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

11/23/1994

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: Review and Screening of Environmental Fate Studies Submitted by Makhteshim in Response to DCI for Chlorpyrifos (Sh# 059101; DP Barcode D173382; EFGWB # 92-0432)

TO: Dennis Edwards, Jr., PM #14 / Meredith Johnson
Registration Division (7505C)

FROM: Stephanie Syslo, Environmental Scientist, Review Section #2
EFGWB / EFED (7507C) Stephanie Syslo 11/7/94

THROUGH: Mah Shamim, Ph.D., Acting Section Chief, Review Section #2
EFGWB / EFED (7507C) M Shamim 1994

Henry Jacoby, Chief
EFGWB / EFED (7507C) Henry Jacoby 11/23/94

In response to a 1991 DCI notice for chlorpyrifos [O,O-Diethyl O-(3,5,6-trichloro-2-pyridyl phosphorothioate; Sh.# 059101), Makhteshim-Agan (America) Inc. in early 1992 submitted a number of environmental fate studies to support their registration of Pyrinex Technical (EPA Reg. No. 11678-75). However, in a letter (attached) dated June 23, 1994 to Dennis Edwards, RD, Makhteshim indicated that they are working with other registrants to satisfy data requirements identified in the 1991 DCI. Nevertheless, the studies submitted in 1992 have been reviewed by EFGWB and the results of that review are presented in this memo.

Findings:

After review, the following two studies <u>together</u> were found to be acceptable:

162-1 - 42144911 - Aerobic soil metabolism of chlorpyrifos
162-1 - 42144912 - Aerobic soil metabolism of the chlorpyrifos degradate, 3,5,6-trichloropyridin-2-ol.

After review, the following studies were found to be unacceptable and not upgradeable:

164-1 - 42144915 - Terrestrial field dissipation of chlorpyrifos on turf in California
164-1 - 42144916 - Terrestrial field dissipation of chlorpyrifos on turf in South Carolina

The DERs for the reviewed studies are attached to this memo.

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DP BARCODE: D173382

CASE: 038011 DATA PACKAGE RECORD DATE: 11/25/94
SUBMISSION: S409382 BEAN SHEET Page 1 of 1

* * * CASE/SUBMISSION INFORMATION * * *

CASE TYPE: REGISTRATION ACTION: 410 DATA CALL-IN
RANKING : 35 POINTS (C)
CHEMICALS: 059101 Chlorpyrifos (ANSI) 94.0000%

ID#: 011678-00045 PYRINEX INSECTICIDE FOR FORMULATING USE ONLY
COMPANY: 011678 MAKHTESHIM CHEMICAL WORKS_LTD
PRODUCT MANAGER: 19 DENNIS EDWARDS, JR. 703-305-6386 ROOM: CM2 207
PM TEAM REVIEWER: MEREDITH JOHNSON 703-305-7080 ROOM: CM2 201
RECEIVED DATE: 12/28/91 DUE OUT DATE: 04/26/92

* * * DATA PACKAGE INFORMATION * * *

DP BARCODE: 173382 EXPEDITE: N DATE SENT: 01/22/92 DATE RET.: / /
CHEMICAL: 059101 Chlorpyrifos (ANSI)
DP TYPE: 001 Submission Related Data Package
CSF: N LABEL: N

ASSIGNED TO	DATE IN	DATE OUT
DIV : EFED	01/23/92	/ /
BRAN: EFGB	01/23/92	11/23/94
SECT: CRS2	01/23/92	11/23/94
REVR : SSYSLO	01/23/92	11/23/94
CONTR:	/ /	/ /

ADMIN DUE DATE: 01/22/92
NEGOT DATE: 04/21/92
PROJ DATE: 11/15/94

* * * DATA REVIEW INSTRUCTIONS * * *

Please review the following studies submitted by Makhteshim in response to the DCI for chlorpyrifos:

Guideline No. 161-2, MRID No. 42144910; Guideline No. 161-2, MRID No. 42163401;
Guideline No. 162-1, MRID No. 42144911;
Guideline No. 162-1, MRID No. 42144912;
Guideline No. 163-1, MRID No. 42144913;
Guideline No. 163-1, MRID No. 42144914;
Guideline No. 164-1, MRID No. 42144915;
Guideline No. 164-1, MRID No. 42144916.

Please refer to the Registrant's cover letter for study titles.

* * * DATA PACKAGE EVALUATION * * *

No evaluation is written for this data package

* * * ADDITIONAL DATA PACKAGES FOR THIS SUBMISSION * * *

DP BC	BRANCH/SECTION	DATE OUT	DUE BACK	INS	CSF	LABEL
172905	EEB/RS3	01/07/92	05/06/92	Y	N	N
173532	TB-2/RS-4	01/27/92	04/26/92	Y	N	N

After screening, the following study was found to be **unacceptable but upgradeable**:

161-2 - 42144910 - Photodegradation of chlorpyrifos in aqueous solution

After screening, the following studies were found to be **unacceptable and not upgradeable**:

161-2 - 42163401 - Photodegradation of chlorpyrifos in aqueous solution in sunlight
163-1 - 42144913 - Soil adsorption/desorption of unaged chlorpyrifos
163-1 - 42144914 - Soil adsorption/desorption of aged chlorpyrifos

A discussion of each of the screened studies is included in this memo.

Recommendations:

1) EFGWB recommends that RD inform Makhteshim that the aerobic soil metabolism studies (42144911 and 42144912) can be used to support environmental fate data requirements.

2) EFGWB recommends that RD advise the registrant that the photodegradation in water study (42144910) may be upgradeable if the registrant submits acceptable isolation and identification data for the water soluble degradates.

3) EFGWB recommends that RD advise the registrant that the remaining studies (42163401, 42144913, 42144914, 42144915, and 42144916) are not upgradeable and cannot be used to fulfill data requirements.

Discussion:

For a discussion of the REVIEWED studies (42144911, 42144912, 42144915, 421449164), please refer to the attached DERs.

The following studies were screened:

Please note: Study author(s)'s results and/or conclusions for each of the screened studies, and any referenced tables are attached to this memo.

Photodegradation in Water (161-2):

Carpenter, M. 1989. Determination of the photodegradation rate of ^{14}C chlorpyrifos in aqueous solution. Laboratory Project ID: 36639. (42144910)

Discussion:

A photodegradation in water study (MRID 42144910) screened in this report is not acceptable because up to 50% of the radioactivity in ~~the non-sensitized~~ irradiated solutions and up to 68% of the radioactivity in the sensitized irradiated solutions was neither characterized nor identified. The test solutions were extracted with dichloromethane and the extracts were then analyzed for chlorpyrifos by TLC. The extracted aqueous solutions were then

analyzed for total radioactivity by LSC in order to obtain a material balance (Tables XXIII and XXV, MRID 42144910; attached) but were not further analyzed. The study author stated that "additional work is being performed in the effort to isolate and identify the degradation products; however, the results of the characterization work were not available when this report was written." (p. 27 of report) No further information on the identification of this material is available to the Agency at this time.

Conclusions:

Because water-soluble degradates were not characterized, the study is not acceptable at this time. However, if the registrant supplies acceptable characterization and identification data for the water soluble degradates, as described in the document provided for review, this study may be upgradeable. The study does provide supplemental information on the photodegradation of chlorpyrifos in sensitized and non-sensitized pH 7 aqueous buffer solutions.

> Chlorpyrifos degraded with a registrant-calculated half-life of 18.7 days in pH 7 aqueous buffer solutions when irradiated continuously with a xenon arc lamp for 30 days; the degradation half-life in sensitized (1% acetone) solutions was 6.6 days. The only identified degradate in dichloromethane extracts of the irradiated solutions was 3,5,6-trichloro-2-pyridinol (TCP), at maxima of 3.6 and 21% of the activity in the non-sensitized and sensitized solutions, respectively, after 14 days irradiation. Other unidentified degradates in the dichloromethane extracts of the non-sensitized solutions did not exceed 3.6% of the applied; numerous degradates were present in greater amounts in the sensitized solutions. Up to 50% of the radioactivity in the non-sensitized irradiated solutions and up to 68% of the radioactivity in the sensitized irradiated solutions was not extracted by the dichloromethane and was neither characterized nor identified.

Methods:

A preliminary study was conducted to estimate appropriate sampling intervals, stability of solutions, sorption to glass, and extraction efficiency. The definitive study was conducted using 2,6-pyridinyl ring-labeled ^{14}C-chlorpyrifos at 0.7 ppm in both sensitized (1% acetone) and non-sensitized pH 7 aqueous sterile buffer solutions (0.00264 M N-2-hydroxyethylpiperazine-N'-2-ethane sulfonic acid). The final solution concentration for each was 0.7 μg ai/mL with acetonitrile as a co-solvent (<1% by volume); portions (10 mL) were placed in silanized screw top culture tubes. In addition, portions (100 mL) of sensitized and non-sensitized solutions were placed in separate gas washing bottles and scrubbed with humidified, CO_2-free air; any volatiles in the exiting air stream were sequentially trapped in ethylene glycol, sulfuric acid, and KOH solutions, with final exit through a C_{18} Sep-Pak cartridge. Tubes and bottles were irradiated continuously using a xenon arc lamp (6500 watt) using two borosilicate glass filters to remove wavelengths <290 nm; total irradiation during the study was comparable to that "during a solar day at 40°N latitude at the spring equinox." Dark control tubes were wrapped in aluminum foil; irradiated samples and the dark controls were maintained at 25 ± 1°C.

At designated sampling intervals, duplicate tubes of the irradiated and dark control solutions were removed; aliquots of the solution were analyzed for total radioactivity by LSC. The solutions remaining in the sample tubes were then extracted with dichloromethane; the extracted aqueous solutions were not further analyzed. Aliquots of the dichloromethane extracts were analyzed for total radioactivity by LSC; additional aliquots were analyzed by TLC in one solvent system (methanol:water: 90:10 v:v).

Trapping solutions were changed at each sampling interval and analyzed for total radioactivity by LSC; Sep-Pak cartridges were extracted with methanol and analyzed for total radioactivity by LSC. Scrubbed irradiated solutions were analyzed only for total radioactivity by LSC (to determine material balance).

Photodegradation in Water (161-2):

Schlesinger, H.M. 1991. Pyrinex - photolysis in aqueous solution in sunlight. Laboratory Project ID: 36641. (42163401)

Discussion:

A photodegradation in water study (MRID 42163401) screened in this report is not acceptable because the material balance was incomplete; the concentration of the parent decreased from 0.4 ppm at the beginning of the study to 0.16-0.17 ppm at the termination of the study (75 hours sunlight irradiation over a period of 9 days), with no detectable degradates at any sampling interval; volatiles were not trapped during the experiment. The amount of parent in the dark controls decreased by approximately 10% after 10 days.

Conclusions:

Because the material balance was incomplete, the problems with the study cannot be repaired by the submission of additional data. Because the registrant could not account for a major proportion of the starting material, the information provided in this study is questionable and should not be used to predict the environmental behavior of chlorpyrifos.

Methods:

A preliminary study was conducted to estimate degradation rate in sunlight. The definitive study was conducted using reagent grade chlorpyrifos (99.5% purity) at 0.4 ppm in pH 7 aqueous sterile buffer solutions (0.05 M phosphate) with acetonitrile as a co-solvent (1% by volume). Portions (25 mL) were placed in Pyrex conical flasks with teflon screw caps and suspended in a water bath kept at 30 ± 1 °C. The samples were exposed to sunlight between the hours of 0800 to 1700 hr in Israel for ten consecutive days during late August/early September, 1986; the measured range of sunlight intensities was 600-2100 μeinsteins m^2/sec. Dark control flasks (3 total) were wrapped in aluminum foil and maintained under the same conditions as the irradiated samples. At night, all samples were kept at 30°C in the laboratory.

At designated sampling intervals, triplicate flasks of the irradiated solutions were removed; dark control samples were analyzed only at the initiation and termination of the study. Aliquots of the buffer solutions were analyzed directly only for chlorpyrifos and TCP by reverse-phase HPLC: the analysis for chlorpyrifos used a C_8 column eluted with acetonitrile:water (60:40, v:v) with UV detection (288 nm); the analysis for TCP used a C_{18} column eluted with acetonitrile:water:orthophosphoric acid (500:500:0.5, v:v:v) with UV detection (296 nm). The detection limit for TCP was 0.025 ppm.

Mobility (163-1; unaged):

Bowman, B.R. 1989. Soil adsorption/desorption with ^{14}C chlorpyrifos. Laboratory Project ID: 36642. (42144913)

Discussion:

A soil mobility/adsorption-desorption study (MRID 42144913) screened in this report is unacceptable because the soil was autoclaved before use. Autoclaving of soils may significantly and unpredictably change the physical and chemical properties of the soil, which can then affect the mobility of a pesticide in that autoclaved soil.

Conclusions:

Because the soil was autoclaved before use, the problems with the study cannot be repaired by the submission of additional data. However, the study can provide supplemental information.

> Chlorpyrifos appeared to be immobile in autoclaved sand, sandy loam, silt loam, and clay loam soils, with K_{ads}'s ranging from 15.47 to 62.24; K_{des} values were comparable.

Methods:

A soil mobility/adsorption-desorption study (MRID 42144913) was conducted using unaged ^{14}C-chlorpyrifos (radiochemical purity 97%) on four soils (sand, sandy loam, silt loam, clay loam). The soils were air-dried, sieved (2 mm), and autoclaved for 15 minutes at 121°C and 15 psi before use. In a preliminary study to select soil:solution ratio, optimum equilibration time, and the amount of adsorption of the active to the walls of the test containers, it was determined that: the appropriate soil:solution ratio was 1:20 for sand and sandy loam and 1:40 for silt loam and clay loam; the best equilibration time was 48 hours; and 28-34% of the active adsorbed onto sides of containers after 48 hours. In the definitive study, the concentrations used were 0.2, 1.0, 1.5 and 2.0 µg/mL active ingredient in filter-sterilized 0.01 M calcium chloride. The solutions were added to soil in culture tubes, which were then shaken in the dark at 25 ± 1 °C for 48 hours. After shaking, the tubes were centrifuged and the supernatants were decanted; aliquots of the supernatant were analyzed for total radioactivity by LSC. Additional aliquots were analyzed by TLC followed by radioscanning; chlorpyrifos degraded during the experiment (duration 48 hours) from 13 to 38%. To measure desorption,

pesticide-free calcium chloride solution was added to the tubes to replace that removed, and the tubes were shaken for an additional 48 hours. The tubes were centrifuged and supernatants decanted; aliquots of supernatant were analyzed for total radioactivity by LSC. Radioactivity remaining sorbed to the soil was determined by LSC following combustion.

Mobility (163-1; aged):

Cranor, W. 1989. Soil adsorption/desorption of ^{14}C chlorpyrifos following aerobic aging. Laboratory Project ID: 36643. (42144914)

Discussion:

A soil mobility/adsorption-desorption study (MRID 42144914) screened in this report is unacceptable because the batch equilibrium experiments were performed using the extractable [^{14}C]residues from the aerobically incubated treated soil, which consisted of a mixture of chlorpyrifos parent and degradates; a column leaching study is recommended in these cases. As noted in the Rejection Rate Analysis for Environmental Fate (EPA 738-R-93-010; September, 1993), when using batch equilibrium techniques, a separate adsorption/desorption study must be conducted for the parent and for each degradate of concern (p.121). In addition, the soil used for the adsorption/desorption portion of the study was autoclaved before use. Autoclaving of soils may significantly and unpredictably change the physical and chemical properties of the soil, which can then affect the mobility of a pesticide in that autoclaved soil. An additional observation was that residues in the extracting solutions were not stable during the duration of the study; chlorpyrifos continued to be converted to TCP during the adsorption phase of the experiment.

Conclusions:

Because a separate adsorption/desorption study was not conducted for the parent and for each degradate of concern and because the soil used for the adsorption/desorption portion of the study was autoclaved before use, the problems with the study cannot be repaired by the submission of additional data. Because the adsorption/desorption study was conducted with a mixture of parent and degradates, the information provided in this study is questionable and should not be used to predict the mobility of chlorpyrifos and its degradates.

Methods:

An aged soil mobility/adsorption-desorption study (MRID 42144913) was conducted using sandy loam soil (the same soil as was used in an aerobic soil metabolism study reviewed in a DER prepared for this report [Study #1; MRID 42144911]) treated at approximately 10 ppm with ^{14}C-chlorpyrifos (radiochemical purity 98%), moistened to 75% of field capacity, and incubated at approximately 25°C for 30 days in a flow-through system. After 30 days of aerobic incubation, portions of the soil were extracted by shaking sequentially three times with methanol:acetonitrile (50:50, v:v); after each

extraction, the sample was centrifuged and the supernatant was decanted. Aliquots of the combined extracts were then analyzed using reverse phase TLC developed with methanol:water (90:10, v:v); reference standards were chromatographed on the same plates. Radioactive zones were located by autoradiography; radioactive zones were then scraped from the plates and the radioactivity desorbed with acetonitrile and quantified by LSC. Identities of compounds were determined by comparison to reference standards; identities were confirmed "by co-chromatography in two analytical systems." Extracted soil was analyzed for total radioactivity by LSC following combustion.

After 30 days of aerobic incubation, approximately 90% of the initial application was present in the soil extract as parent chlorpyrifos and approximately 8% as TCP.

The soil used in the batch equilibrium study (sandy loam) was autoclaved for 15 minutes at 121°C and 15 psi before use. In a preliminary study to select the optimum soil:solution ratio and equilibration time, it was determined that the appropriate soil:solution ratio was 1:20, and the best equilibration time was 24 hours. In the definitive study, a sufficient volume of soil extract to yield a final concentration of 2.0 μg ^{14}C-chlorpyrifos equivalent/mL was evaporated to dryness under nitrogen and redissolved in sterilized (autoclaved) 0.01 M calcium chloride. Portions of this solution were diluted to produce additional solutions with concentrations of 0.15, 1.0, and 1.5 μg ^{14}C-chlorpyrifos equivalent/mL. The solutions were added to the autoclaved soil in culture tubes, which were then shaken in the dark at 25 ± 1 °C for 24 hours. After shaking, the tubes were centrifuged and the supernatants were decanted; aliquots of the supernatant were analyzed for total radioactivity by LSC. Additional aliquots were analyzed by TLC followed by radioscanning; chlorpyrifos degraded during the experiment (duration 48 hours) from 13 to 38%.

To measure desorption, pesticide-free calcium chloride solution was added to the tubes to replace that removed, and the tubes were shaken for an additional 24 hours. The tubes were centrifuged and supernatants decanted; aliquots of supernatant were analyzed for total radioactivity by LSC. Radioactivity remaining sorbed to the soil was determined by LSC following combustion.

cc: Linda Propst
Dennis McNeill

Makhteshim - Agan of North America Inc.
551 Fifth Ave, Suite 1100, New York, NY 10176
Telephone: 212-661-9800 Fax: 212-661-9038/9043

MAKHTESHIM
A G A N
of NORTH AMERICA

23 June 1994

Ms. Lois A. Rossi, Branch Chief
Reregistration Branch
Special Review and Reregistration Division (H7508W)
Document Processing Desk
Office of Pesticide Programs
U.S. Environmental Protection Agency
1921 Jefferson Davis Highway
Arlington, VA 22202

and

Mr. Dennis McNeilly, Case Manager
Reregistation Branch
Special Review and Reregistration Division (H7508W)
Document Processing Desk
Office of Pesticide Programs
U.S. Environmental Protection Agency
1921 Jefferson Davis Highway
Arlington, VA 22202

RE: Chlorpyrifos Data Call In
Received 23 May 1994

Dear Ms. Rossi and Mr. McNeilly:

As prescribed in the subject DCI, enclosed is a copy of the documents forwarded to Mr. Edwards for your records. Should you have any questions regarding this response, please give me a call at (212) 661-9800.

Sincerely,
Makhteshim-Agan of North America Inc.

A. Eimanis
Manager, Regulatory Affairs

AE/cs

Enclosure

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Makhteshim - Agan of North America Inc.
551 Fifth Ave, Suite 1100, New York, NY 10176
Telephone: 212-661-9800 Fax: 212-661-9038/9043

MAKHTESHIM
A G A N
of
NORTH AMERICA

23 June 1994

Mr. Dennis H. Edwards, Jr.
Product Manager, 19
Insecticide-Rodenticide Branch
Registration Division (H7505C)
U.S. Environmental Protection Agency
1921 Jefferson Davis Highway
Arlington, VA 22202

RE: Chlorpyrifos Data Call-In
Received 23 May 1994

Dear Mr. Edwards:

This letter is being addressed to you at the request of Mr. Dennis McNeilly of the Agency's Special Review and Reregistration Division. Mr. McNeilly has been informed of the amendments filed by Makhteshim Chemical Works, Ltd. (MCW) c/o Makhteshim-Agan of North America Inc. (MANA) on 13 May 1994 requesting the voluntary deletion of the mosquito larvicide use pattern from our technical label.

MCW also is working with other registrants to satisfy data requirements identified in your letter. We have enclosed a letter indicating that cost sharing offers have been made, and in fact, an agreement is in place. MCW thinks that this letter constitutes a proper and complete Data Call-In response for maintaining its chlorpyrifos technical label permitting indoor uses (including crack ad crevice in food handling establishments), termiticide and outdoor non-food use.

Under these circumstances , we have not enclosed a revised DCI Response Form, which would not appear necessary. Please contact me promptly if you disagree. Should you have any additional questions regarding this issue, please give me a call at (212) 661-9800.

Sincerely,
Makhteshim-Agan of North America Inc.

A. Eimanis
Manager, Regulatory Affairs

AE/cs

Enclosure
cc: Lois A. Rossi (H7508W)
Dennis McNeilly (H7508W)

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MRID 42144911-12, -15 + -16

Page 11 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.

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

MAY

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

CERTIFIED MAIL

Andy Eimanis
Makhteshim-Agan of North America Inc.
551 Fifth Avenue
Suite 1101
New York, New York 10176

RECEIVED
MAY 1992
MAKHTESHIM AGAN OF N.A. INC

Subject: Chlorpyrifos Data Call-In

Dear Mr. Eimanis:

In your March 5, 1992 response to the Chlorpyrifos Data Call-In you indicated that the data requirements listed below were not applicable to your technical product, Pyrinex Insecticide, EPA Reg. No. 11678-45:

72-1B	Fish Toxicity Bluegill- TEP
72-1D	Fish Toxicity Rainbow Trout- TEP
72-2B	Invertebrate Toxicity- TEP
72-3D	Estuarine/Marine Toxicity Fish- TEP
72-3E	Estuarine/Marine Toxicity Mollusk- TEP
72-3F	Estuarine/Marine Toxicity Shrimp- TEP
71-1-SS	TCP Degradate Testing
71-2-SS	"
72-1-SS	"
72-2-SS	"
72-3-SS	"
72-4B	Life Cycle Invertebrate
72-5	Life Cycle Fish
70-1	Fish Monitoring
72-6	Aquatic Organism Accumulation
162-4	Aerobic Aquatic Metabolism Study.
163-1	Leaching/Adsorption/Desorption
164-1	Terrestrial Field Dissipation
201-1	Droplet Size Spectrum
202-1	Drift Field Evaluation
231	Non-Occupation Post-Application Exposure (Dermal)
132	Non-Occupation Post-Application Exposure (Inhalation)

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These data are required to support a non-food outdoor use pattern (which includes mosquito use). Your technical product has been amended to include non-food outdoor uses. This allows your product to be formulated into end-use products for non-food outdor use. As a result, your technical product is now subject to the data requirements listed above.

Within thirty (30) days of receipt of this letter, you must either (1) submit a revised Data Call-In Response Form indicating how you intend to comply with these data requirements, or (2) submit amended draft labeling deleting reference to the outdoor use pattern. Your labeling package should be directed to Dennis Edwards, PM-19, Registration Division, with a courtesy copy to us.

Failure to respond within the time frame specified in this letter may result in a Notice of Intent to Suspend affecting your chlorpyrifos products.

Questions concerning this letter should be directed to Dennis McNeilly at (703) 308-8066.

Sincerely,

Lois A. Rossi

Lois A. Rossi, Branch Chief
Reregistration Branch
Special Review and Reregistration
Division

cc: Dennis Edwards (H7505C)

STUDY AUTHOR(S)'S RESULTS AND/OR CONCLUSIONS
(INCLUDING PERTINENT TABLES AND FIGURES)
FOR STUDIES SCREENED IN THIS REPORT

MRID 42144911 - 12, 15 & -16

Page_____ is not included in this copy.

Pages 15 through 31 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.
