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

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES



**MEMORANDUM**

September 10, 2001

SUBJECT: **Propanil** Magnitude of the Residue in Crayfish and Information in Support of Revising the Retreatment Interval for Rice and the Discharge Period for Water in Treated Paddies; PC code 028201; Rereg. Case 0226; DP Barcode D276423; MRID No. 43748101 and 43406501.

FROM: Sherrie L. Kinard, Chemist Sherrie L. Kinard
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Health Effects Division (7509C)

THROUGH: Alan Nielsen, Branch Senior Scientist C. Nielsen 9/10/01
Reregistration Branch II
Health Effects Division (7509C)

TO: Tom Meyers, Chemical Review Manager
Reregistration Branch II
Special Review and Reregistration Division (7508W)

## INTRODUCTION

Data in support of reregistration of propanil have been submitted on behalf of the Propanil Task Force (PTF; including Cedar Chemical Corporation, Westrade USA, Retzloff Delta Company, and Rohm and Haas Company) by Agri Business Group (ABG) and NPC, Inc. In response to an Agency memorandum (DP Barcode D178275, 9/14/92, R. Perfetti), ABG has submitted data pertaining to the magnitude of the residue in crayfish (1995; MRID 43748101). NPC, Inc. has submitted information in support of revising the retreatment interval for rice and the discharge period for water in treated paddies (1994; MRID 43406501) as a follow-up to a meeting held with the Agency concerning propanil use in rice culture (No DP Barcode, 6/23/94, C. Swartz). These submissions are evaluated herein for their adequacy in fulfilling residue chemistry data requirements for the reregistration of propanil.

Attached is the residue chemistry reviews of the ABG submitted data pertaining to the magnitude of the residue in crayfish (1995; MRID 43748101) and the NPC, Inc. submitted information in

support of revising the retreatment interval for rice and the discharge period for water in treated paddies (1994; MRID 43406501). This information was compiled by Dynamac Corporation under supervision of RRB2. This review has undergone secondary review by RRB2 and has been revised to reflect current Agency policies.

## EXECUTIVE SUMMARY OF CHEMISTRY DEFICIENCIES

- Product labels should be revised to specify a 7-day retreatment interval for application of propanil to rice.
- Based on the submitted data for crayfish, label restrictions against application to fields where catfish farming is practiced and draining water from fields into areas where catfish farming is practiced must be added to all product labels for propanil uses on rice.

## RECOMMENDATIONS

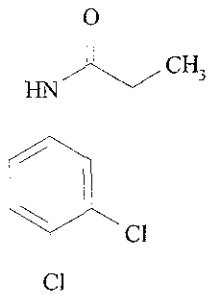
Based on the submitted data for crayfish, The Agency recommends that a tolerance of 0.05 ppm be established for residues of propanil and its metabolites (calculated as propanil) in/on crayfish.

The Agency cannot at this time recommend in favor of a reduction in the discharge interval. With respect to reducing the retreatment interval, essentially no new data were submitted to support the registrant's proposal, and the Agency reiterates its recommendation that product labels be revised to specify a 7-day retreatment interval for application of propanil to rice.

**cc: Sherrie L. Kinard (RRB2), Propanil Reg. Std. File, Propanil Subject File, RF, LAN. RD/I: Propanil Team Review (9/5/2001).**

**7509C: RRB2: S. Kinard: CM#2:Rm 722B: 703-305-0563: 9/10/2001.**

# PROPANIL



PC Code 028201; Case 0226

(DP Barcode D276423)

REGISTRANT'S RESPONSE TO RESIDUE CHEMISTRY DATA REQUIREMENTS

## PRESENT SUBMISSIONS

Data in support of reregistration of propanil have been submitted on behalf of the Propanil Task Force (PTF; including Cedar Chemical Corporation, Westrade USA, Retzloff Delta Company, and Rohm and Haas Company) by Agri Business Group (ABG) and NPC, Inc. In response to an Agency memorandum (DP Barcode D178275, 9/14/92, R. Perfetti), ABG has submitted data pertaining to the magnitude of the residue in crayfish (1995; MRID 43748101). NPC, Inc. has submitted information in support of revising the retreatment interval for rice and the discharge period for water in treated paddies (1994; MRID 43406501) as a follow-up to a meeting held with the Agency concerning propanil use in rice culture (No DP Barcode, 6/23/94, C. Swartz). These submissions are evaluated herein for their adequacy in fulfilling residue chemistry data requirements for the reregistration of propanil.

## BACKGROUND

The qualitative nature of the residue in plants (rice and wheat) and animals (poultry, ruminant, and crayfish) is adequately understood. Based on the available plant and animal metabolism data, the HED Metabolism Committee has determined that the propanil residues of concern that need to be regulated for plants and animals consist of propanil and residues convertible to 3,4-dichloroaniline (3,4-DCA). Tolerances for residues of propanil in/on the grain and straw of barley, oats, rice, and wheat, in eggs and milk, in the fat, meat, and meat byproducts of cattle, goats, hogs, horses, poultry, and sheep, and in processed rice commodities (bran, hulls, mill fractions, and polishings) are established under 40 CFR §180.274(a)(1) and (a)(2). Propanil tolerances are expressed in terms of propanil (3',4'-dichloropropionanilide)and its metabolites (calculated as propanil). There is no tolerance for propanil residues in shellfish.

Adequate methods are available for tolerance enforcement. For the enforcement of plant commodity tolerances, the Propanil Task Force has proposed a GC/NPD method (EN-CAS Method No. ENC-9/90) which uses a base hydrolysis step resulting in the conversion of propanil and metabolites containing the 3,4-DCA moiety to 3,4-DCA. EN-CAS Method No. ENC-9/90 has undergone a successful independent laboratory validation (ILV) trial and should be forwarded to the Analytical Chemistry Branch for Agency validation. For the enforcement of animal commodity tolerances, the preferred method is Method I of the Pesticide Analytical Manual (PAM) Vol. II. Method I also uses base hydrolysis to convert propanil and its metabolites to 3,4-DCA; residues are then detected using GC/ECD and are reported as propanil. There are no Codex MRLs in effect for residues of propanil; therefore, there is no question with respect to Codex/U.S. tolerance compatibility.

## CONCLUSIONS AND RECOMMENDATIONS

### OPPTS GLN 860.1340: Residue Analytical Methods

1. Based on the available method validation and concurrent recovery data, the GC/NPD method (EN-CAS Method ENC-9/90) used to measure propanil and its metabolites, determined as base-releasable 3,4-DCA, in/on the edible portion of crayfish and rice commodities (forage, grain, and straw) from the magnitude of the residue in crayfish study is adequate for data collection. The validated method LOQ is 0.01 ppm for all matrices.

### OPPTS GLN 860.1380: Storage Stability Data

2. In support of the storage intervals and conditions of samples from the magnitude of the residue in crayfish study, the registrant cited previously reviewed storage stability data for crayfish (MRID 42301001; DP Barcode D178275, 9/14/92, R. Perfetti) and rice commodities (MRIDs 43157001 and 43157002; DP Barcode D200811, 10/3/95, C. Swartz). The available storage stability data indicate that residues of propanil and 3,4-DCA-glucose are stable in crayfish samples stored frozen for up to 18 weeks, and that residues of propanil and its metabolites determined as base-releasable 3,4-DCA are stable during frozen storage in/on rice bran and polished rice for up to 10 months, rice straw for up to 18 months, and rough rice grain and rice hulls for up to 20 months. These data are adequate to support the storage intervals and conditions of the crayfish and rice samples from the submitted magnitude of the residue study in which the storage intervals between sample collection and analysis were: 50-53 days (~2 months) for crayfish, 257-264 (~8-9 months) for rice forage, 185-252 (~6-8 months) for rice grain, and 186-248 (~6-8 months) for rice straw samples.

OPPTS GLN 860.1400: Water, Fish, and Irrigated Crops

3a. *Crayfish*: The submitted magnitude of the residue in crayfish data are adequate to satisfy reregistration requirements. Residues of propanil and its metabolites, determined as base-releasable 3,4-DCA and expressed as propanil equivalents, were <0.01-0.03 ppm in/on the edible portion of crayfish harvested 7-8 months following two applications of the 4 lb/gal EC formulation at ~4 lb ai/A/application, for a total rate of ~8 lb ai/A (1x the maximum seasonal application rate) to drained rice paddy sites.

3b. Based on the submitted data for crayfish, The Agency recommends that a tolerance of 0.05 ppm be established for residues of propanil and its metabolites (calculated as propanil) in/on crayfish.

4a. *Irrigation and Potable Water*: The Agency has considered the submitted summary of the existing data and scientific literature in support the PTF's proposal to reduce the discharge interval to 30 days and for a retreatment interval of less than 7 days. With respect to the summary of existing data and scientific literature addressing the non-availability of propanil residues in water, we conclude that the registrant has not provided any new information which would affect our previous recommendation for a 30-day discharge interval. The most compelling information offered by the registrant was the discussion of water management practices for rice production; however, in the absence of residue data supporting a discharge interval of less than 30 day, we cannot at this time recommend in favor of a reduction in the discharge interval.

4b. With respect to reducing the retreatment interval, essentially no new data were submitted to support the registrant's proposal, and the Agency reiterates its recommendation that product labels be revised to specify a 7-day retreatment interval for application of propanil to rice.

5. *Catfish*: No data have been submitted depicting magnitude of the residue in catfish; however, label restrictions against application to fields where catfish farming is practiced and draining water from fields into areas where catfish farming is practiced are established on labels for the 4 lb/gal EC, the 81% DF, and the 80.2% DF formulations (EPA Reg. Nos. 707-109, 707-226, and 707-266). Based on the submitted data for crayfish, this restriction must be added to the remaining product labels for propanil uses on rice.

DETAILED CONSIDERATIONS

OPPTS GLN 860.1340: Residue Analytical Methods

Samples of the edible portion of crayfish and rice commodities (forage, grain, and straw) from the magnitude of the residue in crayfish study (MRID 43748101) were analyzed for residues of propanil and its metabolites, determined as base-releasable 3,4-DCA, by EN-CAS Method ENC-9/90. The method uses a DB-17 or DB 1701 capillary column and alkali flame nitrogen-phosphorus detection (NPD) and is similar to Method I in PAM Vol. II. The method, entitled "Analytical Method for the Determination of Propanil as Base-Releasable 3,4-DCA in Soil, Water, Crayfish (edible portion), Rough Rice Grain, Polished Rice Grain, Rice Hulls, Rice Bran, Rice Straw, and the Determination of Base-Releasable 3,4-Dichloroaniline from N-(3,4-Dichlorophenyl)-D-glucosylamine (3,4-DCA-glucose) in Crayfish," has a limit of quantitation of 0.01 ppm for all matrices.

Briefly, residues of propanil are base-hydrolyzed to 3,4-DCA, steam-distilled into hexane, and cleaned up using a silica gel column prior to analysis using GC/NPD. The registrant referenced method validation data previously reviewed for rice grain, polished rice grain, hulls, and bran (CBRS No. 9589, DP Barcode D175886, 6/22/92, R. Perfetti). These data indicate that method ENC-9/90 adequately recovers residues of propanil as free and base-releasable 3,4-DCA from rough rice grain and processed rice commodities.

Concurrent method validation was conducted by EN-CAS Laboratories (Winston-Salem, NC) to determine the adequacy of this method for data collection purposes. Untreated samples of crayfish, rice forage, rice straw, and rough rice grain were fortified with propanil at 0.01-600 ppm; fortification levels were higher than the LOQ for rice forage, straw, and grain due to high apparent residue levels in the controls. Concurrent recovery data are presented in Table 1. Raw data, sample calculations, and representative chromatograms were submitted. The concurrent recovery data indicate that the GC/NPD method is adequate for data collection purposes to determine propanil residues in crayfish, rice forage, rice straw, and rough rice grain.

Table 1. Concurrent method recoveries of propanil residues from fortified control samples using the GC/NPD method ENC-9/90.

| Matrix | Fortification Level, ppm | Recovery, % | | | No. of Samples |
|---|---|---|---|---|---|
| | | Average | Range[a] | SD | |
| Crayfish | 0.01 | 105 | 100, 110; 232[b] | 7 | 3 |
| | 0.05 | 82 | 67; 97; 462[b] | 21 | 3 |
| Rice forage | 600 | 71 | 69; 73 | 3 | 2 |
| Rice straw | 2.0 | 79 | 78-80 | 1 | 4 |
| Rough rice grain | 0.50 | 75 | 72-79 | 3 | 4 |

[a] Recovery values outside the acceptable 70-120% range are listed separately.

[b] This value was considered an outlier and was not used in the calculation of average and SD.

OPPTS GLN 860.1380: Storage Stability Data

The PTF provided adequate information pertaining to storage and handling procedures for samples collected from the magnitude of the residue in crayfish study (MRID 43748101). Within one hour of collection, samples were packed in insulated boxes and were shipped frozen by ACDS truck or overnight express service to EN-CAS Analytical Laboratories (Winston-Salem, NC). Samples remained in frozen storage (-27 to -12 C) prior to analysis. The storage intervals between sample collection and analysis were: 50-53 days (~2 months) for crayfish, 257-264 (~8-9 months) for rice forage, 185-252 (~6-8 months) for rice grain, and 186-248 (~6-8 months) for rice straw samples.

In support of the storage intervals and conditions of samples from the magnitude of the residue in crayfish study, the registrant cited previously reviewed storage stability data for crayfish (MRID 42301001; DP Barcode D178275, 9/14/92, R. Perfetti) and rice commodities (MRIDs 43157001 and 43157002; DP Barcode D200811, 10/3/95, C. Swartz). The available storage stability data indicate that residues of propanil and 3,4-DCA-glucose are stable in crayfish samples stored frozen for up to 18 weeks, and that residues of propanil and its metabolites determined as base-releasable 3,4-DCA are stable during frozen storage in/on rice bran and polished rice for up to 10 months, rice straw for up to 18 months, and rough rice grain and rice hulls for up to 20 months. These data are adequate to support the storage intervals and conditions of the crayfish and rice samples from the submitted magnitude of the residue study.

OPPTS GLN 860.1400: Water, Fish, and Irrigated Crops

Crayfish

In response to an HED memorandum (DP Barcode D178275, 9/14/92, R. Perfetti), ABG, on behalf of the PTF has submitted data depicting the magnitude of the residue of propanil in crayfish (1995; MRID 43748101).

The HED memorandum concluded that the previously submitted study depicting the magnitude of the residue in crayfish (1992; MRID 42301001) was unacceptable because only a single application of propanil had been made at 0.5x the maximum label rate, and crayfish were harvested one year after treatment rather than at a typical harvest interval of 7 months (winter harvest). The registrant was required to conduct a new study reflecting two applications of propanil at 4 lb ai/A each, with crayfish harvested at a 7-month interval to provide the minimum treatment-to-harvest interval.

*Established tolerances*: No tolerances have been established for residues of propanil and its metabolites, calculated as propanil, in crayfish.

*Registered use pattern*: The 3 and 4 lb/gal emulsifiable concentrate (EC) and 80.2 and 81% dry flowable (DF) formulations (EPA Reg. Nos. 707-75, 707-94, 707-109, 707-112, 707-226, and 707-266) are registered for postemergence broadcast applications to rice at 4.0-6.0 lb ai/A/application, not to exceed 8.0 lb ai/A/season, using ground or aerial equipment. Ground applications are to be made in a minimum of 15-20 gal of water/A and aerial applications are to be made in a minimum of 5-10 gal of water/A. There is no minimum retreatment interval between applications specified. Applications are to be made when fields have been drained of most of the standing water, and fields should be flooded within 12 to 24 hours of spraying. Use is limited to rice grown in southern U.S.

*Discussion of the data*: Two tests were conducted in LA depicting residues of propanil in/on crayfish following ground application of propanil to rice. Crayfish were added to the rice paddies before the rice was planted, at a stocking rate of 41-42 lb/A to ensure the presence of sufficient crayfish for sampling. Two postemergence applications of the 4 lb/gal EC formulation at 3.80-4.10 lb ai/A/application, for a total rate of ~8 lb ai/A (1x the maximum seasonal application rate), were made 29-30 days and 43-45 days after planting to drained rice paddy sites. Applications were made in 19.11-19.45 gal of water/A using ground equipment ($CO_2$ backpack sprayer). The intervals between applications ranged from 14 to 15 days. Fields were reflooded 49 and 58 days after planting. A separate plot at each trial site was left untreated to provide control samples.

Control and treated samples of rice forage were collected within one hour of the second application. At rice maturity, 78-85 days following the second application, the water was drained from the rice paddies, and control and treated samples of rice grain and straw were harvested. Following rice harvest, the paddies were left drained until reflooding during the month of October as recommended for commercial crayfish cultural practices. Crayfish were sampled (in December and January), 7 and 8 months following the final application. Information pertaining to handling and storage procedures for harvested samples is found in "Storage Stability Data" section of this document. The harvested samples were analyzed for residues of propanil using EN-CAS Method 9/90 described in the "Residue Analytical Methods" section.

The results of the magnitude of the residue in crayfish study are presented in Table 2. We note that data pertaining to rice commodities are presented for informational purposes only. Apparent residues were <0.01 ppm in/on eight samples of untreated crayfish; detectable residues were observed in/on four samples each of untreated rice forage (0.047-0.06 ppm), rough rice grain (0.015-0.109 ppm), and rice straw (0.059-0.147 ppm).

Table 2. Residues of propanil its metabolites determined as base-releasable 3,4-DCA in/on crayfish and rice commodities following application of the 4 lb/gal EC formulation to rice paddies in St. Landry Parish, LA, at 1x.

| Test location | PHI | Residues, ppm | |
|---|---|---|---|
| | | Base-Releasable 3,4-DCA | Propanil equivalents [a] |
| Crayfish | | | |
| Site 1 | 7 months | <0.010, 0.012, 0.083 (<0.010, <0.010) [b] | <0.01, 0.02, 0.11 (<0.01, <0.01) [b] |
| Site 2 | | 0.012, 0.018, 0.019 | 0.02, 0.02, 0.03 |
| Site 1 | 8 months | <0.010, 0.014, 0.017 | <0.01, 0.02, 0.02 |
| Site 2 | | <0.010, 0.010, 0.015 | <0.01, 0.01, 0.02 |
| Rice forage | | | |
| Site 1 | 0 days | 412, 436, 579 | 556, 588, 782 |
| Site 2 | 0 days | 207, 222, 283 | 280, 300, 383 |
| Rough rice grain | | | |
| Site 1 | 78 days | 0.131, 0.133, 0.136 | 0.18, 0.18, 0.18 |
| Site 2 | 85 days | 0.037, 0.037, 0.040 | 0.05, 0.05, 0.05 |
| Rice straw | | | |
| Site 1 | 78 days | 0.525, 0.697, 0.811 | 0.71, 0.94, 1.1 |
| Site 2 | 85 days | 0.294, 0.520, 0.746 | 0.40, 0.70, 1.0 |

[a] Propanil equivalents are calculated from base-releasable 3,4-DCA values by multiplying by 1.35 (molecular weight correction).

[b] Residue values in parentheses represent duplicate reanalyses. The registrant noted that the initial result of 0.083 ppm (0.11 ppm propanil equivalents) was due to probable laboratory contamination; procedural recoveries were also unacceptably high for this sample. The registrant requested that the confirmatory residue values be reported in spite of the elevated recovery.

## Conclusions

The submitted magnitude of the residue in crayfish data are adequate to satisfy data requirements. Residues of propanil and its metabolites, determined as base-releasable 3,4-DCA and expressed as propanil equivalents, were <0.01-0.03 ppm in/on the edible portion of crayfish harvested 7-8 months following two applications of the 4 lb/gal EC formulation at ~4 lb ai/A/application, for a total rate of ~8 lb ai/A (1x the maximum seasonal application rate) to drained rice paddy sites.

Based on the submitted data for crayfish, the Agency recommends that a tolerance of 0.05 ppm be established for residues of propanil and its metabolites (calculated as propanil) in/on crayfish.

Irrigation and Potable Water

On behalf of the PTF, NPC, Inc. has submitted information in support of revising the retreatment interval for rice and the discharge period for water in treated paddies (1994; MRID 43406501) following application of propanil to rice paddies.

The current information was submitted as a follow-up to a meeting held with the Agency concerning propanil use in rice culture (No DP Barcode, 6/23/94, C. Swartz). The meeting was held to discuss the Agency's recommendations that, based on the available data pertaining to irrigation/potable water data requirements, a retreatment interval of 7 days and a water discharge restriction of 30 days should be specified on labels registered for rice use (DP Barcode D200196, 3/25/94, R. Perfetti).

In the meeting, the PTF maintained that a 30-day holding period for water in treated paddies is not compatible with rice culture practices, and proposed to reduce the holding period to 14 days. The registrant proposed to conduct bioavailability studies or additional hydrolysis experiments, and to submit literature references on the nonavailability of propanil residues in rice paddy water to other organisms in support of the reduction in the discharge interval. The Agency responded that the results of the proposed studies would be unlikely to affect the Agency's decision, and that submission of the literature references mentioned above, as well as additional information on rice culture, would not guarantee that the Agency would allow a shorter holding period.

The PTF also stated that the 7-day retreatment interval was too restrictive because there are cases in which a grower might need to re-apply propanil immediately to rice paddies. The Agency noted that because the available data support a 7-day retreatment interval, a scientific reason would be required for allowing retreatment within 3 days. The registrant was advised to submit an argument in writing.

*Discussion of the data*: The PTF has submitted (1994; MRID 43406501) a comprehensive review of the existing data and scientific literature to support its position on reducing the discharge interval to 30 days, along with information related to water management practices utilized in rice culture, and has provided justification for establishing a retreatment interval of less than 7 days. The submitted information is summarized below.

In support of reducing the discharge interval, the PTF cited acceptable aerobic soil, aerobic aquatic, and anaerobic aquatic metabolism studies that demonstrated that propanil is rapidly degraded with half-lives of 2-3 days. The studies demonstrated that propanil is rapidly degraded to 3,4-DCA, which adsorbs to soil or sediment humic matter and becomes irreversibly bound over time. The PTF also cited acceptable aquatic field dissipation studies which indicated that propanil dissipated with half-lives of <1 day in paddy and discharge water and 1-2 days in the loam soil of rice plots, and that solvent-extractable 3,4-DCA degraded with half-lives of 2-3 days in paddy water and 9-12 days in soil.

These studies were previously reviewed by the Agency, and were taken into account in the Agency's recommendation of a 30-day retreatment interval; however, the registrant further noted that water samples analyzed for the aquatic dissipation study were not filtered before analysis, and that, because the analytical method used will release 3,4-DCA from plant and soil biopolymers and organic matter, bound or unavailable residues may have been quantitated in the aquatic dissipation study.

The registrant listed additional sources of base-releasable 3,4-DCA in rice paddy discharge water which may be contributed by the rice plants, aquatic organisms, and paddy soil organisms, and would be released and quantitated by the analytical method. Potential sources of 3,4-DCA included: sugar conjugates, 3,4-DCA-containing lignin biopolymers, and 3,4-DCA coupled with humic material. Supporting literature citations were included.

The registrant also cited a number of journal articles supporting their argument that the bound 3,4-DCA residues in rice are not readily bioavailable. The articles included a study of the nature of propanil bound residues in rice plants, a study of the animal bioavailability (to rats and sheep) of a 3,4-dichloroaniline-lignin metabolite fraction from wheat, and a study of the bioavailability and disposition of bioincurred carrot residues of [$^{14}$C]linuron and [$^{14}$C]3,4-DCA in rats. In these studies, the majority of 3,4-DCA-related residues were found in the excreta of the animals.

Based on this information, the registrant concluded that the 3,4-DCA detected in paddy water samples by the base-hydrolysis methodology after the free 3,4-DCA had declined to <0.01 ppm may have come from non-bioavailable sources and would not be of regulatory concern. The registrant further argued that the sediment in the water samples analyzed for the aquatic dissipation studies would be removed from potable water in sedimentation basin before the water entered any treatment plant, and thus, would not be a source of bound residues of 3,4-DCA determined by the analytical method.

Also in support of reducing the discharge interval, the registrant noted that rice production commonly requires that a grower discharge water from his rice for the application of fertilizer and other chemicals and to control "straighthead" in rice, and that these practices would occur much sooner than the 30-day interval recommended by the Agency. To support this argument, the registrant summarized water management practices in rice production from the Rice Production Handbook, LSU Agricultural Center, and other sources. Detailed descriptions of the water management systems were described for dry seeding and wet seeding of rice. Based on this information, the discharge interval is of most concern in water-seeded rice. In dry-seeded rice, the paddies are flushed with just enough water to wet the soil surface without any water being discharged from the field, and the field is not drained until harvest. In wet-seed rice, rice seed is germinated by soaking in water for 24 hours, draining the water, and allowing the seed to remain damp until germination. Wet-seeded rice may then be managed by prolonged drainage or delayed flood, pinpoint flood, or continuous flood. The prolonged drainage or delayed flood system is similar to dry seeding for rice. The field is drained after seeding, the flood is reestablished when rice is taller than 4 inches, and the field is not normally drained until harvest.

For pinpoint flood, the field is flooded 3-5 days after the rice seedlings have anchored in the soil, and the flood may be lowered or removed for fertilizer or herbicide application. For continuous flood, the field is never drained except for fertilizer and herbicide application. In wet seeding, the paddy water may be lowered and re-flooded twice within 5-40 days of planting (through mid-tillering), and the process may be repeated twice again from 30 days after planting until maturity (110-140 days after planting), when the field is drained.

With respect to reducing the retreatment interval from 7 days, the registrant argued that propanil retreatment can be viewed as an emergency situation, would occur in less than 10% of rice each year, and would be mostly limited to AK and MS. The following potential retreatment triggers were listed and discussed: (i) climatic conditions in the 3-6 weeks following rice germination which are favorable to rapid growth of barnyard grass; (ii) rainfall occurring shortly after propanil application; (iii) reduction in spray coverage as a result of excess weed foliage, in which case the initial application of propanil would be used for "burn-down"; and (iv) an inadvertent delay in establishing flood shortly after initial propanil application, allowing weed germination and growth.

The registrant further noted that the planting-to-treatment (PTT) interval was more of a factor in determining the residues in rice at harvest than the retreatment interval. Residue studies were summarized demonstrating the following: (i) as the PTT interval increased from 30 days to 60 days, there was a proportional increase in rice residues; (ii) a split application of 4 + 4 lb/ai/A at a 50-day PTT resulted in lower average residues than a single application of 6 lb ai/A applied at a PTT >56 days; (iii) residue levels were similar following 6 lb ai/A and 8 lb ai/A applications made at 45-day PTTs and following 4 lb ai/A and 8 lb ai/A at 28-day PTTs; (iv) residue levels were ~0.03 ppm in rice harvested 60 days following treatment at 7- and 14-day retreatment intervals (MRID 42237301; DP Barcode D175886, 6/22/92, R. Perfetti). The registrant observed that a corresponding trend was observed in residues with respect to the treatment-to-harvest interval.

The registrant concluded that because propanil is a contact herbicide with a short half-life and no residual activity, and because residue data have indicated that the retreatment interval is not critical to the levels of propanil at harvest, a reduced retreatment interval should be granted. The registrant further noted that, in general, a rice grower would not decide that a second application was needed until 2-3 days after the first had been found to be ineffective, and that therefore, the proposed reduction would have no impact on dietary exposure assessment or on discharge water residues.

Conclusions

The Agency has considered the submitted summary of the existing data and scientific literature in support of the PTF's proposal to reduce the discharge interval to 30 days and for a retreatment interval of less than 7 days. With respect to the summary of existing data and scientific literature addressing the non-availability of propanil residues in water, we conclude that the registrant has

not provided any new information which would affect our previous recommendation for a 30-day discharge interval. The most compelling information offered by the registrant was the discussion of water management practices for rice production; however, in the absence of residue data supporting a discharge interval of less than 30 day, we cannot at this time recommend in favor of a reduction in the discharge interval.

With respect to reducing the retreatment interval, essentially no new data were submitted to support the registrant's proposal, and the Agency reiterates its recommendation that product labels be revised to specify a 7-day retreatment interval for application of propanil to rice.

Catfish

No data have been submitted depicting magnitude of the residue in catfish; however, label restrictions against application to fields where catfish farming is practiced and draining water from fields into areas where catfish farming is practiced are established on labels for the 4 lb/gal EC, the 81% DF, and the 80.2% DF formulations (EPA Reg. Nos. 707-109, 707-226, and 707-266). Based on the submitted data for crayfish, this restriction must be added to the remaining product labels for propanil uses on rice.

AGENCY MEMORANDA CITED IN THIS REVIEW

DP Barcode: D175886
SUBJECT: Response to the Propanil Reregistration Standard: Residue Data.
FROM: R. Perfetti
TO: W. Burnam and L. Rossi
DATED: 6/22/92
MRID(s): 42237101, 42237201, and 42237301

DP Barcode: D178275
SUBJECT: Response to the Propanil Reregistration Standard: Residue Chemistry.
FROM: R. Perfetti
TO: L. Rossi and E. Saito
DATED: 9/14/92
MRID(s): 42301001

DP Barcode: D200196
SUBJECT: Response to the Propanil Reregistration Standard: Residue Chemistry
FROM: R. Perfetti
TO: L. Rossi
DATED: 3/25/94
MRID(s): None

DP Barcode: None
SUBJECT: Propanil. List A Reregistration Case No./Chemical ID No. Meeting with Rohm and Haas and the Propanil Task Force Regarding the Retreatment Interval for Rice and the Holding Period for Water in Treated Paddies, 6/9/94.
FROM: C. Swartz
TO: W. Waldrop
DATED: 6/23/94
MRID(s): None

DP Barcode: D200811
SUBJECT: Propanil. List A Reregistration Case No. 0226/Chemical ID No. 028201. Propanil Task Force Submission of Storage Stability Data in Rice [Guideline Ref. No. 171-4(e)].
FROM: C. Swartz
TO: W. Waldrop
DATED: 10/3/95
MRID(s): 43157001 and 43157002

MASTER RECORD IDENTIFICATION NUMBERS

Citations for the MRID documents referred to in this review are presented below.

43406501 Novak, R. (1994) Water Management Practices in Rice Production: Proposal for the Establishment of Discharge and Retreatment Intervals for Propanil: Lab Project Number: 3500H2094. Unpublished study prepared by NPC, Inc. 162 p.

43748101 Robinson, P. (1995) Magnitude of the Residues of Propanil in the Edible Portion of Crawfish (Procambarus sp.) Harvested From Rice Paddies Following Sequential Application of Propanil 4 EC at 4 Plus 4 lb AI/Acre to Rice: Lab Project Number: 94USA0100: 94USA100: ABG PM 95-010. Unpublished study prepared by AgriBusiness Group and Jensen Ag Research, Inc. 280 p.