An explanation of this EEC developed by J. C. Reinert of the former Environmental Fate Branch is attached. Further questions regarding the derivation of this estimate should be directed to the present Environmental Fate and Groundwater Branch.

Included in this submission is a revised protocol for a field residue monitoring study in rice. EEB has previously reviewed (2/8/89) and made comments on a field study protocol submitted by Cyanamid (see attached). This protocol was rejected because it was for a pond study rather than a field monitoring study as required. The revised protocol is indeed designed for a monitoring study, yet it is presented in such summary form as not to supply sufficient information to determine its usefulness and does not qualify as a complete protocol. Before EEB can comment further or approve this protocol, the following concerns must be addressed.

1) The "objective" should be more specific, i.e., "to determine exposure duration by measuring concentrations at key intervals and to determine confidence limits on these measurements".

2) Site specific information must be submitted for review before the study is initiated. The proposed protocol describes the site only as "Arkansas" (the attached letter states Texas, Mississippi (2 sites) and Arkansas). These 4 geographic locations are satisfactory, however, there should be 3 to 5 "sites" or spray areas per geographic location. All sites (with boundaries, acreage, sampling stations, etc) must be located on an original USGS topographic 7.5 minute series map. Total spray area (location and site) must be described in relation to surrounding natural waters. There should be at least one control site at each geographic location.

3) Statistical methods must be defined before proceeding with the study in order to be certain that the sampling design, i.e., number of sites, samples, etc. will yield a statistically valid study.

4) There must be a number of sampling stations per site; the number and locations depending on specifics of the site. Sample stations must not be located at "mixing" areas, such as the junction of gates, etc. Samples must not be composited throughout the entire bayou or pond.

5) Water sampling should occur within 2 to 3 hours following applications, two sample times in the first 24 hours after application and release of flood water, then once per day on Days 2 to 7 and Days 14, 21, 30, 45 and 60. Provision must be made for increased sampling within 24 hours after each major rainfall event (i.e., over 1 inch of rain). Sampling should not cease after Day 7. The number of sample stations and

replicate samples (at least duplicate) taken must be sufficient for the statistical design employed.

6) Soil and/or sediment samples must be taken from the bayou and fields the same days water samples are taken and must be collected such that the top 1 cm can be analyzed separately. Soil sedment samples should not be composited.

7) Analytic methods employed must be submitted for review. Samples sent to the analytical laboratory must be coded to ensure unbiased results. Samples spiked in the field should be included as analytical controls. All collection/sample device materials must be calibrated for absorption of test material. Absorption greater than one percent is unacceptable.

8) The physical-chemical parameters (i.e, pH, temp, rainfall, etc.) of test site water must be measured at each sampling station on every sampling occasion. The soil/sediment properties must also be described.

9) Two drift cards should be used per station. Drift card stations should be located on all sides of the treated area as well as in the field and bayou for all sites. The total number will depend on the specific site. Drift cards must not be composited.

10) Data must be submitted to show that application of Prowl 4E in combination with Stan M4 will not mask or interfere with the detection or dispersion of Prowl 4E. This should include at least one field control site where Prowl 4E alone and in combination is applied.

EEB would welcome a meeting with the registrant, as requested <u>after</u> the above items have been addressed and results submitted. To have a meeting prior to this would be of little benefit to the registrant or the Agency.

EEB has previously recommended (Aug 1989) in the "List A Project Inventory Summary" (FIFRA '88) that the rice use of pendimethalin be cancelled because of failure to submit a field study.

Questions/Comments - Otto Gutenson - 558-3449

	CONCURRENCES							
SYMBOL								
SURNAME								
DATE								

EPA Form 1320-1 (12-70) OFFICIAL FILE COPY

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108501

AUG 1 1989

DANIEL D. RIEDER

GENERAL CATEGORY: ____

SPECIFIC CATEGORY: ____

LIST A PROJECT

INVENTORY SUMMARY SHEET

1. CHEMICAL CASE NAME: Pendimethalin
2. CHEMICAL CASE NO.: 0187 3. PM 25
4. CAS NOS.: 40487-42-1
5. CASWELL NO.: 454BB
6. SHAUGHNESSY CODE(S): 108501
7. DATE OF ISSUANCE OF REGISTRATION STANDARD:
8. TYPE OF PESTICIDE: Herbicide
9. USE PATTERN: Terrestrial Food Crop, Terrestrial Feed Crop, ?Aquatic Food Crop?, Terrestrial Nonfood Crop.
10. SUMMARY OF DATA REQUIREMENTS AND STUDIES

DISCIPLINE	STUDIES REQ.	STUDIES REC'D.	STUDIES REV'D.	STUDIES NOT	STUDIES OUTSTAND. REV'D.	NEW REQ.
TOX.	------	------	------	------	------	------
ENVIRON. FATE	------	------	------	------	------	------
ECO.EFF.	3	2	1	1	1	3
PROD.CHEM.	------	------	------	------	------	------
RES.CHEM.	------	------	------	------	------	------
NDEB.	------	------	------	------	------	------
TOTALS	------	------	------	------	------	-----

note: 35% product packets unobtainable - 19/54; used CLF copy of label for 11 out of the 19.

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LIST A PROJECT SUMMARY SHEET

C. ECOLOGICAL EFFECTS:

1. STUDIES REQUIRED:

72-2 Aquatic Invertebrate w/ TEP
72-6 Aquatic Organism Accumulation Test
72-7 Aquatic field study (rice)

2. NEW REQUIREMENTS:

123-1 Seed Germination / seedling emergence
123-1 Vegetative Vigor
123-2 Aquatic Plant growth

3. STUDIES TO BE REVIEWED:

72-6 Aquatic Organism Accumulation Acc# 261366

4. STUDIES REVIEWED:

72-2 Aqu. Inv. Acute with TEP Acc# 260404 6-24-86 core

5. RECOMMENDATION:

Cancel rice use because of failure to submit field study

DCI for plant data . .

TABLE A
GENERIC DATA REQUIREMENTS FOR PENDIMETHALIN

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.145 Wildlife and Aquatic Organisms					
AVIAN AND MAMMALIAN TESTING					
71-1 - Acute Avian Oral Toxicity	TGAI	A,B,C	Yes	00059739	No
71-2 - Acute Avian Dietary Toxicity					
a) Upland gamebird	TGAI	A,B	Yes	00026674	No
b) Waterfowl	TGAI	A,B	Yes	00026675	No
71-3 - Wild Mammal Toxicity	TGAI	A,B	8/		
71-4 - Avian Reproduction	TGAI	A,B	8/		
71-5 - Simulated and Actual Field Testing - Mammals and Birds	TEP	A,B	8/		
AQUATIC ORGANISM TESTING					
72-1 - Acute Freshwater Fish Toxicity					
a) Warmwater	TGAI	A,B,C	Yes	00106764	No
	TEP	C	Yes	00037927 00131773	No
b) Coldwater	TGAI	A,B,C	Yes	00106764	No
	TEP	C	Yes	00037927	No

Revised 8-1-89 with List A project

TABLE A
GENERIC DATA REQUIREMENTS FOR PENDIMETHALIN

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.145 Wildlife and Aquatic Organisms (continued)					
72-2 - Acute Freshwater Invertebrate Toxicity	TGAI	A,B,C	Yes	00071123 00059738	No
	TEP	C	~~No~~ Yes	Acc# 260404	~~Yes~~ 3/ No
72-3 - Acute Toxicity Estuarine and Marine Organisms					
a) Oyster	TGAI	A,C	Yes	00131772	No
	TEP	A,C	Yes	00131772	No 4/
b) Shrimp	TGAI	A,C	Yes	00131775	No
	TEP	A,C	Yes	00131775	No 4/
c) Marine Fish	TGAI	A,C	Yes	00131774	No
	TEP	A,C	Yes	00131774	No 4/
72-4 - Aquatic Invertebrate Life-Cycle	TGAI	A,C	Yes	00100504	No 4/
72-5 - Fish - Life-Cycle	TGAI	A,C	Yes	00037940	No 4/
72-6 - Aquatic Organism Accumulation	TGAI	A,C	No	-	Yes 4/
72-7 - Aquatic Field Study	TEP	C 5/	No	-	Yes 3/

TABLE A

GENERIC DATA REQUIREMENTS FOR PENDIMENTALIN

Data Requirements	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? 3/
§158.150 Plant Protection					
121-1 - TARGET AREA PHYTOTOXICITY	EP	-	- NO	-	NO 4/
NONTARGET AREA PHYTOTOXICITY					
TIER I					
122-1 - Seed Germination/ Seedling Emergence	TGAI	-	- NO	-	NO 5/
122-1 - Vegetative Vigor	TGAI	-	- NO	-	NO 5/
122-2 - Aquatic Plant Growth	TGAI	-	- NO	-	NO 5/
TIER II					
123-1 - Seed Germination/ Seedling Emergence	TGAI	-	- NO	-	YES
123-1 - Vegetative Vigor	TGAI	-	- NO	-	YES
123-2 - Aquatic Plant Growth	TGAI	-	- NO	-	YES
TIER III					
124-1 - Terrestrial Field	TEP	-	- NO	-	RES 6/
124-2 - Aquatic Field	TEP	-	- NO	-	RES 6/

4/ Not currently a requirement

5/ Tier I phytotoxicity testing for herbicide is waived; Tier II tests are required instead.

6/ Field Testing reserved pending receipt and review of TIER II tests.

TABLE A
GENERIC DATA REQUIREMENTS FOR PENDIMETHALIN

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.155 Nontarget Insect					
NONTARGET INSECT TESTING - POLLINATORS:					
141-1 - Honey bee acute contact toxicity	TGAI	A,B	Yes	00099890	No
141-2 - Honey bee - toxicity of residues on foliage	TEP	A,B	9/		
141-4 - Honey bee subacute feeding study	[Reserved] 6/				
141-5 - Field testing for pollinators	TEP	A,B	9/		

TABLE A
GENERIC DATA REQUIREMENTS FOR PENDIMETHALIN

Data Requirement	Composition 1/	Use Pattern 2/	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?
§158.155 Nontarget Insect (continued)					
NONTARGET INSECT TESTING - AQUATIC INSECTS:					
142-1 - Acute toxicity to aquatic insects	(Reserved)7/				
142-2 - Aquatic insect life-cycle study	(Reserved)7/				
142-3 - Simulated or actual field testing for aquatic insects	(Reserved)7/				
143-1 - NONTARGET INSECT TESTING - PREDATORS AND PARASITES thru 143-3	(Reserved)7/				

TABLE A
GENERIC DATA REQUIREMENTS FOR PENDIMETHALIN

§158.145 Wildlife and Aquatic Organisms
(continued)

1/ Composition: TGAI = Technical grade of the active ingredient; PAI = pure active ingredient; TEP = Typical end-use product;
2/ The use patterns are coded as follows: A=Terrestrial, Food Crop; B=Terrestrial, Non-Food Crop; C=Aquatic, Food Crop; D=Aquatic, Non-Food; E=Greenhouse, Food Crop; F=Greenhouse, Non-Food; G=Forestry; H=Domestic Outdoor; I=Indoor.
3/ This study is required to support the rice use, and must be submitted by October 30, 1985.
4/ Requirement pending receipt and review of environmental fate data in conjunction with such uses as corn, soybeans and cotton.
5/ This study will monitor residues in aquatic sites next to rice fields, and must be submitted by April 30, 1987.
6/ Reserved pending development of test methodology.
7/ Reserved pending Agencys' decision as to whether data requirement should be established.
8/ The low avian and mammalian toxicity data for pendimethalin indicate that these data are not required.
9/ No additional data required because the data shows pendimethalin to be non-toxic to bees.

EPA Index to Pesticide Chemicals
(List A Inventory)

PENDIMETHALIN*

TABLE OF CONTENTS

Site Name — Page

TERRESTRIAL FEED CROP
TERRESTRIAL FOOD CROP
(Agricultural Crops)
TERRESTRIAL NONFOOD CROP
(Agricultural Crops)
(Ornamental Plants and Forest Trees)
(Noncrop, Wide Area, and General Indoor/Outdoor Treatments)
AQUATIC FOOD CROP
(Aquatic Sites)

Alfalfa (seed crop)
Beans (dry, lima, snap)
Christmas Tree Plantings
Corn (field)
Corn (sweet)
Cotton
Fencerows
Fruit Trees (including apple, apricot, cherry, citrus, grape, nectarine, peach, pear, plum, and prune) (non-bearing)
Highway Rights-of-Way (guardrails, delineators, signposts)
Industrial Sites (including petroleum tank farms, pumping stations, and storage areas)
Nut Crops (including almond, English walnut, and pistachio) (non-bearing)
Ornamental Plants (including achillea, agapanthus, ajuga, ash, asparagus fern, butterfly iris, California fur palm, ceanothus, cordyline, cortaderia, daylilies, douglas-fir, dwarf lily turf (gc), euonymus, flowering pear, forsythia, franklinia, hedera, hemlock, holly, Japanese snakebeard (gc), jelly palms, junipers, lagerstromia, ligustrum, linden, liriope, lobelia, magnolia, malus, maple, moraea, nightshade, oak, ophiopogon, pachysandra, pampasgrass, penstemon, photinia, rhododendron, spirea, stokesia, sycamore, syringa, white lily turf (gc), windmill palm, and yucca) (container, field)
Ornamental Lawns (except dichondra and bentgrass lawns)
Ornamental Turf (including bahiagrass, bentgrass, bermudagrass (non-winter overseeded), centipedegrass, fine fescue, Kentucky bluegrass, Poa annua (except putting greens and tees), perennial ryegrass, St. Augustinegrass, tall fescue, and zoysiagrass)
Peanuts
Potato
Railroad Rights-of-Way
Rice (dry-seeded)
Sorghum (grain crop)
Soybeans

N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine

PENDIMETHALIN

TABLE OF CONTENTS

Site Name — Page

Sunflower
Tobacco (burley and flue-cured)
Tobacco (transplants)
Uncultivated Non-Agricultural Areas
Utility Rights-of-Way
Vineyards (non-bearing)

EPA Index to Pesticide Chemicals
(List A Inventory)

PENDIMETHALIN*

TYPE PESTICIDE: Herbicide

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number

Alfalfa (seed crop)

Dormant application.
(EC)
WA880026

Beans (dry, lima, snap)

Preplant incorporation.
(EC)
000241-00243

Christmas Tree Plantings

Broadcast.
(EC)
000241-00305

Corn (field)

Early postemergence.
(DF)
000241-00268

(EC)
000241-00243

(SC/L)
000241-00301

Postemergence.
(EC)
000241-00243
CO790014 KS790009 NE790007

(SC/L)
000241-00301

Preemergence.
(DF)
000241-00268

(EC)
000241-00243

N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine

Issued: 5-02-89 I-108501-1

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Corn (field) (continued)

Preemergence (continued)

(SC/L)
000241-00301

Corn (sweet)

Early postemergence.
(EC)
000241-00243

(SC/L)
000241-00301

Preemergence.
(EC)
000241-00243

(SC/L)
000241-00301

Cotton

At planting.
(EC)
000241-00243

Preemergence.
(DF)
000241-00268

(EC)
000241-00243

Preplant incorporated.
(DF)
000241-00268

(EC)
000241-00243

Fencerows

Broadcast.
(EC)
000241-00305

EPA Index to Pesticide Chemicals
(List A Inventory)

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Fruit Trees (including apple, apricot, cherry, citrus, grape, nectarine, peach, pear, plum, and prune) (non-bearing)

Soil treatment.
(EC)
000241-00243

Highway Rights-of-Way (guardrails, delineators, signposts)

Broadcast.
(EC)
000241-00305

Industrial Sites (including petroleum tank farms, pumping stations, and storage areas)

Broadcast.
(EC)
000241-00305

Nut Crops (including almond, English walnut, and pistachio) (non-bearing)

Soil treatment.
(EC)
000241-00243

Ornamental Lawns (except dichondra and bentgrass lawns)

Broadcast.
(G)
000538-00189 000538-00192 000538-00219 000538-00237

(WP)
000241-00284 010404-00051

(DF)
010404-00052

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Ornamental Plants (including achillea, agapanthus, ajuga, ash, asparagus fern, butterfly iris, California fur palm, ceanothus, cordyline, cortaderia, daylilies, douglas-fir, dwarf lily turf (gc), euonymus, flowering pear, forsythia, franklinia, hedera, hemlock, holly, Japanese snakebeard (gc), jelly palms, junipers, lagerstromia, ligustrum, linden, liriope, lobelia, magnolia, malus, maple, moraea, nightshade, oak, ophiopogon, pachysandra, pampasgrass, penstemon, photinia, rhododendron, spirea, stokesia, sycamore, syringa, white lily turf (gc), windmill palm, and yucca) (container, field)

At planting.
(G)
000538-00188

Broadcast.
(EC)
000241-00305

Posttransplant.
(G)
000538-00172 000538-00188
CT820001 FL820023 LA820004 OR820004 TN820002

Preemergence.
(G)
000538-00172
CT820001 FL820023 LA820004 OR820004 TN820002

Ornamental Turf (including bahiagrass, bentgrass, bermudagrass (non-winter overseeded), centipedegrass, fine fescue, Kentucky bluegrass, Poa annua (except putting greens and tees), perennial ryegrass, St. Augustinegrass, tall fescue, and zoysiagrass)

Broadcast.
(G)
000538-00190 000538-00193 000538-00196 000538-00206
000538-00207 000538-00213 000538-00214 000538-00227

(WP)
000241-00284 010404-00051

(DF)
010404-00052

Peanuts

Preplant incorporated.
(EC)
000241-00243

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Potato

Postemergence.
(EC)
ID830016 OR830023 WA830020

Preemergence.
(EC)
000241-00243
ME810001

Railroad Rights-of-Way

Broadcast.
(EC)
000241-00305

Rice (dry-seeded)

Early postemergence.
(EC)
000241-00243 038167-00010

Postemergence.
(EC)
AR810025

Sorghum (grain crop)

Early postemergence.
(EC)
000241-00243

Postemergence.
(EC)
000241-00243

(SC/L)
000241-00301

Soybeans

At planting.
(EC)
000241-00243

Preemergence.
(DF)
000241-00268

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Soybeans (continued)

Preemergence (continued)

(EC)
000241-00243 000241-00315
NE850007

Preplant.
(EC)
000241-00315

Preplant incorporated.
(DF)
000241-00268

(EC)
000241-00243 000241-00315
NE850007

Sunflower

Preemergence.
(EC)
ND850003

Preplant.
(EC)
ND850003

Preplant incorporated.
(EC)
000241-00243

Tobacco (burley and flue-cured)

Postemergence.
(EC)
000241-00247

Tobacco (transplants)

Layby application.
(EC)
000241-00243

PENDIMETHALIN

Appendix B Report

Listing by Site/Use Pattern Statement/Form/Registration Number (continued)

Tobacco (transplants) (continued)

Preplant incorporated.
(EC)
000241-00243
KY800002 MD800011

Uncultivated Non-Agricultural Areas

Broadcast.
(EC)
000241-00305

Utility Rights-of-Way

Broadcast.
(EC)
000241-00305

Vineyards (non-bearing)

Soil treatment.
(EC)
000241-00243

Dormant application.
(EC)
000241-00243

EPA Index to Pesticide Chemicals
(List A Inventory)

PENDIMETHALIN

Listing of Registered Pesticide Products by Formulation

90% technical chemical
pendimethalin (108501)
000241-00245#
#fiche/label copy

5.8 lb/gal formulation intermediate
pendimethalin (108501)
000241-00281#
#fiche/label copy

86.8% formulation intermediate
pendimethalin (108501)
000241-00291#
#fiche/label copy

0.5% granular
pendimethalin (108501)
000538-00213# 000538-00214
#fiche/label copy

0.57% granular
pendimethalin (108501)
000538-00206

0.68% granular
pendimethalin (108501) plus chlorpyrifos (059101)
000538-00226*
*jacket currently unavailable for review

1% granular
pendimethalin (108501) plus oxyflurofen (111601)
000538-00172

(000538-00172) CT820001 FL820023 LA820004 OR820004 TN820002

1.03% granular
pendimethalin (108501)
000538-00189#
#fiche/label copy

1.15% granular
pendimethalin (108501)
000538-00196 000538-00202*
*jacket currently unavailable for review

1.24% granular
pendimethalin (108501)
000538-00190#
#fiche/label copy

PENDIMETHALIN

Listing of Registered Pesticide Products by Formulation (continued)

1.71% granular
pendimethalin (108501)
000538-00192 000538-00193

1.79% granular
pendimethalin (108501)
000538-00207# 000538-00219 000538-00237
#fiche/label copy

2.68% granular
pendimethalin (108501)
000538-00188

4.13% granular
pendimethalin (108501)
000538-00227

35% wettable powder
pendimethalin (108501)
000241-00302*
*jacket currently unavailable for review

50% wettable powder
pendimethalin (108501)
000241-00284# 010404-00051
#fiche/label copy

60% dry flowable
pendimethalin (108501)
000241-00268# 010404-00052
#fiche/label copy

1 lb/gal emulsifiable concentrate
pendimethalin (108501) plus 3',4'-dichloropropionanilide (028201)
038167-00010

2.8 lb/gal emulsifiable concentrate
pendimethalin (108501) plus imazethapyr (128982)
000241-00315

3 lb/gal emulsifiable concentrate
pendimethalin (108501) plus xylene (086802)
000241-00247#
#fiche/label copy

4 lb/gal emulsifiable concentrate
pendimethalin (108501)
000241-00243 000241-00305

(000241-00243)	AR810025	AZ820008*	CO790014	ID830016
	KS790009	KY800002	MD800011	ME810001
	ND850003	NE790007	NE850007	OR830023

PENDIMETHALIN

Listing of Registered Pesticide Products by Formulation (continued)

4 lb/gal emulsifiable concentrate (continued)

PA800011* TX810023* WA830020 WA880026
*jacket currently unavailable for review

21.85% emulsifiable concentrate
pendimethalin (108501) plus dihyro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl)-3-quinolinecarboxylic acid (128848)
000241-00297*
*jacket currently unavailable for review

32% soluble concentrate/liquid
pendimethalin (108501) plus atrazine (080803)
000241-00300*
*jacket currently unavailable for review

40% soluble concentrate/liquid
pendimethalin (108501)
000241-00301

60% soluble concentrate/liquid
pendimethalin (108501)
000538-00195*
*jacket currently unavailable for review

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ECOLOGICAL EFFECTS

LIST A PROJECT

INVENTORY SUMMARY SHEET

1. CHEMICAL CASE NAME: Pendimethalin

2. SHAUGHNESSY CODE(S): 108501

3. DATE OF ISSUANCE OF REGISTRATION STANDARD: _____

4. TYPE OF PESTICIDE: Herbicide

5. USE PATTERN: Terrestrial food crop, terrestrial feed crop, Aquatic food crop? Terrestrial nonfood crop

6. SUMMARY OF DATE REQUIREMENTS AND STUDIES

DISCIPLINE	DATA REQ.	STUDIES REC'D.	STUDIES REV'D.	STUDIES NOT REV'D.	STUDIES OUT-STAND.	NEW REQ.
ECO.EFF.	3	2	1	1	1	3

NOTE: 35% product jackets unobtainable - 19/54; used CLF copu of label for 11 out of the 19

LIST A PROJECT SUMMARY SHEET

C. ECOLOGICAL EFFECTS:

1. STUDIES REQUIRED:

72-2 Aquatic Invertebrate w/TEP
72-6 Aquatic Organism Accumulation test
72-7 Aquatic Field Study (rice)

2. NEW REQUIREMENTS:

123-1 Seed germination / seedling emergence
123-1 Vegitative vigor
123-2 Aquatic plant growth

3. STUDIES TO BE REVIEWED:

72-6 Aquatic Organism Accumulation Acct. No. 261366

4. STUDIES REVIEWED:

72-2 Aquatic Inv. Acute with TEP Acct. No. 260404 6-24-86 Core

5. RECOMMENTATION:

Cancel rice use because of failure to submit field study.

Then do second round review.