UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

#497E

MAR 31 1995

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

95WA0014

SUBJECT: **Section 18: ID# ~~94OR0011~~.** Emergency Exemption for Use
of Provado 1.6F (Imidacloprid) on Pears in Washington

Tox. Chem. No.:	497E
PC No.:	12909 (129059)
Barcode No.:	D212989
Submission No.:	S483230

TO: Andrea Beard, Manager, PM Team 41
David Deegan, Reviewer, PM Team 41
Emergency Response and Minor Use Section/Registration
Support Branch
Registration Division (H7505C)

FROM: William Dykstra, Ph.D. *William Dykstra 3/29/95*
Review Section I, Toxicology Branch I
Health Effects Division (H7509C)

THRU: John Doherty, Ph.D. *[signature] 3/31/95*
Review Section IV, Toxicology Branch I
Health Effects Division (H7509C)
and
Roger Gardner, Section Head
Review Section I, Toxicology Branch I
Health Effects Division (H7509C)

[signature] 3/31/95

I. CONCLUSIONS

The toxicology data requirements are complete for the issuance
of a Section 18 emergency exemption by the State of Washington for
the temporary use of imidacloprid (Provado 1.6F) to control grape
mealybug on pears. The margins of exposure (MOEs) for short term
exposure are greater than 100. Imidacloprid is a "Group E"
carcinogen, so there is no cancer risk associated with exposure to
this chemical.

For acute dietary exposure, a toxicological NOEL of 24
mg/kg/day based on the increased resorptions and abortions in the
rabbit developmental study should be used.

Toxicology Branch I has no objection to the issuance of this
exemption.

II. ACTION REQUESTED

In a letter dated March 3, 1995, the Washington Department of Agriculture requested an emergency exemption under Section 18 for the use of imidacloprid to control grape mealybug on pears. This is the first request made by Washington for this use.

Provado 1.6F (Miles, Inc.) is the formulation for the active ingredient. The pesticide will be used three times per growing season. The maximum estimated acreage to be treated in Washington is 5,000. The rate of application will be 8.0 fl. oz. of Provado 1.6F per acre (0.1 lb ai) at 10 day intervals. This is equivalent to 937.5 gallons of formulated product (1500 lbs ai) for the entire Section 18.

III. TOXICOLOGY BRANCH I COMMENTS

The toxicology data base for imidacloprid is sufficient to support the proposed Section 18 exemption.

IV. RISK/EXPOSURE ASSESSMENT

This action was submitted to OREB (Occupational and Residential Exposure Branch) for determination of exposure estimates (see attached memo from J. Adams to W. Dykstra, dated March 28, 1995). Therefore, the OREB exposure estimates and the rabbit maternal and developmental NOEL of 24 mg/kg/d (see One Liners, below) were used to determine the Short term MOEs. Calculations were based on a dermal absorption of 100%, because no dermal absorption data is available for imidacloprid. However, dermal exposure is considered negligible, since a 21 day dermal study in rabbits has a systemic NOEL of 1000 mg/kg/day (HDT). Cancer risk is not quantitated, since imidacloprid is a group E carcinogen.

Formula used in calculations:

Short term MOE = NOEL (24 mg/kg BW/d) ÷ Exposure (mg/kg BW/d)

OPERATION*	EXPOSURE (mg/kg/d)	SHORT TERM MOE
Mixer/Loader, hand gun	0.00035	68,571
Applicator, hand gun	0.00612	3921
Mixer/Loader, air blast	0.00112	21,428
Applicator, air blast	0.00663	3,619

* Minimum clothing requirements for Applicators are long pants, long-sleeved shirt, and chemical resistant gloves; Mixer/Loader exposure is based on wearing long pants, long sleeves, and gloves (Worker Protection Standard for Agricultural Pesticides).

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V. SPECIAL TOXICOLOGY ISSUES AND PROBLEMS

1. __Labelling__. The labelling precautionary statements for Provado 1.6F are governed by toxicity studies on the active ingredient.

2. __Carcinogenicity__. There is no cancer risk associated with exposure to this chemical, because the HED RfD Review Committee has determined that the test compound is a "Group E" carcinogen.

3. __RfD__. The RfD/Quality Assurance Peer Review Committee met on April 22, 1993 to assess the reference dose for this chemical. The Committee recommended that an RfD of 0.057 mg/kg/day should be established, based upon a NOEL of 5.7 mg/kg/d in a chronic toxicity study in rats. An uncertainty factor of 100 was used to account for interspecies extrapolation and intraspecies variability.

4. __Non-carcinogenic risk assessment__. In a chronic/oncogenicity study, male rats exhibited increased thyroid lesions at 16.9 mg/kg/day and above, and females at 73 mg/kg/day (see attached one-liners). In a developmental study in rabbits, 72 mg/kg/d of technical imidacloprid (administered on days 6-19 of gestation) increased the number of resorptions and abortions in the dams, and increased skeletal abnormalities and decreased body weight in the pups.

5. __Mutagenicity/genetic toxicity comments__. Most of the genotoxicity studies for imidacloprid were negative, although an in vitro chromosome aberration study (human lymphocytes) was positive at cytotoxic concentrations, and an in vitro sister chromatid exchange mutagenicity study (CHO cells) was positive at cytotoxic doses.

6. __Dermal Penetration__. There are no available dermal penetration data for imidacloprid. However, a 21 day dermal toxicity study in rabbits has a systemic NOEL of 1000 mg/kg/day (HDT).

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

MAR 2 8 1995

MEMORANDUM:

SUBJECT: 95WA0014: Washington State § 18 Request for Use of Imidacloprid on Pear Trees.

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

FROM: James D. Adams, Ph.D., Chemist *James P. Adams*

THRU: Mark Dow, Ph.D., Section Chief *Bruce Kythens for*
Special Review Registration Section II

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

    Please find below, the OREB review of:

<u>DP Barcode:</u>   D212988

<u>Pesticide Chemical Code:</u>   129099

<u>EPA Reg. No.:</u>   3125-457

<u>EPA MRID No.:</u>   N/A

<u>PHED:</u>   Yes. Draft Version 1.1 of PHED was used.

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I. INTRODUCTION:

A. Background:

The Department of Agriculture of the State of Washington is asking for a Section 18 Emergency Exemption for the use of Provado™ 1.6F to control grape mealybugs on pear trees. The active ingredient of Provado™ 1.6F is Imidacloprid {1-[(6-chloro-3-pyridinyl)methyl]--N-nitro-2-imidazolidinimine}.

B. Purpose:

The purpose of this review is to estimate the exposure of mixer and loader, and of applicators to the active ingredient Imidacloprid during the use of Provado 1.6F on pear trees in Chelan and Douglas Counties of Washington State. Exposure is also calculated here for a combination of mixing, loading, and application. Since the average pear-farm size is small in these counties, all three tasks could be done by one person.

II. DETAILED CONSIDERATIONS:

According to the 1992 Census of Agriculture, Chelan County had 475 farms with 7,788 acres in pears, and Douglas County had 96 farms with 983 acres in pears. The combined number of farms for the two counties is 571 with a total of 8771 acres in pears for an average of 15.4 acres/farm.

The the application rate is 8 fluid ounces of Provado 1.6F (0.10 lbs ai) in 400 gallons of dilute spray per acre per application. A maximum of three applications may be allowed per season, but no more than 5000 acres will be treated, and no more than 1500 lbs of active ingredient will be applied per year.

The label submitted does not contain any mention of clothing or Personal Protective Equipment [PPE] that the mixer/loader or the applicator will wear. However, a label from Miles Inc. provided in a previous submission contains a precautionary statement that; "Applicators and other handlers must wear: long-sleeved shirts and long pants; water-proof gloves; shoes plus socks". Assessments of handler exposure rates were run with the Pesticide Handler Exposure Data-base [PHED] using this PPE as a parameter. Draft Version 1.1 of the Pesticide Handler Exposure Data-base was used to assess handler exposures when the pesticide is applied with an airblast groundrig. Version 1.01 of PHED was used to assess handler exposures when a handgun is used for pesticide application. Those results were combined with estimates of daily usage rates to obtain estimates of daily handler exposures. The results are reported in the tables below.

III. CONCLUSIONS/RECOMMENDATIONS:

A pesticide treatment at 0.10 lbs of active ingredient per acre is a rather low usage rate, and the acreage of the pear farms at an average of 15.4 acres is also rather low. Thus, the amounts of active ingredient handled (e.g., 1.54 lbs ai/day) are relatively small.

Conditions with Airblast Equipment

$$Application\ Rate\ =\ 0.10\ lb\ ai/Acre$$
$$Area\ Treated\ \ \ \ =\ 15.4\ Acres/day$$
$$Amount\ Applied\ \ =\ \textbf{1.54 lb ai/day}$$

Dr. John E. Dunley of Washington State University estimates [See the attached FAX copy.] that an applicator could treat a pear tree with a high-pressure handgun in 30 seconds (120 trees/hour); a 10-hour work day is common; and there are about 250 trees/acre in those counties. Using those data, Dunley calculated that the area treated by handgun would be:

$$\frac{(120\ trees/hour)(10\ work\text{-}hours/day)}{(250\ trees/acre)}\ =\ 4.8\ acres/day$$

Conditions with Handgun Equipment

$$Application\ Rate\ =\ 0.10\ lb\ ai/Acre$$
$$Area\ Treated\ \ \ \ =\ 4.8\ Acres/day$$
$$Amount\ Applied\ \ =\ \textbf{0.48 lb ai/day}$$

These estimated usage amounts applied when combined with the total unit exposure rates obtained from PHED [See attached PHED reports.] yield the total daily exposures listed in the table below. Those rates are 43.6 μg/lb-ai mixed, 258.3 μg/lb-ai applied by airblast, and 765.6 μg/lb-ai applied by high-pressure handgun.

TOTAL DAILY EXPOSURES FOR USE OF IMIDACLOPRID ON PEAR TREES

Equipment Type	Total Daily Exposures (μg-ai/kg-bw/day)		
	Mixer/Loader	Applicator	All tasks
Airblast	1.12	6.63	7.75
Handgun	0.35	6.12	6.47

CC: Correspondence File
     Imidacloprid File
     Circulation
     James D. Adams, OREB

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CALCULATION OF TOTAL DAILY EXPOSURES

Airblast Equipment

Mixer/Loader

$$\frac{(1.54\ \text{lb-ai/day})(43.6\ \mu\text{g-ai/lb-ai})}{60\ \text{kg-bw}} = 1.12\ \mu\text{g-ai/kg-bw/day}$$

Applicator

$$\frac{(1.54\ \text{lb-ai/day})(258.3\ \mu\text{g/lb-ai})}{60\ \text{kg-bw}} = 6.63\ \mu\text{g-ai/kg-bw/day}$$

High-pressure Handgun

Mixer/Loader

$$\frac{(0.48\ \text{lb ai/day})(43.6\ \mu\text{g/lb-ai}}{60\ \text{kg-bw}} = 0.349\ \mu\text{g-ai/kg-bw/day}$$

Applicator

$$\frac{(0.48\ \text{lb ai/day})(765.6\ \mu\text{g/lb-ai})}{60\ \text{kg-bw}} = 6.12\ \mu\text{g-ai/kg-bw/day}$$

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SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI SPRAYED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
HEAD (ALL)	Lognormal	105.69	140.8333	77.4664	105.262	9
NECK.FRONT	Lognormal	12.195	22.0817	96.0397	13.4678	9
NECK.BACK	Lognormal	8.943	31.548	152.5041	12.9288	9
UPPER ARMS	Other	45.396	47.918	15.7895	47.4874	9
CHEST	Other	55.38	55.38	0	55.3791	9
BACK	Other	55.38	55.38	0	55.3791	9
FOREARMS	Lognormal	18.876	255.0142	248.3883	47.5413	9
THIGHS	Lognormal	59.592	4954.0307	291.5219	186.603	9
LOWER LEGS	Lognormal	37.128	3474.1124	283.7355	159.2327	9
FEET						0
HANDS	Other	6.25	110.8403	266.2583	13.8807	9
TOTAL DERM:	687.4416	404.83	9147.1386		697.1619	

95% C.I. on Mean: Dermal: [-352402.5151, 370696.7923]

Number of Records: 9

Data File: APPLICATOR   Subset Name: HPHW1.APPL

ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for HPHW1.APPL

With Dermal Grade Uncovered Equal to "A" "B"
Subset originated from HPHW.APPL
With Application Method Equal to 13
Subset originated from APPL.FILE

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SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI SPRAYED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
HEAD (ALL)	Lognormal	105.69	140.8333	77.4664	105.262	9
NECK.FRONT	Lognormal	12.195	22.0817	96.0397	13.4678	9
NECK.BACK	Lognormal	8.943	31.548	152.5041	12.9288	9
UPPER ARMS	Other	45.396	47.918	15.7895	47.4874	9
CHEST	Other	55.38	55.38	0	55.3791	9
BACK	Other	55.38	55.38	0	55.3791	9
FOREARMS	Lognormal	18.876	255.0142	248.3883	47.5413	9
THIGHS	Lognormal	59.592	4954.0307	291.5219	186.603	9
LOWER LEGS	Lognormal	37.128	3474.1124	283.7355	159.2327	9
FEET						0
HANDS	Other	6.25	110.8403	266.2583	13.8807	9
TOTAL DERM:	687.4416	404.83	9147.1386		697.1619	

95% C.I. on Mean: Dermal: [-352402.5151, 370696.7923]

Data File: APPLICATOR

Number of Records: 9
Subset Name: HPHW2.APPL

ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for HPHW2.APPL

With Hand Grade Equal to "A" "B" "C" and
With Hand Measuring Method Equal to 1 2
Subset originated from HPHW.APPL
With Application Method Equal to 13
Subset originated from APPL.FILE

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EXPOSURE	DISTRIB. TYPE	Median	NANOGRAMS PER LB AI SPRAYED Mean	Coef of Var	Geo. Mean	Obs.
EXPOSURE	Other	78125	78125	<0	78127.7042	9

95% C.I. on Geo. Mean: [78127.7042, 78127.7042]
Number of Records: 9
Data File: APPLICATOR   Subset Name: HPHW3.APPL

<< Specifications >>
Subset Specifications for HPHW3.APPL

With Airborne Grade Equal to "A" "B"
Subset originated from HPHW.APPL
With Application Method Equal to 13
Subset originated from APPL.FILE

CALCULATIONS

687.4416 ug/lb ai sprayed - 6.25 ug/lb ai sprayed = 681.1916 ug/lb ai sprayed
(dermal unit exposure
w/o hands)

681.1916 ug/lb ai sprayed + 6.25 ug/lb ai sprayed = 687.4416 ug/lb ai sprayed
TOTAL dermal unit exposure

687.4416 ug/lb ai sprayed + 78.125 ug/lb ai sprayed = 765.5666 ug/lb ai sprayed
(inhalation)   **TOTAL UNIT EXPOSURE**
(combined dermal and inhalation)

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PHED final version 1.1 used

SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI SPRAYED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
HEAD (ALL)	Lognormal	257.14	797.0776	153.0421	185.8648	41
NECK.FRONT	Lognormal	17.7	38.0282	145.7142	12.5667	37
NECK.BACK	Lognormal	9.537	28.3626	157.8159	8.8584	41
UPPER ARMS	Lognormal	4.656	42.3987	265.4846	6.4049	40
CHEST	Lognormal	5.325	22.2689	175.6535	5.6753	48
BACK	Lognormal	3.55	15.0209	172.0057	4.3627	48
FOREARMS	Lognormal	1.21	7.4511	148.7525	2.0066	38
THIGHS	Lognormal	27.122	58.6432	186.3098	18.7807	31
LOWER LEGS	Lognormal	9.282	17.7886	126.359	7.5149	31
FEET						0
HANDS	Lognormal	3.8	7.4605	109.8921	2.4137	33
TOTAL DERM:		254.4487	339.322	1034.5003		254.4487

95% C.I. on Mean: Dermal: [-10919.1483, 12988.1489]

Data File: APPLICATOR

Number of Records: 48
Subset Name: JIM2.APPL

■ ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for JIM2.APPL

With Dermal Grade Uncovered Equal to "A" "B"
Subset originated from JIM.APPL
With Application Method Equal to 1 and (Airblast)
With Cab Type Equal to 1 2 (Open Cab)
Subset originated from APPL.FILE

SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI SPRAYED				
		Median	Mean	Coef of Var	Geo. Mean	
HEAD (ALL)	Lognormal	73.71	816.985	156.115	152.7534	38
NECK.FRONT	Lognormal	4.5825	34.8283	164.1831	8.1666	36
NECK.BACK	Lognormal	5.907	25.1205	178.8273	6.7222	38
UPPER ARMS	Lognormal	6.2565	49.179	260.7302	11.7972	30
CHEST	Lognormal	6.745	24.566	173.0005	7.5932	30
BACK	Lognormal	5.325	16.1525	206.386	5.6735	30
FOREARMS	Other	1.815	6.8106	140.434	3.4333	28
THIGHS	Lognormal	5.73	35.5461	249.8887	9.0206	38
LOWER LEGS	Lognormal	7.616	17.4505	134.4466	6.252	28
FEET						0
HANDS	Lognormal	10.6667	8.5261	74.1769	2.4288	18
TOTAL DERM:		212.2225	128.3537	1035.1646	213.8408	

95% C.I. on Mean: Dermal: [-11940.9957, 14011.3249]

Data File: APPLICATOR

Number of Records: 40
Subset Name: JIM3.APPL

ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for JIM3.APPL

With Hand Grade Equal to "A" "B" and
With Hand Measuring Method Equal to 1 2 (gloves, handrinse)
Subset originated from JIM.APPL
With Application Method Equal to 1 and (Airblast)
With Cab Type Equal to 1 2 (Open Cab)
Subset originated from APPL.FILE

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SUMMARY STATISTICS FOR INHALATION EXPOSURES

EXPOSURE	DISTRIB. TYPE	NANOGRAMS PER LB AI SPRAYED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
EXPOSURE	Other	3849.6377	8068.4196	221.0318	2847.4736181	47

95% C.I. on Geo. Mean: [113.8844, 71195.9313]
Number of Records: 47
Data File: APPLICATOR   Subset Name: JIM4.APPL

<< Specifications >>
Subset Specifications for JIM4.APPL

With Airborne Grade Equal to "A" "B"
Subset originated from JIM.APPL
With Application Method Equal to 1 and (Airblast)
With Cab Type Equal to 1 2 (Open Cab)
Subset originated from APPL.FILE

CALCULATIONS

254.4487 ug/lb ai sprayed - 2.4137 ug/lb ai sprayed = 252.035 ug/lb ai sprayed
                                                           (dermal unit exposure
                                                                w/o hands)

252.035 ug/lb ai sprayed + 2.4288 ug/lb ai sprayed = 254.4638 ug/lb ai sprayed
                                                         TOTAL dermal unit exposure

254.4638 ug/lb ai sprayed + 3.8496 ug/lb ai sprayed = 258.3134 ug/lb ai sprayed
                             (inhalation)   TOTAL UNIT EXPOSURE
                                          (combined dermal and inhalation)

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PHED final version 1.1 used

SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI MIXED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
HEAD (ALL)	Other	2.99	128.9568	493.8357	4.0992	121
NECK.FRONT	Lognormal	1.695	23.2318	360.9199	1.74	103
NECK.BACK	Lognormal	.341	15.7106	381.706	.5427	109
UPPER ARMS	Other	.582	157.6735	903.2036	1.4925	90
CHEST	Other	3.905	19.2219	262.7404	3.4337	89
BACK	Other	.8875	11.009	221.7177	1.8891	88
FOREARMS	Other	.6655	4.4266	211.9821	.8927	84
THIGHS	Lognormal	3.82	16.8134	196.8466	4.0237	71
LOWER LEGS	Other	.952	38.271	819.5203	1.1162	81
FEET	Lognormal	5.371	346.998	180.1404	19.5296	25
HANDS	Lognormal	3.5883	34.7596	316.3227	3.5782	80
TOTAL DERM:		39.3962	24.7973	797.0722	42.3376	

95% C.I. on Mean: Dermal: [-12060.5932, 13654.7376]

Number of Records: 137

Data File: MIXER/LOADER   Subset Name: OPN1.LIQ.MLOD

ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for OPN1.LIQ.MLOD

With Dermal Grade Uncovered Equal to "A" "B"
Subset originated from OPN.LIQ.MLOD
With Liquid Type Equal to 1 2 3 4 5 and
With Mixing Procedures Equal to 1
Subset originated from MLOD.FILE

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SUMMARY STATISTICS FOR CALCULATED DERMAL EXPOSURES

SCENARIO: Long pants, long sleeves, gloves

PATCH LOCATION	DISTRIB. TYPE	MICROGRAMS PER LB AI MIXED				Obs.
		Median	Mean	Coef of Var	Geo. Mean	
HEAD (ALL)	Lognormal	1.885	144.2756	493.6915	3.2991	
NECK.FRONT	Lognormal	1.2675	22.6456	409.0843	1.0823	96
NECK.BACK	Lognormal	.2255	16.0728	418.1281	.3845	82
UPPER ARMS	Other	.582	211.2486	781.2068	1.8065	84
CHEST	Other	5.68	22.1621	251.7974	4.2547	67
BACK	Other	.71	15.265	208.1592	2.2097	70
FOREARMS	Other	.726	5.8497	182.5683	1.172	69
THIGHS	Lognormal	3.82	16.6769	197.9019	3.8973	61
LOWER LEGS	Other	.714	42.9788	773.9239	1.1099	67
FEET	Lognormal	5.371	346.998	180.1404	19.5296	72
HANDS	Lognormal	11.5385	58.2033	228.9173	6.7068	25
TOTAL DERM:		43.3116	32.5195	902.3764	45.4524	59

95% C.I. on Mean: Dermal: [-14732.9298, 16537.6826]

Data File: MIXER/LOADER

Number of Records: 112
Subset Name: OPN2.LIQ.MLOD

ADD INHALATION   CHANGE HEAD   LB AI TO KG AI   EXIT

<< Specifications >>
Subset Specifications for OPN2.LIQ.MLOD

With Hand Grade Equal to "A" "B" and
With Hand Measuring Method Equal to 1 2
Subset originated from OPN.LIQ.MLOD
With Liquid Type Equal to 1 2 3 4 5 and
With Mixing Procedures Equal to 1
Subset originated from MLOD.FILE

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SUMMARY STATISTICS FOR INHALATION EXPOSURES

	DISTRIB. TYPE	NANOGRAMS PER LB AI MIXED				
		Median	Mean	Coef of Var	Geo. Mean	Obs.
EXPOSURE	Other	1041.6667	3519.5428	233.2266	598.9849	85

95% C.I. on Geo. Mean: [8.0354, 44650.2369]
Number of Records: 92
Data File: MIXER/LOADER   Subset Name: OPN3.LIQ.MLOD

<< Specifications >>
Subset Specifications for OPN3.LIQ.MLOD

With Airborne Grade Equal to "A" "B"
Subset originated from OPN.LIQ.MLOD
With Liquid Type Equal to 1 2 3 4 5 and
With Mixing Procedures Equal to 1
Subset originated from MLOD.FILE

CALCULATIONS

39.3962 ug/lb ai mixed - 3.5782 ug/lb ai mixed = 35.818 ug/lb ai mixed
(dermal unit exposure w/o hands)

35.818 ug/lb ai mixed + 6.7068 ug/lb ai mixed = 42.5248 ug/lb ai mixed
TOTAL dermal unit exposure

42.5248 ug/lb ai mixed + 1.0416 ug/lb ai mixed = 43.5664 ug/lb ai mixed
(inhalation)   **TOTAL UNIT EXPOSURE**
(combined dermal and inhalation)

**PHED version 1.1 used

Washington State University

Tree Fruit Research and Extension Center

MEMORANDUM

TO: Dr. James D. Adams
Occupational and Residential Exposure Branch
Health Effects Division (7509C)
US - EPA
Washington, DC 20460
FAX: 703-305-5147
PHONE: 703-305-7335

FROM: Dr. John E. Dunley
Washington State University
Tree Fruit Research and Extension Center
Wenatchee, WA 98801
FAX: 509-662-8714
PHONE: 509-663-8181 x236

DATE: March 22, 1995

Regarding information for the FIFRA Section 18 request for Provado 1.6F use in Washington pears, I estimate the maximum number of acres treated by one person using a high-pressure handgun method as follows:

- It takes at least 30 seconds / tree (this is very conservative)
- Workers put in a maximum of 10 hr. days
- Average of 250 pear trees / ac, because the problems tend to arise in older plantings

$$\frac{120 \text{ trees}}{1 \text{ hr}} \quad \times \quad \frac{10 \text{ hr}}{1 \text{ day}} \times \quad \frac{1 \text{ ac}}{250 \text{ trees}} \quad = \quad \frac{4.8 \text{ ac}}{\text{day}}$$

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Washington State University

Tree Fruit Research and Extension Center

1100 North Western Avenue
Wenatchee, WA 98801
509-663-8181
FAX 509-662-8714

DATE: March 22, 1995

Please deliver the following pages:

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