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

JUL - 2 1996

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PREVENTION, PESTICIDES, AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PROPAZINE; Required Studies for Non-food Greenhouse Use by Griffin Corporation.

Barcode No.: D227218
Submission No.: S493480
PC Code: 080808
Tox Chem No.: 184

TO: Kathryn Boyle
Risk Characterization and Analysis Branch
Health Effects Division (7509C)

FROM: Kit Farwell
Section 3, Toxicology Branch I
Health Effects Division (7509C)

Kit Farwell 6.24.96

THRU: Edwin Budd, Acting Section Head
Section 3, Toxicology Branch I
Health Effects Division (7509C)

Budd 6/25/96
KB 6/28/96

ACTION REQUESTED:

Risk Characterization and Analysis Branch (RCAB) requested Toxicology Branch I to identify which required studies have not been submitted by Griffin Corporation in support of non-food greenhouse use of propazine. Propazine is being treated as a new chemical for purposes of registration and only studies sponsored by or owned by Griffin Corporation are to be considered for this registration.

SUMMARY:

1. This memo only addresses the non-food greenhouse use of propazine. Risk Characterization and Analysis Branch will be requesting information about datagaps for food use at a later date. The datagaps for food use will be addressed in a separate memo.

2. Studies required to support the non-food greenhouse use of propazine are listed in Tables 1 and 2. Requirements tentatively satisfied by Griffin Corporation and outstanding

datagaps are also presented in Tables 1 and 2. Studies sponsored by Griffin Corporation are presently under review and studies purchased by Griffin Corporation will be re-reviewed, so the acceptability of submitted studies may change upon review or re-review.

3. Present datagaps for the non-food greenhouse use are listed below by guideline number. Requirements for several of the listed studies are reserved at this time or are contingent on the results of other studies. Certain other studies need not be submitted at this time. See the comments in Tables 1 and 2 for specific information on each of the datagaps listed below.

81-8	Acute Neurotoxicity - rat
82-3	90-day Dermal Toxicity
82-4	90-day Inhalation Toxicity
82-7	90-day Neurotoxicity - rat
83-2(a)	Carcinogenicity - mouse
83-3(a)	Developmental Toxicity - species A
83-3(b)	Developmental Toxicity - species B
84-2	Bacterial Cell Mutation
84-2	Additional Mutagenicity Studies
85-7	Immunotoxicity

4. The Reference Dose (RfD) Peer Review Committee and the Toxic Endpoint Selection (TES) Committee were scheduled to discuss propazine on 8/15/96 and 8/20/96 respectively. These meetings have been postponed until the complete toxicology database has been submitted by Griffin Corporation. Only studies sponsored by or owned by Griffin Corporation are to be used in support of registration when the RfD and TES Committees meet.

5. The Cancer Peer Review (CPR) Committee will meet as scheduled on 8/28/96 to consider the carcinogenic potential of propazine.

6. Risk Characterization and Analysis Branch also has requested copies of memos which addressed previous datagaps for propazine. Attached is a copy of a Section 18 memo from Toxicology Branch, document date 1/19/96, which referred to gaps in the toxicology database other than Griffin Corporation's datagaps.

DISCUSSION:

Propazine is being treated by Registration Division as a new chemical and only studies sponsored by or owned by Griffin Corporation are to be considered for this registration. Tables 1 and 2 show which guideline studies are required for non-food

greenhouse use of propazine and which requirements have been tentatively satisfied. Notes on the acceptability of submitted studies and comments on toxicity requirements follow the tables. The studies included in Tables 1 and 2 are only those studies sponsored or purchased by Griffin Corporation according to the attached note from Risk Characterization and Analysis Branch (RCAB) dated 6/12/96.

According to the RCAB note, Griffin Corporation has performed and submitted the following acute toxicity studies with both technical and end-use products: acute oral, acute dermal, acute inhalation, primary eye irritation, primary dermal irritation, and dermal sensitization. A metabolism study with technical propazine has also been submitted. The submitted studies are presently being reviewed and may or may not meet guideline requirements for acceptability. Any study found to be unacceptable will have to be replaced with an acceptable study.

The RCAB note also reports that Griffin Corporation has purchased the following studies: 2 year chronic/carcinogenic rat study, rat reproduction study, nucleus anomaly test in nuclei of Chinese hamster, and a V79 Chinese hamster point mutation test.

The 2 year chronic/carcinogenic rat study is undergoing re-review because a re-read of histology slides may have changed the conclusions of the study report. Other studies purchased by Griffin will undergo re-review and may or may not meet current guideline requirements for acceptability. Any study found to be unacceptable will have to be replaced with an acceptable study.

The Reference Dose (RfD) Peer Review Committee and the Toxic Endpoint Selection (TES) Committee were scheduled to discuss propazine on 8/15/96 and 8/20/96, respectively. Datagaps for propazine were discussed, however, in a Health Effects Division management meeting on June 17, 1996, and it was decided to postpone the RfD and TES meetings until the complete toxicology database has been submitted by Griffin Corporation.

The Cancer Peer Review (CPR) Committee will meet as scheduled on 8/28/96. Propazine has been found to cause mammary tumors in Sprague-Dawley rats. Further testing of propazine and/or its metabolites may be required by the Cancer Peer Review committee.

At this time, it is not certain exactly which studies Griffin Corporation purchased. Toxicology Branch I has requested Registration Division to contact Griffin to obtain a listing of specifically which studies have been purchased, their identifying MRID numbers, and a statement detailing which guideline number each study is expected to fulfill. If the listing of purchased studies changes, then the datagaps will also change.

TABLE 1 PROPAZINE TECHNICAL: TOXICOLOGY
STUDIES REQUIRED FOR NON-FOOD GREENHOUSE USE[a]

GUIDE-LINE	STUDY IDENTIFICATION	REQUIRED	TENTATIVELY SATISFIED	COMMENT
81-1	Acute oral toxicity	Yes	Yes (b)	
81-2	Acute dermal toxicity	Yes	Yes (b)	
81-3	Acute inhalation toxicity	Yes	Yes (b)	
81-4	Primary eye irritation	Yes	Yes (b)	
81-5	Primary dermal irritation	Yes	Yes (b)	
81-6	Dermal sensitization	Yes	Yes (b)	
81-7	Delayed neurotoxicity - hen	No	---	
81-8	Acute neurotoxicity - rat	Yes	No	1
82-1(a)	90-day oral, rodent	No	---	
82-1(b)	90-day oral, non-rodent	No	---	
82-2	21-day dermal	No	---	
82-3	90-day dermal	Yes	No	2
82-4	90-day inhalation	Yes	No	3
82-6	28-day delayed neurotox. - hen	No	---	
82-7	90-day neurotoxicity - rat	Yes	No	1
83-1(a)	Chronic feeding - rodent	No	---	
83-1(b)	Chronic feeding - nonrodent	No	---	
83-2(a)	Carcinogenicity - rat	Reserved	Yes (c)	4
83-2(b)	Carcinogenicity - mouse	Reserved	No	4
83-3(a)	Developmental tox. - species A	Yes	No	5
83-3(b)	Developmental tox. - species B	Reserved	No	5
83-4	Reproductive toxicity	No	---	
83-6	Postnatal developmental tox.	No	---	
84-2	Mammalian Cell Mutation	Yes	Yes (c)	6
84-2	Bacterial Cell Mutation	Yes	No	6
84-2	Structural Chromosomal Aberr.	Yes	Yes (c)	6
84-2	Additional Mutagenicity Studies	Reserved	No	7
85-1	Metabolism	Reserved	Yes (b)	8
85-2	Domestic animal safety	No	---	
85-3	Dermal penetration	No	---	
85-4	Visual system studies	No	---	
85-7	Immunotoxicity	Yes	No	1

NOTES ON ACCEPTABILITY OF STUDIES FOR NON-FOOD GREENHOUSE USE OF PROPAZINE TECHNICAL:

(a) Only studies sponsored or owned by Griffin Corporation (according to Risk Characterization and Analysis Branch) are included in this table. See attached note from Kathryn Boyle of RCAB, dated 6/12/96.

(b) This requirement is tentatively satisfied by a study sponsored by Griffin Corporation. Study is being reviewed in accordance with current criteria for acceptability.

(c) This requirement is tentatively satisfied by a study owned by Griffin Corporation. Study is being re-evaluated in accordance with current criteria for acceptability.

COMMENTS ON TOXICITY TESTING REQUIREMENTS FOR NON-FOOD GREENHOUSE USE OF PROPAZINE TECHNICAL:

1. Although required, the lack of this study at this time should not delay registration for this use.

2. When the 21-day dermal study is submitted and evaluated, a judgement will be made as to whether an additional 90-day dermal study will be required.

3. The 90-day inhalation study is required unless Griffin Corporation can demonstrate that use of the end-use-product in greenhouses will not result in respirable droplets and/or use will not result in repeated inhalation exposure at a concentration likely to be toxic.

4. The requirement for carcinogenicity studies in rats and/or mice to support this non-food use is reserved pending assessment of the carcinogenic potential of propazine by the HED Carcinogenicity Peer Review Committee.

5. The requirement for developmental toxicity testing in a second species to support non-food greenhouse use is reserved pending a full evaluation by Occupational and Residential Exposure Branch of the potential exposure to greenhouse workers from this use. Developmental toxicity testing in a second species will be required if significant exposure to human females of child-bearing age may reasonably be expected to occur, or if significant developmental toxicity occurs in the first species.

6. Since propazine is considered a new chemical, the <u>new</u> guidelines for mutagenicity testing are applicable.

7. Additional mutagenicity studies may be required by the HED Carcinogenicity Peer Review Committee to assist in the assessment of the mutagenic and carcinogenic potential of propazine.

8. The requirement for a general metabolism study in rats is reserved pending the decision as to whether carcinogenic studies in rats and/or mice will be required to support this non-food use. If a carcinogenicity study in either species is required, then the metabolism study will also be required.

TABLE 2 PROPAZINE END-USE PRODUCT (PROPAZINE 4L)
TOXICOLOGY STUDIES REQUIRED FOR NON-FOOD GREENHOUSE USE[a]

GUIDE-LINE	STUDY IDENTIFICATION	REQUIRED	TENTATIVELY SATISFIED	COMMENT
81-1	Acute oral toxicity	Yes	Yes (b)	
81-2	Acute dermal toxicity	Yes	Yes (b)	
81-3	Acute inhalation toxicity	Yes	Yes (b)	
81-4	Primary eye irritation	Yes	Yes (b)	
81-5	Primary dermal irritation	Yes	Yes (b)	
81-6	Dermal sensitization	Yes	Yes (b)	

NOTES ON ACCEPTABILITY OF STUDIES FOR NON-FOOD GREENHOUSE USE OF PROPAZINE END-USE-PRODUCT:

(a) Only studies sponsored or owned by Griffin Corporation (according to Risk Characterization and Analysis Branch) are included in this table. See attached note from Kathryn Boyle of RCAB, dated 6/12/96.

(b) This requirement is tentatively satisfied by a study sponsored by Griffin Corporation. Study is being reviewed in accordance with current criteria for acceptability.

Attachment

From: Kathryn Boyle at DCOPP3 6/12/96 11:57AM (1753 bytes: 1 ln)
To: Kit Farwell at DCOPP5, Ed Budd at DCOPP5, Terri Stowe at DCOPP2, JOSEPH BAILEY at DCOPP6, Deborah McCall
Subject: propazine database
---------- Message Contents----------

Kit - This is my understanding of the status of the propazine tox database.

Since this is a registration action only those studies that have been performed by Griffin or purchased by Griffin can be considered in evaluating whether or not there are any data gaps.

Griffin has performed and submitted the following studies:

acute oral
acute dermal
acute inhalation
primary eye irritation
primary dermal irritation
dermal sensitization
metabolism

Griffin has purchased and submitted the following studies:

2 year chronic/carcinogenic rat
reproduction study (rat)
nucleus anomaly test in nuclei of Chinese hamster
V79 Chinese hamster point mutation test

Based on these two lists only (no other studies exist) what data gaps exist for which a study has not even been submitted based on

1) non-food greenhouse use

2) food use (sorghum)

Terri, please realize that the list of data gaps that will be generated is preliminary. If any of these submitted studies are determined to be unacceptable, that will be another/additional data gap.

Kathryn

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

CASWELL FILE

JAN 19 1996

MEMORANDUM

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SUBJECT: **Section 18: PROPAZINE. ID# 96TX0002.** Specific Exemption Request by the State of Texas for Use of Propazine to Control Weeds in Sorghum.

Tox.Chem. No.: 184
PC No.: 080808
Barcode No.: D220613
Submission No.: S495360

FROM: William Dykstra, Ph.D. William Dykstra 11/27/95
Section I, Tox. Branch I
Health Effects Division (7509C)

TO: Teung Chin, Ph.D., Manager, PM Team 41
Andrea Beard, Reviewer, PM Team 41
Emergency Response and Minor Use Section/Registration Support Branch
Registration Division (7505W)

THRU: Roger Gardner, Section Head, Toxicologist
Section I, Tox. Branch I
Health Effects Division (7509C) Roger Gardner RA 12/15/95
11-27-95

I. CONCLUSIONS

The current toxicology database for propazine is incomplete and does not support the proposed specific exemption to control weeds in approximately 1.82 million acres of grain sorghum in the State of Texas.

Propazine was evaluated by the HED Carcinogenicity Peer Review Committee and has been classified as a C carcinogen without quantitation based on increased incidence of mammary gland adenomas in female rats at high dose in the 2-year feeding study. However, discrepancies in interpretation of the mammary gland histopathology were required to be resolved and the classification is subject to change pending results of currently available independent assessments by the Registrant, Griffin Corporation. It has been learned from oral communication by personnel of the Griffin Corporation that a significant number of female mammary gland tumors in the 2-year rat feeding study with propazine have been reclassified from BENIGN TO MALIGNANT.

THESE DATA HAVE NOT BEEN SUBMITTED TO THE AGENCY AND MUST BE EVALUATED BY THE CPRC BEFORE THE SECTION 18 CAN BE CONSIDERED.

Although no serious developmental or maternal toxicity concerns were identified in the rat developmental toxicity study, TB-I considers developmental toxicity studies in both species (rabbit developmental is a data gap) necessary for evaluation of risk to female farm workers, as well as the general public, from the proposed use pattern, particularly given the unprecedented number of acres involved in this Section 18.

II. ACTION REQUESTED

The Texas Department of Agriculture submitted an application for a specific exemption to use propazine to control weeds in grain sorghum (letter from Donnie Dippel dated 10-13-95). The specific product to be used is Milo-Pro® 4L (43% a.i.; not currently registered with the EPA).

The proposed use involves treatment of up to 1,823,000 acres in the Northern and Southern High Plains, Northern and Southern Low Plains, Cross Timbers, Blacklands, East Texas and Edwards Plateau at a rate of 1.2 lbs a.i. per acre (total maximum of 2,187,600 lbs. a.i.). A single application per growing season would be permitted. It was estimated that about 80% of the application would be with ground equipment and the rest by air. Timing of application would be based on State Agriculture Extension Service specific recommendations for the indicated areas. A 24 hr re-entry period must be observed following application.

III. TOX. BRANCH I COMMENTS

Registration of propazine was voluntarily canceled in 1988 by the Registrant (Ciba-Geigy). The following data gaps remain for propazine: rabbit developmental toxicity (83-3b), 21-day dermal (82-2), general metabolism (85-1) and dermal sensitization (81-6). In addition, mammary gland histopathology slides from the rat 2 yr study must be reread if propazine is to be reregistered again. No toxicology data was submitted since prior to issuance of the Reregistration Standard for propazine in 1987.

Tolerances of 0.25 ppm were established for sorghum commodities while the product was still registered for use by Ciba-Geigy and are still on record (40 CFR 180.243).

IV. RISK/EXPOSURE ASSESSMENT

Applicator exposures and risk were determined for the proposed use pattern by OREB (memo of 11/22/95 form T. Manville to W. Dykstra). The rat developmental study with a NOEL of 10 mg/kg/day for developmental and maternal effects was used to calculate short term MOEs for exposed workers. At the LEL of 100 mg/kg/day, there were decreases in food consumption and body weight in the dams and delayed ossification of skeletal structures in the fetuses.

Calculations were based on a dermal absorption of 100%, because no dermal absorption data is available for propazine. **Dermal penetration of atrazine, a related pesticide, is 20%.** The 21-day dermal toxicity study in rabbits is a data gap and the actual dermal penetration may be less than 100%. Therefore, the actual MOEs may be much greater than the TB-I estimates.

TB-I also calculated two different cancer risks to female farm workers from the Section 18. The Q^*1 cancer risk was determined by the following equation: cancer risk = AADE x 0.17 $(mg/kg/day)^{-1}$ x 2/70. Secondly, a cancer risk to farm workers was calculated using the RfD approach by the following equation: cancer risk = RfD ÷ AADE x 2/70. As stated previously, the dermal penetration of propazine is calculated to be 100%. Actual cancer risk may be significantly less than the calculated risk, based on actual dermal penetration. **Dermal penetration of atrazine, a related pesticide, is 20%.** The Q^*1 of the original malignant mammary gland tumors diagnosis was used as a possible "worst case" scenario, due to oral communication with Griffin Corporation personnel regarding the change in diagnosis from benign to malignant for a significant number of mammary gland tumors in female rats. The RfD approach to cancer risk is based on the latest peer review (1989).

Formulas used in calculations:

Short-term MOE = NOEL (10 mg/kg BW/d) ÷ Exposure (mg/kg BW/d) (Assumes 100% dermal penetration)

OPERATION*	DAILY EXPOSURE (mg/kg/d)	SHORT TERM MOE
Mixer/Loaders-Ground	0.084	119
Applicator-Ground	0.032	312
Mixer/Loaders-Aerial	0.263	38
Applicators-Aerial	0.027	370
Mixer/Loaders -Commercial Aerial	0.347	29
Applicators-Commercial Aerial	0.035	285

"Worst Case" CANCER RISK = AADE X Q^*1 X 2/70 (Assumes 100% dermal penetration)

$Q^*1 = 0.17\ (mg/kg/day)^{-1}$

CANCER RISK = RfD + AADE X 2/70 (Assumes 100% dermal penetration)

OPERATION*	AADE (mg/kg/d)	RfD CANCER RISK	Q^*1 CANCER RISK
Mixer/Loaders-Ground	0.00081	865	3.93×10^{-6}
Applicator-Ground	0.00031	2,257	1.51×10^{-6}
Mixer/Loaders-Aerial	0.00072	972	3.5×10^{-6}
Applicators-Aerial	0.000074	9,478	3.5×10^{-7}
Mixer/Loaders-Commercial Aerial	0.0072	97	3.5×10^{-5}
Applicators-Commercial Aerial	0.00073	972	3.5×10^{-6}

* Minimum clothing requirements are: long-sleeved shirt, long pants, shoes, socks, and chemically resistant gloves for each job function (Worker Protection Standard for Agricultural Pesticides).

Toxicity Data Base:

Series. Study Type	Status	Comments/Significant Findings	Doc.#
81-1. Acute Oral, rat	A	Tox. Category IV	1379 5823
81-2. Acute Dermal, rabbit	A	Tox. Category III (limit test)	1379 5823
81-3. Acute inhalation, rat	A	Tox. Category III	1379 5823
81-4. Primary eye, rabbit	A	Tox. Category III	1379 5823
81-5. Primary dermal, rabbit	A	Tox. Category IV	7419
81-6. Dermal sensitization, guinea pig	NA	DATA GAP	
82-1a. Subchronic, rat	NA		
82-1b. Subchronic, dog	NA		

82-2. 21-Day dermal, rabbit	NA	DATA GAP	
83-1a, 2a. Feeding/onco, rat	A	NOEL = 5 mg/kg/day. LEL = 50 mg/kg/day (decr. body wt.). Incr. incid. mammary tumors in females, 50 mg/kg/day (HDT).[1]	575 4542 5419 5508 5823
83-1b. Chronic feeding, dog	NA	WAIVED	
83-2. Oncogenicity, mouse	A	NOEL = 10 mg/kg/day (myocardial histopath.). No oncogenic effects.	575 4542 5823
83-3a. Developmental toxicity, rat	A	Maternal NOEL/LEL = 10/100 mg/kg/day (decr. food cons., decr. body wt.). Developmental NOEL/LEL = 10/100 mg/kg/day (incr. incid. incompl. skeletal ossific.).	5226 5823
83-3b. Dev. toxicity, rabbit	NA	DATA GAP	
83-4. 2-generation reproduction, rat	A	Reproductive NOEL/LEL = 5 mg/kg/day (decr. pup wt.).	575 4542 5823
84-2a. Gene mutation	A	CHO gene mutation: positive w/o activation; weak positive with activation.	5611 5823
84-2b. Chromosome aberration	A	CHO nucleus anomaly: negative	5226 5823
84-4. Genotoxicity, other mechanism	A	DNA repair, rat: negative	5226 5823
85-1. Metabolism, rat	NA	DATA GAP	
85-3. Dermal absorption	NA		

A Study Acceptable
NA Study Not Available
1 Rereading of mammary histopathology required if product reregistered

Special Toxicology Issues and Problems.

1. Labelling. Propazine is no longer registered for use as a pesticide; it was voluntarily canceled by the manufacturer.

2. Carcinogenicity. Propazine is classified as a C carcinogen with no quantitation based on increased incidence of mammary tumors in female rats (Peer Review Re-evaluation dated 1-10-89; previously assigned quantitation of 1.7×10^{-1} removed

based on single sex benign tumors without dose-response). However, due to discrepancies in mammary tumor counts in histopathology readings of different pathologists, all mammary histopathology slides must be reread if reregistration of this active ingredient is ever pursued. Propazine is a S-chloro-triazine and is related to other similar pesticides which induce malignant mammary gland tumors in female rats. These pesticides include atrazine, terbutryn, cyanazine (voluntarily canceled) and others.

3. RfD. An RfD of 0.02 mg/kg/day was established based on the NOEL of 5 mg/kg/day from the rat chronic feeding study and an uncertainty factor of 300 (extra 3 for data gaps). This value was verified by the Agency RfD Workgroup on 5-20-87.

4. Non-carcinogenic risk assessment. At this time there are no known non-carcinogenic risk assessment concerns for propazine other than the RfD; however, the toxicology database is not complete. Important missing studies needed to evaluate the risks to the public as well as farm workers are (a) rabbit developmental (b) re-read of mammary gland tumor slides in female rats in 2-year rat study (c) 21-day dermal study and (d) rat metabolism study.

5. Mutagenicity/genetic toxicity comments. Propazine produced a dose-related mutagenic response without activation and a weak response with activation in the Chinese hamster ovary point mutation assay but was negative in the other assays submitted to support reregistration.

6. Dermal Penetration. Data on dermal penetration is not available for propazine.

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

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM:

SUBJECT: TEXAS SECTION 18 REQUEST (96TX0002) TO USE PROPAZINE (MILO-PRO 4L HERBICIDE) ON GRAIN SORGHUM TO CONTROL WEEDS

FROM: Tina Manville, Biologist
Special Review and Registration Section II

TO: William Dykstra, Ph.D.
Toxicology Branch I
Health Effects Division (7509C)

THRU: Mark I. Dow, Ph.D., Section Head
Special Review and Registration Section II

Larry C. Dorsey, Chief
Occupational and Residential Exposure Branch
Health Effects Division (7509C)

Please find below, the OREB review of:

DP Barcode: D220614

Pesticide Chemical Code: 080808

EPA Reg. No.: _____

PHED: Yes. Version 1.1

TABLE ONE. SECTION 18 DETAILS	
Crop	Sorghum
Pest	weeds
Application method	ground boom (open cab) aerial (closed cab)
Max. application rate	1.2 lb ai/acre
Min. final spray volume	ground - 10 gal/acre air - 3 gal/acre
No. of applications	1 per crop growing season
Max acreage	1,823,000 acres
Manufacturer	Griffin Corp.
Use period	does not specify start date, ends August 1, 1996
Average sorghum farm size[1]	286 acres

1. 1992 Census of Agriculture, Vol. 1, part 43b, Ch. 2, Table 26. Grains: 1992.

OREB's exposure assessment is based on the following assumptions (Table Two. Assumptions):

TABLE THREE. PROPAZINE SECTION 18 WORKER EXPOSURE			
APPLICATION METHOD	WORKER	DAILY EXPOSURE µg/kg/day	Average Annual Daily Exposure µg/kg/day
Ground boom	Mixer/loader	84	0.81
	Applicator	32	0.31
Aerial	Mixer/loader	263	0.72
	Applicator	27	0.074
Commercial Aerial	Mixer/loader	347	7.2
	Applicator	35	0.73

For calculations please see appendix.

Mixer/loader and ground applicator exposures are based on an open pour and open cab scenario with the worker wearing long pants, long sleeved shirt, shoes and socks, and gloves. The aerial applicator exposure is based on a closed cockpit with the worker wearing long pants, long sleeved shirt, and shoes and socks. Aerial application to the average size sorghum farm can be accomplished in one day however OREB believes most aerial application is done by commercial applicators who can be reasonably assumed to treat 10 farms a year.

The Milo-Pro label states that the following personal protective equipment (PPE) are required: long pants and long-sleeved shirt, waterproof gloves, and shoes plus socks. This is in accordance with the Worker Protection Standard (WPS). The REI for Milo-Pro listed on the label is 24 hours, which is in agreement with WPS.

Attachments

cc: T. Manville
Chemical File: **PROPAZINE 080808**
Correspondence

Mixer/loader AADE:

347 µg/kg/day x 1 day/year ÷ 365 days/year = **0.72 µg/kg/day**

Applicator DE:

4.7 µg/lb a.i. x 343lb a.i./day ÷ 60 kg = **27 µg/kg/day**

Applicator AADE:

35 µg/kg/day x 1 day/year ÷ 365 days/year = **0.074 µg/kg/day**

****

Commercial Aerial Application:

Total A.I. handled per day:

assume that worker will treat maximum possible number of acre/day = 377
1.2 lb a.i./acre x 377 acres/day = 452 lb a.i./day

Mixer/loader DE:

46 µg/lb a.i. x 452 lb a.i./day ÷ 60 kg = **347 µg/kg/day**

Mixer/loader AADE:

Assume that a commercial worker would treat 10 sorghum farms/year .
286 average farm size ÷ 377 acres applied/day = 0.76 day/farm
0.76 day/farm x 10 farms/year = 7.6 days/year

347 µg/kg/day x 7.6 day/year ÷ 365 days/year = **7.2 µg/kg/day**

Applicator DE:

4.7 µg/lb a.i. x 452lb a.i./day ÷ 60 kg = **35 µg/kg/day**

Applicator AADE:

35 µg/kg/day x 7.6 day/year ÷ 365 days/year = **0.73 µg/kg/day**

YSNG(BEAD) Estimate of Acres Treated by Various Application Methods

11/08/95

Site: SORGHUM Chem: PROPAZINE Hrs/day: 8.0 hr.
Appl. method: GROUND Speed: 4.0 (increment: 1) mph
Tank capacity(TC): 350 (Increment: 50) gal Length of run(LR): 2000 ft.
Swath width(SW): 26 (Increment: 6) ft. Water station(WS): 200 yd.
Finish spray(FS): 10 (Increment: 2) gal. Refill time(RT): 9.0 min
** Recommand: Ground -- RT = 2-3 mins. per 100 gal TC; LR = 1000 ft; **********
WS = varies; Ferry speed = speed * 2.0; Turning time = 0.25 min.

350 TC	4.0 mph				5.0 mph				6.0 mph				7.0 mph			
FS	10	12	14	16	10	12	14	16	A 10	12	14	16	10	12	14	16
26	81	78	76	73	96	93	89	86	C 111	106	102	98	124	118	113	108
SW 32	96	92	89	86	114	109	104	100	R 130	123	118	113	144	137	130	124
38	110	105	101	97	129	123	117	112	E 147	139	132	125	163	153	145	137

400 TC	4.0 mph				5.0 mph				6.0 mph				7.0 mph			
FS	10	12	14	16	10	12	14	16	A 10	12	14	16	10	12	14	16
26	81	78	76	73	96	93	90	86	C 111	106	102	98	124	118	113	108
SW 32	96	92	89	86	114	109	104	100	R 130	124	118	113	145	137	130	124
38	110	105	101	97	130	123	118	112	E 147	139	132	126	163	153	145	137

Make life easier, hit "PrtSc" to get a hard copy, than hit any key to continue

YSNG(BEAD) Estimate of Acres Treated by Various Application Methods

11/08/95

Site: SORGHUM Chem: PROPAZINE Hrs/day: 3.0 hr.
Appl. method: AERIAL Speed: 110.0 (increment: 10) mph
Tank capacity(TC): 400 (Increment: 50) gal Length of run(LR): 2000 ft.
Swath width(SW): 60 (Increment: 10) ft. Water station(WS): 8800 yd.
Finish spray(FS): 3 (Increment: 1) gal. Refill time(RT): 9.0 min
** Recommand: Aerial -- RT = 1-2 min. per 100 gal TC; LR = 2640 ft(.5 mile); ** Hrs/day=2-4; WS=8800 yd(5 miles), Ferry speed=speed; Turning time=0.25 mim.

400 TC	110.0mph				120.0mph				130.0mph				140.0mph			
FS	3	4	5	6	3	4	5	6	A 3	4	5	6	3	4	5	6
60	377	310	263	228	385	316	267	232	C 392	321	271	235	398	325	275	238
SW 70	397	323	272	235	405	329	277	239	R 412	334	281	242	418	338	284	245
80	413	334	280	241	421	339	284	245	E 428	344	288	248	434	349	292	251

450 TC	110.0mph				120.0mph				130.0mph				140.0mph			
FS	3	4	5	6	3	4	5	6	A 3	4	5	6	3	4	5	6
60	381	313	266	231	388	319	270	234	C 395	324	274	238	401	328	278	241
SW 70	401	326	275	238	409	332	280	242	R 415	337	284	245	421	341	287	248
80	417	337	283	244	425	343	287	247	E 432	348	291	250	438	352	295	253

Make life easier, hit "PrtSc" to get a hard copy, than hit any key to continue

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Chemical:	**Propazine**
PC Code:	**080808**
HED File Code	**13000 Tox Reviews**
Memo Date:	**07/02/96**
File ID:	**DPD227218**
Accession Number:	**412-03-0019**

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