12-19-96
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

MEMORANDUM

DATE: 12/19/96

SUBJECT: ID# 97OR0002. SECTION 18 EXEMPTION FOR THE USE OF **ETHOPROP** ON **HOPS** IN THE STATE OF **OREGON.**

DP Barcode:	**D230932**	Caswell#:	434C
Trade Name:	Mocap EC	Chem#:	041101
EPA Reg#:	264-458	PRAT Case#:	288134
Class:	Nematicide/Insecticide	40 CFR:	180.262

TO: S. Schaible/R. Forrest, PM Team 41
ERMUS/RSB/RD (7505W)

FROM: S. Knizner, M. Nelson, W. Dykstra, C. Lewis,
D. Davis, J.Morales
PIRAT/RCAB/HED (7509C)

THRU: Michael S. Metzger, Acting Chief
RCAB/HED (7509C)

INTRODUCTION

The Oregon Department of Agriculture is proposing a specific exemption for the use of ethoprop on hops for control of garden symphylans (*Scutigerella immaculata*). This is the second year the use has been requested; an exemption was granted (96OR0010) for the 1996 growing season (3/15/96-5/30/96). The formulation to be used is Mocap EC Nematicide/Insecticide (EPA Reg. No. 264-458, Rhône-Poulenc Ag Company, manufacturer). It is an emulsifiable concentrate (EC) containing 6 lbs of ethoprop as active ingredient (ai) per gallon. The proposed program for 1997 will entail application of 4,250 gallons (25,500 lbs ai) of Mocap EC on 8,500 acres of hops in Clackamas, Marion, and Polk counties of Oregon during the period, 1/1/97 - 5/30/97.

Ethoprop is a List A chemical for reregistration. The FRSTR Residue Chemistry Chapter was issued 10/20/87. The RED is not yet scheduled.

1/24

RECOMMENDATION

HED recommends against granting this Section 18 registration to the State of Oregon for use of ethoprop on hops. **Occupational exposure estimates exceed HED's level of concern. Acute dietary estimates for all population subgroups, including infants and children, also exceed HED's level of concern.**

RISK CHARACTERIZATION

Occupational Risk

The Margin of Exposure (MOE) values reported are for the specific worker exposure scenario outlined in this Section 18 request.

PIRAT has conducted its risk assessment assuming workers are wearing two layers of clothing, gloves and an organic vapor (OV) respirator. The calculated MOE for ground mixer/loaders was 2 and for ground applicators (groundboom) it was 3. A detailed analysis of the risk assessment shows that the risk is being driven by the dermal exposure component. In assessing dermal risk, PIRAT used the Pesticide Handlers Exposure Database (PHED) and mathematically corrected for the addition of a second layer of clothing and OV respirator. PIRAT has used the best available data to assess worker dermal exposure. No further refinements of the dermal occupational exposure assessment are possible in the absence of data reflecting the use of two layers of clothing and an OV respirator. Toxicology data used in the dermal occupational hazard assessment have been reviewed by the Toxicology Endpoint Selection (TES) Committee. Short- and intermediate-term endpoints were based on a 21-day dermal rabbit study. The NOEL from the study is 0.1 mg/kg/day. The LEL from the study was 1.0 mg/kg/day. The difference between the NOEL and LEL is not so large that PIRAT can conclude the dermal risk is greatly overestimated.

Finally, PIRAT notes that addition of a Self Contained Breathing Apparatus (SCBA) would only slightly reduce the inhalation risk. Because the occupational risk is driven by the dermal exposure, additional respiratory protection is not expected to significantly lower worker risk. PIRAT notes that the label requires mixer/loaders to wear a chemical-resistant apron. This will provide an additional degree of protection. Unfortunately, this additional protection can not be quantified using PHED and based on PIRAT's best scientific judgement would not raise the mixer/loader MOE to a level that is not of concern to HED.

At this time, PIRAT concludes that it is not possible to further refine the risk to workers to a level that would no longer be of concern to HED.

Acute Dietary Risk

PIRAT notes that there is no incremental increase in acute dietary risk from the addition of this Section 18 use on hops.

The acute dietary risk assessment was conducted assuming a residue level of 0.08 ppm for all commodities which currently have ethoprop tolerances at 0.02 ppm. The increased residue values were used based on a recent Metabolism Committee decision (Meeting of 10/17/96) that three ethoprop metabolites were also of toxicological concern and should be included in the tolerance expression. Review of available plant metabolism and rotational crop data showed that detectable residues of the metabolites are likely, and that the existing tolerances (in terms of parent compound only) may not be adequate to cover all residues of toxicological concern. Based on these data, PIRAT is unable to further refine the acute dietary risk using anticipated residues until such time as field trial data reflecting metabolites of toxicological concern are available.

HED is unable at this time to use a Monte Carlo model in conducting the acute dietary analysis. However, given the low MOEs calculated (25 - females 13+; 14 - US Pop; 6 - infants and children), PIRAT believes that it is unlikely that these MOEs will be raised sufficiently by the use of ARC (anticipated residue contribution) values and Monte Carlo analysis to reach a level which would not be of concern to HED.

CONCLUSIONS

Hazard Assessment

1. Occupational Exposure Endpoint Selection

   a) Short-Term and Intermediate-Term Risk. For short-term and intermediate-term margin of exposure (MOE) calculations, the Toxicology Endpoint Selection (TES) Committee (6/11/96) recommended use of the NOEL of 0.1 mg/kg/day based on inhibition of plasma, erythrocyte, and brain cholinesterase (ChE) activity in both sexes of rabbits after 21 days of dermal treatment at the LOEL of 1.0 mg/kg/day (MRID# 41304404). Except for the acute inhalation study (LC_{50} = 0.123 mg/L; Tox. Cat. II), no other inhalation studies with technical material are available. Although the TES Committee recommended that the inhalation and dermal components should be added together in calculations of mixer/loader and applicator estimates of exposure, in order to separate inhalation risks (possibly mitigated by respirator) from dermal risks, PIRAT has used the subchronic dog oral NOEL of 0.025 mg/kg/day (see Dietary Endpoint Selection - Acute Risk) for

calculating worker inhalation MOEs.

b) Chronic Risk. Chronic MOE calculations are not required, since a chronic exposure scenario is not present in this Section 18.

c) Cancer Risk. Ethoprop has not been classified as to carcinogenicity by the RfD Committee. Ethoprop is scheduled to be evaluated by the Cancer Peer Review Committee (CPRC) in the near future (first or second quarter of FY97).

d) Dermal Penetration. Dermal penetration studies are not required for this Section 18 because a 21-day dermal toxicity study is being used to calculate worker dermal MOEs.

2. Dietary Endpoint Selection

a) Acute Risk. 0.025 mg/kg/day. For acute dietary risk assessment, the TES Committee (6/11/96) recommended use of the NOEL of 0.025 mg/kg/day for plasma ChE inhibition in male dogs on day 2, the earliest post-treatment determination, in the subchronic study in dogs (MRID# 00075240). The LOEL is based on plasma ChE inhibition at 0.075 mg/kg/day. This endpoint is supported by a 5-month dog study (MRID# 41498601) which showed plasma ChE inhibition after two weeks of treatment at 0.025 mg/kg/day. Brain ChE inhibition occurred at the same doses as plasma ChE inhibition in the 21-day rabbit dermal study (MRID# 41304404), two chronic rat studies (MRID#s 42430201 and 00138636), a rat reproduction study (MRID# 41921201), and a subchronic rat neurotoxicity study (MRID# 43442401). This risk assessment will evaluate acute dietary risk to all population subgroups.

b) Chronic Risk. RfD = 0.0001 mg/kg/day. The RfD is based on the NOEL of 0.01 mg/kg/day for plasma ChE inhibition in female dogs in a 5-month study (MRID# 41498601) and employs a 100-fold uncertainty factor. At the LOEL of 0.025 mg/kg/day, there was plasma ChE inhibition (RfD Meeting of 5/9/96, final document in preparation).

c) Cancer Risk. Ethoprop has not been classified as to carcinogenicity by the RfD Committee. Ethoprop is scheduled to be evaluated by the CPRC in December, 1996.

d) Infants and Children.

i) Developmental Studies

Rat - From the rat developmental study (MRID# 41304402), the maternal (systemic) NOEL was 2 mg/kg/day, based on decreased weight gain during gestation days 6-9 and increased incidence of soft stool at the LOEL of 9 mg/kg/day. The developmental (pup) NOEL was ≥ 18 mg/kg/day, the highest dose tested (HDT).

Rabbit - From the rabbit developmental study (MRID# 41304403), the maternal (systemic) NOEL was 2.5 mg/kg/day (HDT). The developmental (pup) NOEL was also 2.5 mg/kg/day (HDT). Although no maternal toxicity was seen in this study, other developmental data (MRID #41345302) in rabbits demonstrated that maternal mortality was produced at a slightly higher dose level.

ii) Reproduction Studies

Rat - From the rat reproduction study (MRID# 41921201), the maternal (systemic) NOEL was 2.3 mg/kg/day, based on tremors, loose stool and decreased weight gain at the LOEL of 24 mg/kg/day for F0 and F1a and 13 mg/kg/day for F1b and F2. The developmental (pup) NOEL was 2.3 mg/kg/day, based on decreased pup body weight and pup survival at the LEL of 13/24 mg/kg/day. The reproductive NOEL was 13/24 mg/kg/day (HDT). The ChE NOEL was 0.08 mg/kg/day based on plasma and brain ChE inhibition at the LOEL of 2.3 mg/kg/day.

Occupational Exposure

1. Acute data for this formulation are available. The work clothing and PPE appearing on the referenced label (Mocap EC, EPA Reg. No. 264-458) are in compliance with the Worker Protection Standard (WPS).

2. Acute data for the technical are available. The 48-hour restricted entry interval (REI) appearing on the label is in compliance with the WPS.

3. Occupational exposure assumptions and estimates of exposure are summarized in Tables 1 and 2, respectively. The referenced label (Mocap EC, EPA Reg. No. 264-458) requires applicators and other handlers to wear coveralls over long-sleeved shirt and long pants, chemical-resistant gloves, chemical-resistant footwear plus socks, protective eyewear, chemical-resistant headgear for overhead exposure, chemical-resistant apron when cleaning equipment, mixing, or loading,

and an organic vapor (OV) respirator. PIRAT has conducted its estimates of exposure with workers wearing two layers of clothing, gloves and an OV respirator.

4. The occupational exposure endpoint of concern for ethoprop is cholinesterase inhibition. Because dermal and inhalation toxicological endpoints for estimating occupational risk are the same (plasma ChE inhibition) the individually calculated risks can be added to obtain a total MOE. For ground mixer/loaders and ground applicators (groundboom), the calculated total Margin Of Exposure (MOE) values are summarized below:

Ground Mixer/Loader	2
Ground Applicator (groundboom)	3

An MOE of less than 100 exceeds HED's level of concern for short- and intermediate-term occupational risk estimates.

Aggregate Exposure

Dietary Exposure

1. The nature of ethoprop residues in plants and animals is adequately understood. The HED Metabolism Committee has recently determined the residues to be regulated are parent ethoprop (O-ethyl-S,S-dipropylphosphorodithioate) plus metabolites designated as Metabolite II (O-ethyl-S-methyl-S-propylphosphoro-dithioate), Metabolite III (O-ethyl-O-methyl-S-propylphosphorothioate), and Metabolite IV (O-ethyl-S-propylphosphorothioate) (see memo of J.Abbots, 10/29/96). The structures of these metabolites of concern can be found in Table 9 of this review.

   Based on the available metabolism data, the ratio of total ethoprop residues of concern (ethoprop plus metabolites II, III, and IV) to residues of ethoprop *per se* ranges from 1.2X to 8.4X, with the average being 3.4X (see "Additional Information" under Dietary Exposure, page 10, for details). Current ethoprop tolerances are based on parent only. To take into account the metabolites of concern identified by the HED Metabolism Committee, existing (published, pending, new) ethoprop tolerance levels were multiplied by 4 by PIRAT prior to conducting the acute and chronic dietary risk estimates.

2. Adequate enforcement methodology [GLC/FPD (P mode)] is available in PAM Vol. II for ethoprop per se and for Metabolite IV. The enforcement method has not been validated for the other two ethoprop metabolites recently identified by the HED Metabolism Committee as being of concern. In conjunction with reregistration, an enforcement method capable of determining all residues of concern is

being required. For the data presented with this Section 18 request, the validated limit of quantitation (LOQ) for residues of either ethoprop per se or Metabolite IV in/on dried hop cones is 0.02 ppm. Representative chromatograms were provided to confirm this LOQ.

3. Residues of ethoprop and its metabolites of concern (as identified by the HED Metabolism Committee) are not expected to exceed 0.08 ppm in/on hops. This value is based on the sum of the LOQs of 0.02 ppm for each analyte of concern.

4. No livestock feedstuffs are associated with this Section 18 use. PIRAT notes that in light of the HED Metabolism Committee decision, CBRS recommended reinstating livestock feeding studies as a formal requirement for reregistration. However, CBRS was willing to reevaluate these requirements pending receipt of crop field trial data on significant feedstuffs (J. Abbotts, 10/29/96).

5. Acute Dietary Risk. The acute dietary exposure endpoint of concern for ethoprop is cholinesterase inhibition. All population subgroups are of concern. The calculated Margin Of Exposure (MOE) values for high end exposure are summarized below:

U.S. Population (48 states)	14
Infants (<1 year old)	6
Children (1-6 years old)	6
Females (13+ years old)	25
Males (13+ years old)	21

Generally for acute dietary risk estimates, MOEs of less than 100 are of concern to HED.

6. Chronic Dietary Risk. Percent crop treated data were supplied by BEAD and were incorporated in the chronic DRES analysis. The calculated Anticipated Residue Contribution (ARC) for various population subgroups is equivalent to the following percentages of the RfD:

U.S. Population (48 states)	24%
Nursing Infants	**36%**
Non-Nursing Infants (<1 year old)	**88%**
Children (1-6 years old)	**59%**
Children (7-12 years old)	**37%**
Southern Region	25%
Western Region	28%
Hispanics	32%
Non-Hispanic Others	32%

The subgroups listed above are: (1) the U.S. population (48 states); (2) those for infants and children; and, (3) the

other subgroups for which the percentage of the RfD occupied is greater than that occupied by the subgroup U.S. population (48 states).

7. Cancer Risk. A cancer risk assessment was not conducted because ethoprop has not yet been classified as to its carcinogenic potential.

8. International Harmonization. There are no CODEX, Canadian, or Mexican international residue limits (IRLs) for residues of ethoprop in/on hops.

Exposure from Water

EFED in a previous review of a Section 18 exemption for use of ethoprop on hops in Oregon concluded that the use will not likely result in ground or surface water contamination (D.Spatz, 2/27/96). EFED studies indicate that ethoprop is mobile and can be expected to leach. The ethoprop metabolite O-ethyl-S-propylphosphorothioate is highly mobile in some soils.

There is no established Maximum Concentration Level (MCL) for residues of ethoprop in drinking water. No health advisory levels for ethoprop in drinking water have been established. According to EPA's "Pesticides in Groundwater Database" (EPA 734-12-92-001, Sept 1992), no ground water detections have been reported with over 1350 wells sampled from 1987 to 1992.

HED does not have available data to perform a quantitative drinking water risk assessment for ethoprop at this time. Although the lack of detectable residues found in the available groundwater monitoring data suggest that water contamination due to ethoprop use may be unlikely, it has not been determined whether these data are adequately representative of sites at which ethoprop would be likely to be found. Since ethoprop data indicate the potential for soil mobility, leaching, and slow degradation, water risks will be assumed to account for 10% of the total allowable chronic and acute risk until further data are provided. Based on analysis of water monitoring data for a large number of pesticides with varying toxicities, soil mobility characteristics, environmental stabilities, physical/chemical properties, and toxicities, the assumption of 10% of the total chronic and acute risk allocated to drinking water is considered conservative and protective of the public health.

Non-occupational Exposure

Ethoprop is registered for use on golf course turf. However, at this time the Agency has insufficient information to assess the potential risks from such exposure. Short- and intermediate-term occupational exposure toxicology endpoints have been identified under Hazard Assessment 1(a). These endpoints could be used to

assess non-occupational hazards from similar routes and durations of exposure. However, because no data are available to assess non-occupational exposure for ethoprop, a risk assessment cannot be conducted.

Cumulative Effects

The Agency has not made a determination whether ethoprop and other pesticides have a common mode of toxicity and require cumulative risk assessment. For purposes of this Section 18 exemption, PIRAT has considered only effects from ethoprop. If required, cumulative effects will be assessed as part of Reregistration and tolerance reassessment and when methodologies for determining common mode of toxicity and for performing cumulative risk assessment are finalized.

Determination of Safety for Infants and Children

The pre- and post-natal toxicology data base for ethoprop is complete with respect to current toxicological data requirements. The studies considered for assessing pre-natal toxicity are the rat and rabbit developmental studies; post-natal toxicity was assessed by considering the 2-generation rat reproduction study. The rat and rabbit developmental studies do not demonstrate any special pre-natal sensitivity for infants and children. This conclusion is based on the fact that the developmental NOEL in the rat is 18 mg/kg/day (HDT), whereas the maternal NOEL and LOEL is 2 and 9 mg/kg/day, respectively. This demonstrates that there is no developmental toxicity **even** in the presence of maternal effects. In the rabbit developmental study, the highest dose tested (2.5 mg/kg/day) was the NOEL for both the developmental and maternal aspects of the study. Although maternal effects were not produced in this study, the RfD Committee determined that slightly higher doses resulted in mortality in rabbits.

The results of the 2-generation rat reproduction study demonstrated that both pup and adult systemic NOEL and LOEL occur at the same doses (2.3 and 13 mg/kg/day, respectively). The pup systemic toxicity was decreased survival (i.e., death) and decreased body weight, whereas the parental systemic effects were decreased body weight and neurotoxicity. However, the parental NOEL of 0.08 mg/kg/day for ChE inhibition occurs at doses below the pup and parental systemic NOEL and indicates that an additional uncertainty factor may not be needed.

SUPPLEMENTAL INFORMATION

Occupational Exposure

Table 1. Occupational Exposure Assumptions	
PARAMETER	**ASSUMPTION**
Pesticide Handlers Exposure Database (PHED), Version 1.1, Unit of Exposure Values from runs dated 7/96 - LIQ.OPN.MLOD and GBM.OPN.APPL	Mixer/Loader (all liquids, open pour, double layer clothing plus gloves: Dermal = 17.4874 µg/lb ai handled, Inhalation (corrected for OV respirator) = 0.1208 µg/lb ai handled
	Applicator - Ground (liquid, open cab, double layer clothing plus gloves): Dermal = 11.2678 µg/lb ai applied, Inhalation (corrected for OV respirator) = 0.07397 µg/lb ai applied
Percent Absorption	Dermal: NA (dermal toxicity study) Inhalation: 100% (default value)
Application Type	Groundboom
Minimum Finish Spray	Ground: 20 gal/A
Maximum Application Rate	3.0 lb ai/A
Maximum Applications Per Year	1
Duration of Occupational Exposure	Intermediate-term (one week to several months)
Acres Treated/Day (Y. NG,BEAD)	Ground: 73 acres
Average Farm Size (1992 Ag Census)	Based on Polk County, OR 266 acres
Worker Weight	70 kg (based on Tox endpoint)
Number of Farms Treated by PCO (Professional Chemical Operator)	Ground: 2

Table 2. Occupational Exposure and Risk Assessment[a]					
Worker	Average Daily Dermal Dose[b] (ug/kg/day)	Average Daily Inhalation Dose[c] (ug/kg/day)	Short- & Intermediate -Term Dermal MOE[d]	Short- & Intermediate -Term Inhalation MOE[e]	Total MOE[f]
Ground Mixer/Loader	54.71	0.38	2	66	2
Ground Applicator-groundboom	35.25	0.23	3	110	3

[a] MOEs are expressed to two significant figures.

[b] Average Daily Dermal Dose (ADD) = PHED unit exposure x application rate x acres treated/day ÷ kg body weight.

[c] Average Daily Inhalation Dose (ADD) = PHED unit exposure x application rate x acres treated/day ÷ kg body weight.

[d] Short- & Intermediate-Term Dermal Occupational Exposure MOE = NOEL/ADD (where NOEL = 0.1 mg/kg/day).

[e] Short- & Intermediate-Term Inhalation Occupational Exposure MOE = NOEL/ADD (where NOEL = 0.025 mg/kg/day).

[f] Because dermal and inhalation toxicological endpoints are the same (plasma cholinesterase inhibition) these individual MOEs can be added as follows: Total MOE $= \frac{1}{\frac{1}{\text{MOE (dermal)}} + \frac{1}{\text{MOE (inhal.)}}}$

Dietary Exposure

Table 3. Residue Consideration Summary Table		
PARAMETER	PROPOSED USE	RESIDUE DATA
CHEMICAL	Ethoprop	Ethoprop
FORMULATION	Mocap EC (EPA Reg. No. 264-458)	Mocap EC
CROP	Hops	Hops, 1994 trials: WA(1), OR(1)
TYPE APPLICATION	Ground - broadcast or banded	Ground
# APPLICATIONS	1	1
TIMING/PHI	For baby hops, apply post-plant, pre-emergence (pre-E); For mature hops, apply pre-E. PHI = 120 days.	PHI = 138 or 145 days
RATE/APPLICATION	0.5 gal. (3 lbs ai/A	0.5 gal. (3 lbs ai/A

Table 3. Residue Consideration Summary Table		
PARAMETER	**PROPOSED USE**	**RESIDUE DATA**
RATE/YEAR or SEASON	0.5 gal. (3 lbs ai)/A	0.5 gal. (3 lbs ai)/A
MAXIMUM RESIDUE	N/A (= not applicable)	Hops (dry cones): <0.02 ppm each of ethoprop or ethoprop Metabolite IV
RESTRICTIONS	◆ Livestock may not be grazed in treated areas, and hop waste from the treated crop may not be used for food or feed. ◆ Applications by air or by chemigation are not permitted. ◆ Do not apply within 140 ft of inland freshwater habitats.	
RESIDUE DATA SOURCE	N/A	Data provided with this Section 18 package: IR-4 Analytical Summary Report, PR# 02734, "Magnitude of Residues of Ethoprop and its Metabolite M1 (aka Metabolite IV) on Hops".
PERFORMING LAB	N/A	Food and Environmental Quality Laboratory, Washington State University, Richland.

Additional Information

Results from the ethoprop metabolism studies were summarized for the HED Metabolism Committee meeting of 10/17/96 (J. Abbots, 10/1/96, "Issues to be presented at the 10/7/96 meeting of the HED Metabolism Committee"). Plant metabolism data were summarized for corn, potatoes, and cabbage. Data on metabolism in rotational crops were also been summarized and accepted (CBRS 11533, 12610, 12797, 6/22/94, R.B. Perfetti).

Table 4. Ethoprop and metabolites of concern in corn.

Residue	Forage:		Fodder:	
	% TRR	ppm	% TRR	ppm
Ethoprop	7.8	0.17	0.5	0.01
Metabolite II. O-ethyl-S-methyl-S-propylphosphoro-dithioate	0.3	0.01	1.1	0.02
Metabolite III. O-ethyl-O-methyl-S-propylphosphoro-thioate	0.8	0.02	1.8	0.03
Metabolite IV. O-ethyl-S-propylphosphorothioate	2.3	0.05	0.8	0.01
Total Residues of Concern	11.2	0.25	4.2	0.07
Ratio of Total Residues of Concern to Ethoprop Residues	1.4X		8.4X	

Table 5. Ethoprop metabolites in cabbage.

Residue	Cabbage leaves		Cabbage heads	
	% TRR	ppm	% TRR	ppm
Ethoprop	4.0	0.62	0.8	0.02
II. O-ethyl-S-methyl-S-propylphosphorodithioate	0.6	0.09	0.4	0.01
III. O-ethyl-O-methyl-S-propylphosphorothioate	1.7	0.26	1.7	0.05
IV. O-ethyl-S-propylphosphorothioate	2.5	0.39	0.3	0.01
Total Residues of Concern	8.8	1.36	3.2	0.09
Ratio of Total Residues of Concern to Ethoprop Residues	2.2X		4.0X	

Table notes: Data are summarized from, CBRS 7933 (corn), CBRS 7407 (cabbage), 1/24/92, C.L. Olinger. See Table 9 for structures.

Table 6. Summary of characterized/identified residues in **radish roots** rotated from aged sandy loam soil treated with [^{14}C]ethoprop at 1x the maximum seasonal rate for annual crops.

Metabolite	31-DAT [a]		123-DAT	
	% TRR	ppm	% TRR	ppm
I. Ethoprop	7.6	0.33	5.1	0.07
II. O-Ethyl-S-methyl-S-propylphosphorodithioate	0.3	0.01	--	--
III. O-Ethyl-O-methyl-S-propylphosphorothioate	0.2	0.01	--	--
IV. O-Ethyl-S-propylphosphorothioate	21.0	0.91	--	--
Total Residues of Concern	29.1	1.26	--	--
Ratio of Total Residues of Concern to Ethoprop Residues	3.8X		--	

[a]Data are from a composite sample of radish tops and roots.

Table 7. Summary of characterized/identified residues in/on **spinach** rotated from aged sandy loam soil treated with [^{14}C]ethoprop at 1x the maximum seasonal rate for annual crops.

Metabolite	31-DAT	
	% TRR	ppm
I. Ethoprop	0.4	0.08
II. O-Ethyl-S-methyl-S-propylphosphorodithioate	1.8	0.34
III. O-Ethyl-O-methyl-S-propylphosphorothioate	--	--
IV. O-Ethyl-S-propylphosphorothioate	--	--
Total Residues of Concern	2.2	0.42
Ratio of Total Residues of Concern to Ethoprop Residues	5.5X	

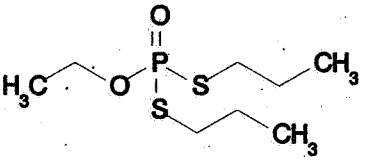
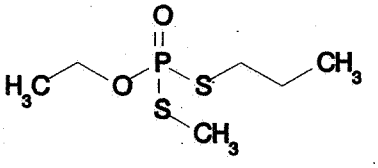
Notes for Tables 7 and 8: DAT = days after treatment for planting. See Table 6 for structures.

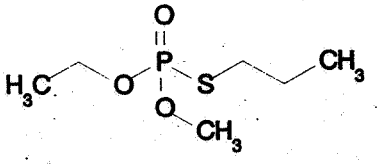
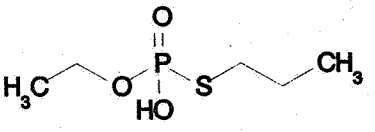
Table 8. Summary of characterized/identified residues in/on **wheat** rotated from aged sandy loam soil treated with [^{14}C]ethoprop at 1x the maximum seasonal rate for annual crops.

Metabolite	31-DAT		123-DAT	
	% TRR	ppm	% TRR	ppm
Wheat forage				
I. Ethoprop	6.5	1.82	4.9	0.25
II. O-Ethyl-S-methyl-S-propylphosphorodithioate	0.8	0.22	--	--
III. O-Ethyl-O-methyl-S-propylphosphorothioate	0.3	0.08	--	--
IV. O-Ethyl-S-propylphosphorothioate	--	--	10.5	0.53
Total Residues of Concern	7.6	2.12	15.4	0.78
Ratio of Total Residues of Concern to Ethoprop Residues	1.2X		3.1X	
Wheat straw				
I. Ethoprop	1.3	0.62	0.3	0.13
II. O-Ethyl-S-methyl-S-propylphosphorodithioate	--	--	0.05	0.02
III. O-Ethyl-O-methyl-S-propylphosphorothioate	0.6	0.27	0.4	0.16
IV. O-Ethyl-S-propylphosphorothioate	--	--	0.2	0.09
Total Residues of Concern	1.9	0.89	0.95	0.40
Ratio of Total Residues of Concern to Ethoprop Residues	1.5X		3.2X	

Table Notes: DAT = days after treatment for planting. See Table 9 for structures.

Table 9. Ethoprop and metabolites identified in primary and rotational crops.

Code	Chemical Name; Common Name	Structure
I.	O-ethyl-S,S-dipropylphosphorodithioate; ethoprop	
II.	O-ethyl-S-methyl-S-propylphosphorodithioate	

Code	Chemical Name; Common Name	Structure
I.	O-ethyl-S,S-dipropylphosphorodithioate; ethoprop	
III.	O-ethyl-O-methyl-S-propylphosphorothioate	
IV.	O-ethyl-S-propylphosphorothioate	

Attachments: DRES Analyses (Chronic, 11/13/96; Acute, 11/13/96)

cc with Attachments: M. Nelson, PIRAT, D. Davis, DRES (B. Steinwand)

cc without Attachments: S. Knizner, W. Dykstra, C. Lewis, OREB (Chem File), Caswell File, TOX (K.Farwell) , CBTS (Sect 18), RCAB (P.Deschamp).

RDI:PIRAT:11/19/96 **[mjn file: ETHO-HOP.S18]**

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Ethoprop (Ethoprophos) Caswell #434C CAS No. 13194-48-4 A.I. CODE: 041101 CFR No. 180.262	1yr & 5mn feed- dog NOEL= 0.0100 mg/kg 0.00 ppm LEL= 0.0250 mg/kg 0.00 ppm ONCO: Referred to HCPRC	Plasma ChE inhibition.	ADI UF -->100 OPP RfD= 0.000100 EPA RfD= 0.000000	Carcinogenicity- mouse (study maybe upgraded)	HED complete 11/03/86 WHO reviewed 1987 RfD/PR reviewed 05/09/96

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY) CURRENT TMRC*	NEW TMRC**	NEW TMRC AS PERCENT OF RFD	DIFFERENCE AS PERCENT OF RFD	EFFECT OF ANTICIPATED RESIDUES ARC	%RFD
U.S. POPULATION - 48 STATES	0.000073	0.000074	73.666000	0.299000	0.000024	24.33900
U.S. POPULATION - SPRING SEASON	0.000071	0.000072	71.528000	0.329000	0.000023	23.38900
U.S. POPULATION - SUMMER SEASON	0.000075	0.000075	75.376000	0.321000	0.000025	24.77300
U.S. POPULATION - FALL SEASON	0.000074	0.000074	74.160000	0.280000	0.000024	24.47400
U.S. POPULATION - WINTER SEASON	0.000073	0.000074	73.613000	0.267000	0.000025	24.71300
NORTHEAST REGION	0.000067	0.000067	67.428000	0.420000	0.000022	21.82300
NORTH CENTRAL REGION	0.000076	0.000076	75.824000	0.275000	0.000023	22.94500
SOUTHERN REGION	0.000077	0.000078	77.562000	0.192000	0.000025	25.27500
WESTERN REGION	0.000072	0.000072	72.168000	0.358000	0.000028	28.15400
HISPANICS	0.000076	0.000077	76.686000	0.246000	0.000032	32.02900
NON-HISPANIC WHITES	0.000073	0.000073	73.136000	0.329000	0.000024	23.60400
NON-HISPANIC BLACKS	0.000076	0.000076	75.652000	0.138000	0.000025	24.57400
NON-HISPANIC OTHERS	0.000074	0.000074	73.820000	0.246000	0.000032	32.24400
NURSING INFANTS (< 1 YEAR OLD)	0.000060	0.000060	60.051000	0.000000	0.000036	36.39800
NON-NURSING INFANTS (< 1 YEAR OLD)	0.000161	0.000161	161.251000	0.000000	0.000088	88.20000
FEMALES (13+ YEARS, PREGNANT)	0.000049	0.000049	49.202000	0.036000	0.000016	16.11900
FEMALES 13+ YEARS, NURSING	0.000054	0.000055	54.541000	0.162000	0.000017	17.19400
CHILDREN (1-6 YEARS OLD)	0.000162	0.000162	162.465000	0.002000	0.000059	58.57700
CHILDREN (7-12 YEARS OLD)	0.000114	0.000114	114.444000	0.000000	0.000037	36.84900
MALES (13-19 YEARS OLD)	0.000076	0.000076	76.240000	0.148000	0.000023	22.90600
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.000065	0.000065	65.485000	0.048000	0.000019	19.42600
MALES (20 YEARS AND OLDER)	0.000056	0.000057	56.704000	0.847000	0.000018	17.85600
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS)	0.000051	0.000051	50.672000	0.161000	0.000016	16.06400

*Current TMRC does not include new or pending tolerances.
**New TMRC includes new, pending, and published tolerances.

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ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 434C DATE: 11/13/96 PAGE: 1

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Ethoprop (Ethoprophos) Caswell #434C CAS No. 13194-48-4 A.I. CODE: 041101 CFR No. 180.262	1yr & 5mn feed- dog NOEL= 0.0100 mg/kg 0.00 ppm LEL= 0.0250 mg/kg 0.00 ppm ONCO: Referred to HCPRC	Plasma ChE inhibition.	ADI UF -->100 OPP RfD= 0.000100 EPA RfD= 0.000000	Carcinogenicity- mouse (study maybe upgraded)	HED complete 11/03/86 WHO reviewed 1987 RfD/PR reviewed 05/09/96

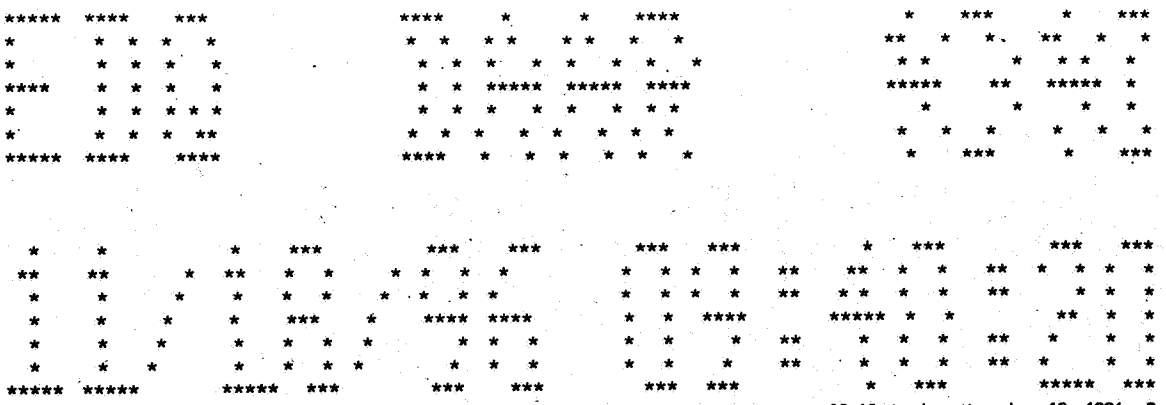
FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
06002AA	BANANAS-UNSPEC	22 COOKED-FRESH-BAKED	0F0959	P 0.080000	0.080000		100.00	0.020000
06002AB	BANANAS-FRESH	10 RAW-FRESH OR NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06002AB	BANANAS-FRESH	21 COOKED-NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06002AB	BANANAS-FRESH	31 COOKED-FRESH OR CANNED	0F0959	P 0.080000	0.080000		100.00	0.020000
06002DA	BANANAS-DRIED	10 RAW-FRESH OR NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06002DA	BANANAS-DRIED	21 COOKED-NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06013AA	PINEAPPLE-PULP	10 RAW-FRESH OR NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06013AA	PINEAPPLE-PULP	21 COOKED-NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06013AA	PINEAPPLE-PULP	31 COOKED-FRESH OR CANNED	0F0959	P 0.080000	0.080000		100.00	0.020000
06013DA	PINEAPPLE-DRIED	10 RAW-FRESH OR NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06013JA	PINEAPPLE-JUICE	10 RAW-FRESH OR NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06013JA	PINEAPPLE-JUICE	15 RAW-FRESH OR CANNED	0F0959	P 0.080000	0.080000		100.00	0.020000
06013JA	PINEAPPLE-JUICE	21 COOKED-NFS	0F0959	P 0.080000	0.080000		100.00	0.080000
06013JA	PINEAPPLE-JUICE	31 COOKED-FRESH OR CANNED	0F0959	P 0.080000	0.080000		100.00	0.020000
06016AA	PLANTAINS	21 COOKED-NFS	0F0959	P 0.080000	0.080000		100.00	0.020000
06016AA	PLANTAINS	23 COOKED-FRESH-BOILED	0F0959	P 0.080000	0.080000		100.00	0.080000
06016AA	PLANTAINS	25 COOKED-FRESH-FRIED	SECT18	N 0.080000	0.080000		1.00	0.000200
08020AA	HOPS	21 COOKED-NFS	5F1568	P 0.080000	0.080000		1.00	0.000200
10010AA	CUCUMBERS	10 RAW-FRESH OR NFS	5F1568	P 0.080000	0.080000		1.00	0.000800
10010AA	CUCUMBERS	11 RAW-FRESH-PICKLED,CORNED,OR CURED	5F1568	P 0.080000	0.080000		1.00	0.000200
10010AA	CUCUMBERS	21 COOKED-NFS	2F1250	P 0.080000	0.080000		1.00	0.000200
13007AA	CABBAGE	10 RAW-FRESH OR NFS	2F1250	P 0.080000	0.080000		1.00	0.000200
13007AA	CABBAGE	11 RAW-FRESH-PICKLED,CORNED,OR CURED	2F1250	P 0.080000	0.080000		100.00	0.020000
13007AA	CABBAGE	21 COOKED-NFS	2F1250	P 0.080000	0.080000		100.00	0.020000
13010AA	CABBAGE-CHINESE	10 RAW-FRESH OR NFS	2F1250	P 0.080000	0.080000		7.00	0.001400
13010AA	CABBAGE-CHINESE	21 COOKED-NFS	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AA	POTATO(WH)-WHOLE	10 RAW-FRESH OR NFS	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AA	POTATO(WH)-WHOLE	21 COOKED-NFS	5F1568	P 0.080000	0.080000		7.00	0.005600
14013AA	POTATO(WH)-WHOLE	22 COOKED-FRESH-BAKED	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AB	POTATO(WH)-UNSPE	22 COOKED-FRESH-BAKED	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AC	POTATO(WH)-PULP	21 COOKED-NFS	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AC	POTATO(WH)-PULP	22 COOKED-FRESH-BAKED	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AC	POTATO(WH)-PULP	23 COOKED-FRESH-BOILED	5F1568	P 0.080000	0.080000		7.00	0.001400
14013AC	POTATO(WH)-PULP	25 COOKED-FRESH-FRIED	5F1568	P 0.080000	0.080000		7.00	0.001400
14013DA	POTATO(WH)-DRY	10 RAW-FRESH OR NFS	5F1568	P 0.080000	0.080000		7.00	0.005600
14013DA	POTATO(WH)-DRY	31 COOKED-FRESH OR CANNED	5F1568	P 0.080000	0.080000		15.00	0.003000
14013HA	POTATO(WH)-PEEL	22 COOKED-FRESH-BAKED	0F0872	P 0.080000	0.080000		15.00	0.003000
14018AA	SWEETPOTATOES	21 COOKED-NFS	0F0872	P 0.080000	0.080000		15.00	0.003000
14018AA	SWEETPOTATOES	31 COOKED-FRESH OR CANNED	0F0872	P 0.080000	0.080000			
14018AA	SWEETPOTATOES	51 COOKED-CANNED						

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Ethoprop (Ethoprophos) Caswell #434C CAS No. 13194-48-4 A.I. CODE: 041101 CFR No. 180.262	1yr & 5mn feed- dog NOEL= 0.0100 mg/kg 0.00 ppm LEL= 0.0250 mg/kg 0.00 ppm ONCO: Referred to HCPRC	Plasma ChE inhibition.	ADI UF -->100 OPP RfD= 0.000100 EPA RfD= 0.000000	Carcinogenicity- mouse (study maybe upgraded)	HED complete 11/03/86 WHO reviewed 1987 RfD/PR reviewed 05/09/96

FOOD CODE	FOOD	FOOD FORM	PET.#		TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
15001AC	BEANS-DRY-LIMA	21 COOKED-NFS	5F1568	P	0.080000	0.080000		100.00	0.020000
15002AA	BEANS-SUCC-LIMA	10 RAW-FRESH OR NFS	5F1568	P	0.080000	0.080000		4.00	0.003200
15002AA	BEANS-SUCC-LIMA	21 COOKED-NFS	5F1568	P	0.080000	0.080000		4.00	0.000800
15003AA	BEANS-SUCC-GREEN	21 COOKED-NFS	5F1568	P	0.080000	0.080000		4.00	0.000800
15005AA	CORN,SWEET	10 RAW-FRESH OR NFS	9F0750	P	0.080000	0.080000		2.00	0.001600
15005AA	CORN,SWEET	21 COOKED-NFS	9F0750	P	0.080000	0.080000		2.00	0.000400
15005AA	CORN,SWEET	31 COOKED-FRESH OR CANNED	9F0750	P	0.080000	0.080000		2.00	0.000400
15006AA	PEANUTS-WHOLE	10 RAW-FRESH OR NFS	0F0872	P	0.080000	0.080000		2.00	0.001600
15006AA	PEANUTS-WHOLE	21 COOKED-NFS	0F0872	P	0.080000	0.080000		2.00	0.000400
15006AA	PEANUTS-WHOLE	22 COOKED-FRESH-BAKED	0F0872	P	0.080000	0.080000		2.00	0.000400
15015AA	OKRA	21 COOKED-NFS	3E2851	P	0.080000	0.080000		100.00	0.020000
15015AA	OKRA	25 COOKED-FRESH-FRIED	3E2851	P	0.080000	0.080000		100.00	0.020000
15029AA	SOYBEAN-SPROUTED	00 NOT SPECIFIED (NO CONSUMPTION)	0F0872	P	0.080000	0.080000		100.00	0.080000
16003AA	MUSHROOMS	10 RAW-FRESH OR NFS	0E2341	P	0.080000	0.080000		100.00	0.020000
16003AA	MUSHROOMS	21 COOKED-NFS	0E2341	P	0.080000	0.080000		100.00	0.020000
16003AA	MUSHROOMS	31 COOKED-FRESH OR CANNED	0E2341	P	0.080000	0.080000		100.00	0.020000
16003AA	MUSHROOMS	53 COOKED-CANNED-BOILED	0E2341	P	0.080000	0.080000		100.00	0.020000
24002EA	CORN,GRAIN-ENDO	10 RAW-FRESH OR NFS	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002EA	CORN,GRAIN-ENDO	21 COOKED-NFS	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002EA	CORN,GRAIN-ENDO	22 COOKED-FRESH-BAKED	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002EA	CORN,GRAIN-ENDO	23 COOKED-FRESH-BOILED	NOPET#	P	0.080000	0.080000		100.00	0.080000
24002HA	CORN,GRAIN-BRAN	00 NOT SPECIFIED (NO CONSUMPTION)	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002SA	CORN SUGAR	10 RAW-FRESH OR NFS	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002SA	CORN SUGAR	21 COOKED-NFS	NOPET#	P	0.080000	0.080000		100.00	0.020000
24002SA	CORN SUGAR	22 COOKED-FRESH-BAKED	NOPET#	P	0.080000	0.080000		5.00	0.001000
25003SA	CANE SUGAR	10 RAW-FRESH OR NFS	2F1204	P	0.080000	0.080000		5.00	0.001000
25003SA	CANE SUGAR	21 COOKED-NFS	2F1204	P	0.080000	0.080000		5.00	0.001000
25003SA	CANE SUGAR	22 COOKED-FRESH-BAKED	2F1204	P	0.080000	0.080000		5.00	0.001000
25003SA	CANE SUGAR	31 COOKED-FRESH OR CANNED	2F1204	P	0.080000	0.080000		100.00	0.080000
25003SB	SUGAR-MOLASSES	10 RAW-FRESH OR NFS	2F1204	P	0.080000	0.080000		100.00	0.020000
25003SB	SUGAR-MOLASSES	21 COOKED-NFS	2F1204	P	0.080000	0.080000		100.00	0.020000
25003SB	SUGAR-MOLASSES	22 COOKED-FRESH-BAKED	2F1204	P	0.080000	0.080000		100.00	0.020000
25003SB	SUGAR-MOLASSES	31 COOKED-FRESH OR CANNED	NOPET#	P	0.080000	0.080000		100.00	0.020000
27002OA	CORN,GRAIN-OIL	18 PROCESSED OIL	0F0872	P	0.080000	0.080000		100.00	0.020000
27007OA	PEANUTS-OIL	18 PROCESSED OIL	0F0872	P	0.080000	0.080000		100.00	0.020000
27010OA	SOYBEANS-OIL	18 PROCESSED OIL	0F0872	P	0.080000	0.080000		100.00	0.020000
28023AA	SOYBEANS-UNSPEC	21 COOKED-NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023AB	SOYBEANS-DRY	10 RAW-FRESH OR NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023AB	SOYBEANS-DRY	21 COOKED-NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023AB	SOYBEANS-DRY	23 COOKED-FRESH-BOILED							

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Ethoprop (Ethoprophos) Caswell #434C CAS No. 13194-48-4 A.I. CODE: 041101 CFR No. 180.262	1yr & 5mn feed- dog NOEL= 0.0100 mg/kg 0.00 ppm LEL= 0.0250 mg/kg 0.00 ppm ONCO; Referred to HCPRC	Plasma ChE inhibition.	ADI UF -->100 OPP RfD= 0.000100 EPA RfD= 0.000000	Carcinogenicity- mouse (study maybe upgraded)	HED complete 11/03/86 WHO reviewed 1987 RfD/PR reviewed 05/09/96

FOOD CODE	FOOD	FOOD FORM	PET.#		TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
28023AB	SOYBEANS-DRY	25 COOKED-FRESH-FRIED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023AB	SOYBEANS-DRY	31 COOKED-FRESH OR CANNED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WA	SOY-FL, FULL FAT	21 COOKED-NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WA	SOY-FL, FULL FAT	22 COOKED-FRESH-BAKED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WA	SOY-FL, FULL FAT	31 COOKED-FRESH OR CANNED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WB	SOY-FL, LOW FAT	21 COOKED-NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WC	SOY-FL,DEFAT	10 RAW-FRESH OR NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WC	SOY-FL,DEFAT	21 COOKED-NFS	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WC	SOY-FL,DEFAT	22 COOKED-FRESH-BAKED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WC	SOY-FL,DEFAT	51 COOKED-CANNED	0F0872	P	0.080000	0.080000		100.00	0.020000
28023WC	SOY-FL,DEFAT	53 COOKED-CANNED-BOILED	0F0872	P	0.080000	0.080000		100.00	0.020000



DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 09:40 Monday, November 18, 1996 2

NAME: ETHOPROP STUDY RDV NOEL SF STUDY TYPE SPECIES EFF. LEV. CORE GRADE DOC. NO.
CASWELL NO: 434C CFR NO: CFR180.262 A 00000.0001 000000.300 000200 Subchronic Rat Systemic Blank 0000001795
CAS NO: 13194-48-4 SHAUGHNESSY NO: 041101 B 00000.0800 000160.000 000200 Terata Rat Systemic Supplmentl 0000001796
STATUS CODES: C 00000.0125 000100.000 000200 Subchronic Dog Systemic Minimum 0000001795
*RDV INFO: The LD value used in this analysis is 0.001 MG/KG of BODY WEIGHT/DAY *
FILE INFO: No Tolerance Data Are Used--Without User Modifications. AR DATA: No User Modifications

U.S. POP.--48 STATES

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL: PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY: MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.60	0.000298	29.83

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	.5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	54	23	11	6	3	2	1	1	0	0	0	0	0	0	0	0

MOE Calculations (U.S. Pop)
High End Exposure = RDV x X = 0.001 x 1.8 = 0.0018 mg/kg/day
MOE = NOEL/exposure = 0.025 mg/kg/day ÷ 0.0018 mg/kg/day = 14

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INFANTS(<1 YEAR)

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL: PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY: MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	91.66	0.000613	61.28

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	79	50	35	26	18	13	9	6	5	4	1	0	0	0	0	0

MOE Calculations (Infants <1)

High End Exposure = RDV x X = 0.001 x 4 = 0.004 mg/kg/day
MOE = NOEL/exposure = 0.025 mg/kg/day ÷ 0.004 mg/kg/day = 6

CHILDREN(1-6 YRS)

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL: PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY: MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.91	0.000653	65.33

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	86	64	44	29	19	12	7	5	3	2	1	0	0	0	0	0

MOE Calculations (Children 1-6)

High End Exposure = RDV x X = 0.001 x 4 = 0.004 mg/kg/day
MOE = NOEL/exposure = 0.025 mg/kg/day ÷ 0.004 mg/kg/day = 6

FEMALES(13+ YRS)

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL: PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY: MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.51	0.000214	21.40

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	43	13	4	1	0	0	0	0	0	0	0	0	0	0	0	0

MOE Calculations (Females 13+)

High End Exposure = RDV x X = 0.001 x 1 = 0.001 mg/kg/day
MOE = NOEL/exposure = 0.025 mg/kg/day ÷ 0.001 mg/kg/day = 25

MALES(13+ YRS)

ESTIMATES BASED ON	ESTIMATED % OF POTENTIAL PERSON DAYS THAT ARE USER-DAYS	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.87	0.000244	24.44

ESTIMATED % OF POPULATION USER-DAYS WITH RESIDUE CONTRIBUTION EXCEEDING X TIMES THE RDV, FOR X=

	0	.2	.4	.6	.8	1	1.2	1.4	1.6	1.8	2	3	4	5	10	15	20
TOLERANCES:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTICIPATED RESIDUES:	100	51	17	5	2	1	0	0	0	0	0	0	0	0	0	0	0

MOE Calculations (Males 13+)

High End Exposure = RDV x X = 0.001 x 1.2 = 0.0012 mg/kg/day

MOE = NOEL/exposure = 0.025 mg/kg/day ÷ 0.0012 mg/kg/day = 21

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11/18/96 Ethoprop Acute Run
ID#97OR0002

Acute File

434C	06002AA22	0.0800	BANANAS-UNSPEC
434C	06002AB10	0.0800	BANANAS-FRESH
434C	06002AB21	0.0800	BANANAS-FRESH
434C	06002AB31	0.0800	BANANAS-FRESH
434C	06002DA10	0.0800	BANANAS-DRIED
434C	06002DA21	0.0800	BANANAS-DRIED
434C	06013AA10	0.0800	PINEAPPLE-PULP
434C	06013AA21	0.0800	PINEAPPLE-PULP
434C	06013AA31	0.0800	PINEAPPLE-PULP
434C	06013DA10	0.0800	PINEAPPLE-DRIED
434C	06013JA10	0.0800	PINEAPPLE-JUICE
434C	06013JA15	0.0800	PINEAPPLE-JUICE
434C	06013JA21	0.0800	PINEAPPLE-JUICE
434C	06013JA31	0.0800	PINEAPPLE-JUICE
434C	06016AA21	0.0800	PLANTAINS
434C	06016AA23	0.0800	PLANTAINS
434C	06016AA25	0.0800	PLANTAINS
434C	08020AA21	0.0800	HOPS
434C	10010AA10	0.0800	CUCUMBERS
434C	10010AA11	0.0800	CUCUMBERS
434C	10010AA21	0.0800	CUCUMBERS
434C	13007AA10	0.0800	CABBAGE
434C	13007AA11	0.0800	CABBAGE
434C	13007AA21	0.0800	CABBAGE
434C	13010AA10	0.0800	CABBAGE-CHINESE
434C	13010AA21	0.0800	CABBAGE-CHINESE
434C	14013AA10	0.0800	POTATO(WH)-WHOLE
434C	14013AA21	0.0800	POTATO(WH)-WHOLE
434C	14013AA22	0.0800	POTATO(WH)-WHOLE
434C	14013AB22	0.0800	POTATO(WH)-UNSPE
434C	14013AC21	0.0800	POTATO(WH)-PULP
434C	14013AC22	0.0800	POTATO(WH)-PULP
434C	14013AC23	0.0800	POTATO(WH)-PULP
434C	14013AC25	0.0800	POTATO(WH)-PULP
434C	14013DA10	0.0800	POTATO(WH)-DRY
434C	14013DA31	0.0800	POTATO(WH)-DRY
434C	14013HA22	0.0800	POTATO(WH)-PEEL
434C	14018AA21	0.0800	SWEETPOTATOES
434C	14018AA31	0.0800	SWEETPOTATOES
434C	14018AA51	0.0800	SWEETPOTATOES
434C	15001AC21	0.0800	BEANS-DRY-LIMA
434C	15002AA10	0.0800	BEANS-SUCC-LIMA
434C	15002AA21	0.0800	BEANS-SUCC-LIMA
434C	15003AA21	0.0800	BEANS-SUCC-GREEN
434C	15005AA10	0.0800	CORN,SWEET
434C	15005AA21	0.0800	CORN,SWEET
434C	15005AA31	0.0800	CORN,SWEET

434C	15006AA10	0.0800	PEANUTS-WHOLE
434C	15006AA21	0.0800	PEANUTS-WHOLE
434C	15006AA22	0.0800	PEANUTS-WHOLE
434C	15015AA21	0.0800	OKRA
434C	15015AA25	0.0800	OKRA
434C	15029AA00	0.0800	SOYBEAN-SPROUTED
434C	16003AA10	0.0800	MUSHROOMS
434C	16003AA21	0.0800	MUSHROOMS
434C	16003AA31	0.0800	MUSHROOMS
434C	16003AA53	0.0800	MUSHROOMS
434C	24002EA10	0.0800	CORN,GRAIN-ENDO
434C	24002EA21	0.0800	CORN,GRAIN-ENDO
434C	24002EA22	0.0800	CORN,GRAIN-ENDO
434C	24002EA23	0.0800	CORN,GRAIN-ENDO
434C	24002HA00	0.0800	CORN,GRAIN-BRAN
434C	24002SA10	0.0800	CORN SUGAR
434C	24002SA21	0.0800	CORN SUGAR
434C	24002SA22	0.0800	CORN SUGAR
434C	25003SA10	0.0800	CANE SUGAR
434C	25003SA21	0.0800	CANE SUGAR
434C	25003SA22	0.0800	CANE SUGAR
434C	25003SA31	0.0800	CANE SUGAR
434C	25003SB10	0.0800	SUGAR-MOLASSES
434C	25003SB21	0.0800	SUGAR-MOLASSES
434C	25003SB22	0.0800	SUGAR-MOLASSES
434C	25003SB31	0.0800	SUGAR-MOLASSES
434C	27002OA18	0.0800	CORN,GRAIN-OIL
434C	27007OA18	0.0800	PEANUTS-OIL
434C	27010OA18	0.0800	SOYBEANS-OIL
434C	28023AA21	0.0800	SOYBEANS-UNSPEC
434C	28023AB10	0.0800	SOYBEANS-DRY
434C	28023AB21	0.0800	SOYBEANS-DRY
434C	28023AB23	0.0800	SOYBEANS-DRY
434C	28023AB25	0.0800	SOYBEANS-DRY
434C	28023AB31	0.0800	SOYBEANS-DRY
434C	28023WA21	0.0800	SOY-FL, FULL FAT
434C	28023WA22	0.0800	SOY-FL, FULL FAT
434C	28023WA31	0.0800	SOY-FL, FULL FAT
434C	28023WB21	0.0800	SOY-FL, LOW FAT
434C	28023WC10	0.0800	SOY-FL,DEFAT
434C	28023WC21	0.0800	SOY-FL,DEFAT
434C	28023WC22	0.0800	SOY-FL,DEFAT
434C	28023WC51	0.0800	SOY-FL,DEFAT
434C	28023WC53	0.0800	SOY-FL,DEFAT