UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

**OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES**

MEMORANDUM

DATE: 03/11/2005

SUBJECT: Tau-fluvalinate Acute and Chronic Dietary Exposure Assessments for the Reregistration Eligibility Decision

PC Code: 109302
DP Barcode: D300203

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Executive Summary

Acute and chronic dietary risk assessments were conducted using the Dietary Exposure Evaluation Model (DEEM-FCID™),Version 2.00/2.02, and the Lifeline Model Version 2.0, which use food consumption data from the USDA's Continuing Surveys of Food Intakes by Individuals (CSFII) from 1994-1996 and 1998. The analyses were performed to support the reregistration eligibility decision.

A single tolerance of 0.05 ppm has been established for residues of tau-fluvalinate in honey, resulting from its use in beehives. HED has reassessed this tolerance and determined that it should be reduced to 0.02 ppm, based on available residue data. Tau-fluvalinate is not registered for any other food uses.

Acute Dietary Exposure Results and Characterization

The Tier 1 acute analysis assumed 100% crop treated and reassessed tolerance-level residues of 0.02 ppm in honey. Drinking water was incorporated directly in the dietary assessment using the 1 in 10 year annual peak concentration for surface water generated by the PRZM-EXAMS model.

The resulting acute dietary exposure estimates using the DEEM-FCID model were less than 6% of the aPAD for the U.S. population and all population subgroups. Tau-fluvalinate acute dietary exposure (food + water) at the 95th percentile was estimated at 0.000069 mg/kg/day for the U.S. population (1.4% of the aPAD) and 0.000257 mg/kg/day (5.1% of the aPAD) for the most highly exposed population subgroup (All Infants). Estimated acute exposures at the 95th percentile using the Lifeline model were consistent with the DEEM-FCID results (1.2% of the aPAD for the U.S. population and 3.9% of the aPAD for infants). Nearly all of the estimated acute dietary exposure to tau-fluvalinate is from drinking water. Estimated acute dietary exposure to tau-fluvalinate from honey represents between <0.01% and 0.06% (children, 1-2 yrs. old) of the total estimated exposure.

Chronic Dietary Exposure Results and Characterization

The Tier 1 chronic analysis assumed 100% crop treated and reassessed tolerance-level residues of 0.02 ppm in honey. Drinking water was incorporated directly in the dietary assessment using the 1 in 10 year annual mean concentration for surface water generated by the PRZM-EXAMS model.

The resulting chronic dietary exposure estimates using the DEEM-FCID model were less than 1% of the cPAD for the U.S. population and all population subgroups. Tau-fluvalinate chronic dietary exposure (food + water) was estimated at 0.000014 mg/kg/day for the U.S. population (0.3% of the cPAD) and 0.000045 mg/kg/day (0.9% of the cPAD) for the most highly exposed population subgroup (All Infants). Estimated chronic exposures using the Lifeline model were consistent with the DEEM-FCID results (0.2% of the cPAD for the U.S. population and 0.8% of the cPAD for infants). Nearly all of the estimated chronic dietary exposure to tau-fluvalinate is from drinking water. Estimated chronic dietary exposure to tau-fluvalinate from honey represents <0.01% of the total estimated exposure for the U.S. population and all population subgroups.

I. Introduction

Dietary risk assessment incorporates both exposure and toxicity of a given pesticide. For acute

and chronic assessments, the risk is expressed as a percentage of a maximum acceptable dose (i.e., the dose which HED has concluded will result in no unreasonable adverse health effects). This dose is referred to as the population adjusted dose (PAD). The PAD is equivalent to the Reference Dose (RfD) divided by the special FQPA Safety Factor.

For acute and non-cancer chronic exposures, HED is concerned when estimated dietary risk exceeds 100% of the PAD. References which discuss the acute and chronic risk assessments in more detail are available on the EPA/pesticides web site: "Available Information on Assessing Exposure from Pesticides, A User's Guide," 6/21/2000, web link: http://www.epa.gov/fedrgstr/EPA-PEST/2000/July/Day-12/6061.pdf ; or see SOP 99.6 (8/20/99).

The most recent dietary risk assessment for tau-fluvalinate was conducted by Richard Griffin (01/04/1990) in connection with PP#9F3745 for the use of fluvalinate in beehives. The analysis evaluated chronic exposure only and was based on a reference dose (RfD) of 0.01 mg/kg/day. The analysis included exposure from residues in honey as well as cottonseed, coffee and secondary residues in livestock commodities. Chronic dietary exposure based on these assumptions was estimated to be 1.6% of the RfD for the U.S. population and 7.1% of the RfD for the most highly exposed subgroup, non-nursing infants. Since this analysis was conducted, all food uses of tau-fluvalinate have been cancelled, except the use in beehives.

II. Residue Information

Residues of Concern in Honey: The nature of the residue in honey from the use of tau-fluvalinate in beehives is understood. The risk assessment team has determined that the residue of concern in honey consists of the parent compound, tau-fluvalinate, *per se*.

Residues of Concern in Water: Tau-fluvalinate has low water solubility (0.12 ppm) and is highly immobile; therefore, the potential for significant residues to occur in drinking water is low. The team has determined that the residue of concern in drinking water is tau-fluvalinate, *per se.*

Tolerances: Currently tolerances are expressed in terms of tau-fluvalinate, *per se*. The current tolerance expression is adequate. A single tolerance is established under 40 CFR §180.427(a) for residues of tau-fluvalinate [referred to as fluvalinate], in/on honey at 0.05 ppm. Adequate data are available to reassess the established tolerance for honey at the same level. However, based on the available data, the established tolerance may be reduced from 0.05 ppm to 0.02 ppm.

Residue Data used for Acute and Chronic Assessments:

Food Residues used in the Acute and Chronic Analyses: The Tier 1 acute and chronic analyses assumed 100% crop (beehives) treated and the reassessed tolerance level of 0.02 ppm for honey.

Water Residues Used in the Acute and Chronic Analyses:

The drinking water values used in the dietary risk assessment were provided by the Environmental Fate and Effects Division (EFED) (*Tier II Estimated Environmental Concentration for the Use of Tau-Fluvalinate for Apiary Uses, Carrots for Seed (24-C SLNs), Building Perimeters, Nurseries, Ornamentals, Indoor Landscapes and Honey for the Human Health Drinking Water Risk Assessment*, Mark Corbin, D304067, 02/03/2005). Water residues were incorporated directly in the DEEM-FCID and Lifeline acute and chronic analyses.

The estimated drinking water concentrations from surface water sources were calculated using Tier II PRZM (Pesticide Root Zone Model) and EXAMS (Exposure Analysis Modeling System). Based on the modeling results, the 1 in 10 year annual mean (chronic, non-cancer) concentration in surface water is estimated to be 0.65 ppb. The 1 in 10 year annual peak (acute) concentration is estimated to be 1.31 ppb. The estimated ground water concentrations were calculated using the Tier I SCI-GROW (Screening Concentration In Ground Water) model. The estimated acute and chronic drinking water concentration from ground water sources is 0.0025 ppb. The higher PRZM-EXAMS estimated drinking water concentrations were used for the acute and chronic dietary analyses.

The Lifeline Tapwater model allows users to enter different water concentrations (or a distribution of concentrations) for each combination of season (4), census region (4), water source type (public or private system, private well, other), and setting (rural or urban). For this Tier I dietary analysis, the PRZM-EXAMS estimated acute and chronic concentrations were applied to each combination.

III Program and Consumption Information

Several reasonable peer-reviewed softwares have recently been emerging for modeling dietary exposure to pesticides. For a variety of technical, historical and availability reasons, DEEM™ was the program generally used by EPA's Office of Pesticide Programs for conducting its dietary risk assessments. With the advent and current availability of a number of other exposure software programs, OPP, registrants, and other interested parties have available to them the option of selecting other peer-reviewed exposure software in conducting risk assessments for pesticides. Lifeline™ is one such model and is the software being used, along with DEEM-FCID in this HED review. Dietary Exposure assessments may also be performed with other, similar programs, and if submitted, such results will be reviewed by EPA for acceptability and comparability to existing peer-reviewed software being used by OPP.

IIIa. DEEM-FCID™ Program and Consumption Information

Tau-fluvalinate acute and chronic dietary exposure assessments were conducted using the Dietary Exposure Evaluation Model software with the Food Commodity Intake Database (DEEM-FCID™, Version 2.00/2.02), which incorporates consumption data from USDA's Continuing Surveys of Food Intakes by Individuals (CSFII), 1994-1996 and 1998. The 1994-96,

98 data are based on the reported consumption of more than 20,000 individuals over two non-consecutive survey days. Foods "as consumed" (e.g., apple pie) are linked to EPA-defined food commodities (e.g. apples, peeled fruit - cooked; fresh or N/S; baked; or wheat flour - cooked; fresh or N/S, baked) using publicly available recipe translation files developed jointly by USDA/ARS and EPA. For chronic exposure assessment, consumption data are averaged for the entire U.S. population and within population subgroups, but for acute exposure assessment are retained as individual consumption events. Based on analysis of the 1994-96, 98 CSFII consumption data, which took into account dietary patterns and survey respondents, HED concluded that it is most appropriate to report risk for the following population subgroups: the general U.S. population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, adults 20-49, females 13-49, and adults 50+ years old.

For chronic dietary exposure assessment, an estimate of the residue level in each food or food-form (e.g., orange or orange juice) on the food commodity residue list is multiplied by the average daily consumption estimate for that food/food form to produce a residue intake estimate. The resulting residue intake estimate for each food/food form is summed with the residue intake estimates for all other food/food forms on the commodity residue list to arrive at the total average estimated exposure. Exposure is expressed in mg/kg body weight/day and as a percent of the cPAD. This procedure is performed for each population subgroup.

For acute exposure assessments, individual one-day food consumption data are used on an individual-by-individual basis. The reported consumption amounts of each food item can be multiplied by a residue point estimate and summed to obtain a total daily pesticide exposure for a deterministic exposure assessment, or "matched" in multiple random pairings with residue values and then summed in a probabilistic assessment. The resulting distribution of exposures is expressed as a percentage of the aPAD on both a user (i.e., only those who reported eating relevant commodities/food forms) and a per-capita (i.e., those who reported eating the relevant commodities as well as those who did not) basis. In accordance with HED policy, per capita exposure and risk are reported for all tiers of analysis. However, for tiers 1 and 2, any significant differences in user vs. per capita exposure and risk are specifically identified and noted in the risk assessment.

III b. Lifeline™ Program and Consumption Information

Acute and chronic dietary exposure estimates were also conducted using the Lifeline™ model (Version 2.0). These Lifeline™ assessments were conducted using the same consumption data as the DEEM-FCID™ (CSFII, 1994-1996 and 1998 consumption data with FCID). Lifeline™ uses the recipe file to relate RACs to foods "as-eaten." Lifeline™ converts the RAC residues into food residues by randomly selecting a RAC residue value from the "user defined" residue distribution (created from the residue, percent crop treated, and processing factors data), and calculating a net residue for that food based on the ingredients' mass contribution to that food item. For example, 'apple pie' will have a residue distribution based on the residues provided for apples (adjusted by the appropriate processing factors and percent crop treated), as well as the residues for each of the other ingredients in the apple pie recipe for which there may be

tolerances. Lifeline™ calculates dietary exposure from 'apple pie' based on the amount eaten, and the residue drawn from the 'apple pie' residue distribution for that eating occasion.

Lifeline™ models the individual's dietary exposures over a season by selecting a new CSFII diary each day from a set of similar individuals based on age and season attributes. Lifeline™ groups CSFII diaries based on the respondents' age and the season during which the food diary was recorded. Further information regarding the Lifeline™ model can be found at the following web site: www.theLifeline™group.org.

IV. Toxicological Information

The tau-fluvalinate team selected acute and chronic toxicity endpoints using a weight-of-the-evidence approach that took into consideration the results of two studies: a chronic feeding study in the rat and a subchronic neurotoxicity study in the rat. Acute and chronic RfDs of 0.005 mg/kg/day were selected, based on the NOAEL of 0.5 mg/kg from the chronic rat study and a 100-fold inter-/intra-species uncertainty factor. Although a NOAEL was not established in the subchronic study, the results of this study (LOAEL of 2.0 mg/kg/day, based on clinical signs of neurotoxicity) were considered and determined to support the use of the NOAEL from the chronic rat study for both the acute and chronic endpoints.

Since there are no indications of increased sensitivity in either the rat or rabbit developmental toxicity studies or the rat multi-generation reproduction study and no indications of increased sensitivity from studies in the open literature, the Special FQPA Safety Factor was reduced to 1. Therefore, the acute and chronic PADs are equal to the acute and chronic RfDs of 0.005 mg/kg/day.

Tau-fluvalinate has been classified by the team as "not likely to be a human carcinogen", based on the results of rat and mouse carcinogenicity studies.

Toxicological doses and endpoints for tau-fluvalinate are summarized below in Table 1.

Table 1. Summary of Toxicological Doses and Endpoints for Tau-fluvalinate for Use in Human Dietary Risk Assessments

Exposure Scenario	Dose Used in Risk Assessment, UF	Special FQPA SF* and Level of Concern for Risk Assessment	Study and Toxicological Effects
Acute Dietary (females 13-49)	No selection. No evidence that there is significant toxicity following a single exposure.		
Acute Dietary (general population)	NOAEL = 0.5 mg/kg/day. UF = 100	1	LOAEL = 1 mg/kg/day. Clinical signs in the rat chronic feeding study coupled with a LOAEL of 2 mg/kg/day based on excessive grooming and bulging eyes in the subchronic neurotoxicity study.
Chronic Dietary (all populations)	LOAEL = 0.5 mg/kg/day UF = 100	1	LOAEL = 1 mg/kg/day. Clinical signs in the rat chronic feeding study coupled with a LOAEL of 2 mg/kg/day based on excessive grooming and bulging eyes in the subchronic neurotoxicity study.
Cancer (oral, dermal, inhalation)	**Classification:** *tau*-fluvalinate has not been reviewed by CARC or HIARC for carcinogenicity classification. However, since there are both rat and mouse carcinogenicity studies with *tau*-fluvalinate that were determined not to be positive for carcinogenicity and the available mutagenicity/genetic toxicity data base does not indicate a concern, *tau*-fluvalinate may be classified as "not likely to be a human carcinogen".		

UF = uncertainty factor, FQPA SF = Special FQPA safety factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level

V. Results/Discussion

As stated above, for acute and chronic assessments, HED is concerned when dietary risk exceeds 100% of the PAD. The DEEM-FCID™ analyses estimate the dietary exposure of the U.S. population and various population subgroups. The results reported in Tables 2 through 4 are for the general U.S. Population, all infants (<1 year old), children 1-2, children 3-5, children 6-12, youth 13-19, females 13-49, adults 20-49, and adults 50+ years.

Acute and chronic dietary risks were also estimated using the Lifeline™ model (version 2.0). The Lifeline™ model estimates acute exposure based on the acute 1-day dietary dose drawn randomly from an age-specific seasonal exposure profile of 1000 individuals. The Lifeline™ chronic dietary exposure estimate is based on an average daily exposure from a profile of 1000 individuals over a one year period. Results of the Lifeline™ analysis are consistent with DEEM-FCID™ results.

Results of Acute Dietary Exposure Analysis

Using DEEM-FCID, tau-fluvalinate acute dietary exposure (food + water) at the 95th percentile was estimated at 0.000069 mg/kg/day for the U.S. population (1.4% of the aPAD) and 0.000257 mg/kg/day (5.1% of the aPAD) for the most highly exposed population subgroup (all infants). Estimated acute exposures at the 95th percentile using the Lifeline model were consistent with the DEEM-FCID results (1.2% of the aPAD for the U.S. population and 3.9% of the aPAD for infants). The results for all population subgroups are shown below in Table 2.

Nearly all of the estimated acute dietary exposure to tau-fluvalinate is from drinking water. Estimated acute dietary exposure to tau-fluvalinate from honey represents between <0.01% and 0.06% (children, 1-2 yrs. old) of the total estimated exposure.

Table 2. Results of Acute Dietary Exposure Analysis Using both DEEM FCID and Lifeline Softwares

Population Subgroup	aPAD (mg/kg)	95th Percentile				99th Percentile				99.9th Percentile			
		DEEM-FCID™		Lifeline		DEEM-FCID™		Lifeline		DEEM-FCID™		Lifeline	
		Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD	Exposure (mg/kg/day)	% aPAD
General U.S. Population	0.005	0.000069	1.4	0.000060	1.2	0.000129	2.6	0.000110	2.2	0.000258	5.2	0.000189	3.8
All Infants (< 1 year old)	0.005	0.000257	5.1	0.000197	3.9	0.000368	7.4	0.000239	4.8	0.000659	13.2	0.000270	5.4
Children 1-2 years old	0.005	0.000109	2.2	0.000126	2.5	0.000179	3.6	0.000186	3.7	0.000260	5.2	0.000241	4.8
Children 3-5 years old	0.005	0.000098	2.0	0.000103	2.0	0.000154	3.1	0.000147	2.9	0.000252	5.0	0.000181	3.6
Children 6-12 years old	0.005	0.000068	1.4	0.000062	1.2	0.000114	2.3	0.000099	2.0	0.000155	3.1	0.000131	2.6
Youth 13-19 years old	0.005	0.000056	1.1	0.000046	<1.0	0.000094	1.9	0.000080	1.6	0.000168	3.4	0.000119	2.4
Adults 20-49 years old	0.005	0.000064	1.3	0.000051	1.0	0.000107	2.1	0.000089	1.8	0.000192	3.8	0.000136	2.7
Adults 50+ years old	0.005	0.000058	1.2	0.000051	1.0	0.000083	1.6	0.000090	1.8	0.000136	2.7	0.000138	2.8
Females 13-49 years old	0.005	0.000064	1.3	0.000056	1.1	0.000103	2.1	0.000097	2.0	0.000182	3.6	0.000143	2.9

Results of Chronic Dietary Exposure Analysis

Chronic dietary exposure estimates using the DEEM-FCID model were less than 1% of the cPAD for the U.S. population and all population subgroups. Estimated chronic exposures using the Lifeline model were consistent with the DEEM-FCID results. The results of the chronic dietary exposure analyses are reported in Table 3 below.

Nearly all of the estimated chronic dietary exposure to tau-fluvalinate is from drinking water. Estimated chronic dietary exposure to tau-fluvalinate from honey represents <0.01% of the total estimated exposure for the U.S. population and all population subgroups.

Table 3. Results of Chronic Dietary Exposure Analysis Using both DEEM FCID and Lifeline Softwares

Population Subgroup	cPAD (mg/kg/day)	DEEM-FCID™		Lifeline	
		Exposure (mg/kg/day)	% cPAD	Exposure (mg/kg/day)	% cPAD
General U.S. Population	0.005	0.000014	<1	0.000010	<1
All Infants (< 1 year old)	0.005	0.000045	<1	0.000038	<1
Children 1-2 years old	0.005	0.000021	<1	0.000020	<1
Children 3-5 years old	0.005	0.000020	<1	0.000017	<1
Children 6-12 years old	0.005	0.000013	<1	0.000010	<1
Youth 13-19 years old	0.005	0.000010	<1	0.000007	<1
Adults 20-49 years old	0.005	0.000013	<1	0.000008	<1
Adults 50+ years old	0.005	0.000014	<1	0.000009	<1
Females 13-49 years old	0.005	0.000013	<1	0.000009	<1

Dietary Risk Summary for Tau-fluvalinate

Estimated acute and chronic dietary (food + water) exposure to tau-fluvalinate using the DEEM-FCID and Lifeline are well below HED's levels of concern. Table 4 summarizes the estimated dietary exposure and risk.

Table 4. Summary of Dietary Exposure and Risk for Tau-fluvalinate

Population Subgroup	Acute Dietary (95th Percentile)[1]				Chronic Dietary			
	DEEM-FCID™		Lifeline		DEEM-FCID™		Lifeline	
	Dietary Exposure (mg/kg)	% aPAD	Dietary Exposure (mg/kg)	% aPAD	Dietary Exposure (mg/kg/day)	% cPAD	Dietary Exposure (mg/kg/day)	% cPAD
General U.S. Population	0.000069	1.4	0.000060	1.2	0.000014	<1	0.000010	<1
All Infants (< 1 year old)	0.000257	5.1	0.000197	3.9	0.000045	<1	0.000038	<1
Children 1-2 years old	0.000109	2.2	0.000126	2.5	0.000021	<1	0.000020	<1
Children 3-5 years old	0.000098	2.0	0.000103	2.0	0.000020	<1	0.000017	<1
Children 6-12 years old	0.000068	1.4	0.000062	1.2	0.000013	<1	0.000010	<1
Youth 13-19 years old	0.000056	1.1	0.000046	<1.0	0.000010	<1	0.000007	<1
Adults 20-49 years old	0.000064	1.3	0.000051	1.0	0.000013	<1	0.000008	<1
Adults 50+ years old	0.000058	1.2	0.000051	1.0	0.000014	<1	0.000009	<1
Females 13-49 years old	0.000064	1.3	0.000056	1.1	0.000013	<1	0.000009	<1

[1]Acute exposure is reported at the 95th percentile since it was a Tier 1 dietary assessment. Estimated exposures at the 99th and 99.9th percentiles were also well below HED's level of concern, with the highest estimated exposure at the 99.9th percentile (infants using the DEEM-FCID software) representing only 13% of the aPAD.

VI. Characterization of Inputs/Outputs

These acute and chronic dietary exposure and risk estimates are conservative since they assumed 100% crop (beehives) treated and tolerance-level residues and were based on screening level estimates of drinking water concentrations generated by the PRZM-EXAMS models. They could be further refined through the use of anticipated residues and percent crop treated data for honey (beehives), as well as refined drinking water estimates.

VII. Conclusions

Tier 1 acute and chronic dietary exposure analyses using both DEEM-FCID™ and Lifeline indicate that dietary exposure to tau-fluvalinate from food and drinking water is well below

HED's levels of concern for this pesticide. Estimated chronic dietary exposures are less than 1% of the cPAD for the general U.S. population and all population subgroups. Estimated acute dietary exposures are 5% of the aPAD or less for all population subgroups at the 95th percentile of exposure.

VIII. List of Attachments

- Acute Food plus Water Residue Input file (DEEM).
- Acute Results file (DEEM).
- Chronic Food plus Water Residue Input file (DEEM).
- Chronic Results file (DEEM).
- Acute and Chronic Food Residue Input file (Lifeline).
- Acute Drinking Water Residue Input file (Lifeline).
- Chronic Drinking Water Residue Input file (Lifeline).
- Acute Results file (Lifeline).
- Chronic Results file (Lifeline).

cc: Susan Stanton

Acute Food plus Water Residue Input file (DEEM)

```
"Tau-fluvalinate"
 0.005
FCID1, 0.005
NOEL,          0.5  0.5  0
02-28-2005/10:29:17
-1  "Tau-fluvalinate acute residue file including direct/indirect water EEC
from PRZM-EXAMS"
 999  0
 245 "95001860","O", 0.02  1  1  0 "Honey", ""
 246 "95001861","O", 0.02  1  1  0 "Honey-babyfood", ""
 532 "86010000","O", 0.00131  1  1  0 "Water, direct, all sources", ""
 533 "86020000","O", 0.00131  1  1  0 "Water, indirect, all sources", ""
```

Acute Results file (DEEM)

```
U.S. Environmental Protection Agency                                    Ver. 2.02
DEEM-FCID ACUTE Analysis for TAU-FLUVALINATE                        (1994-98 data)
Residue file: taufluvalinate Acute.R98            Adjustment factor #2 NOT used.
Analysis Date: 02-28-2005/10:32:52    Residue file dated: 02-28-2005/10:29:17/8
NOEL (Acute) =    0.500000 mg/kg body-wt/day
Daily totals for food and foodform consumption used.
Run Comment: "Tau-fluvalinate acute residue file including direct/indirect wat
er EEC from PRZM-EXAMS"
================================================================================

Summary calculations (per capita):
```

	95th Percentile			99th Percentile			99.9th Percentile	
	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE
U.S. Population:									
	0.000069	1.38	7270	0.000129	2.58	3874	0.000258	5.15	1941
All infants:									
	0.000257	5.13	1947	0.000368	7.36	1358	0.000659	13.18	758
Children 1-2 yrs:									
	0.000109	2.18	4588	0.000179	3.59	2785	0.000260	5.19	1926
Children 3-5 yrs:									
	0.000098	1.97	5082	0.000154	3.09	3239	0.000252	5.04	1983
Children 6-12 yrs:									
	0.000068	1.37	7313	0.000114	2.28	4377	0.000155	3.10	3221
Youth 13-19 yrs:									
	0.000056	1.12	8947	0.000094	1.87	5340	0.000168	3.37	2969
Adults 20-49 yrs:									
	0.000064	1.27	7860	0.000107	2.13	4688	0.000192	3.83	2608
Adults 50+ yrs:									
	0.000058	1.16	8653	0.000083	1.65	6048	0.000136	2.72	3671
Females 13-49 yrs:									
	0.000064	1.28	7823	0.000103	2.06	4864	0.000182	3.64	2750

Chronic Food plus Water Residue Input file (DEEM)

```
"Tau-fluvalinate"
 0.005
FCID1, 0.005
NOEL,          0.5  0.5  0
02-28-2005/10:10:59
-1  "Chronic residue file including direct/indirect water EEC from PRZM-EXAMS"
 999  0
 245 "95001860","O", 0.02  1  1  0 "Honey", ""
 246 "95001861","O", 0.02  1  1  0 "Honey-babyfood", ""
 532 "86010000","O", 0.00065  1  1  0 "Water, direct, all sources", ""
 533 "86020000","O", 0.00065  1  1  0 "Water, indirect, all sources", ""
```

Chronic Results file (DEEM)

U.S. Environmental Protection Agency Ver. 2.00
DEEM-FCID Chronic analysis for TAU-FLUVALINATE (1994-98 data)
Residue file name: C:\DEEMFCID\Tau_Fluvalinate\taufluvalinate Chronic.R98
Adjustment factor #2 NOT used.
Analysis Date 02-28-2005/10:20:35 Residue file dated: 02-28-2005/10:10:59/8
Reference dose (RfD, Chronic) = .005 mg/kg bw/day
COMMENT 1: Chronic residue file including direct/indirect water EEC from PRZM-EXAMS

Total exposure by population subgroup

Population Subgroup	Total Exposure mg/kg body wt/day	Total Exposure Percent of Rfd
U.S. Population (total)	0.000014	0.3%
U.S. Population (spring season)	0.000014	0.3%
U.S. Population (summer season)	0.000015	0.3%
U.S. Population (autumn season)	0.000013	0.3%
U.S. Population (winter season)	0.000014	0.3%
Northeast region	0.000013	0.3%
Midwest region	0.000014	0.3%
Southern region	0.000013	0.3%
Western region	0.000016	0.3%
Hispanics	0.000016	0.3%
Non-hispanic whites	0.000014	0.3%
Non-hispanic blacks	0.000013	0.3%
Non-hisp/non-white/non-black	0.000017	0.3%
All infants (< 1 year)	0.000045	0.9%
Nursing infants	0.000017	0.3%
Non-nursing infants	0.000056	1.1%
Children 1-6 yrs	0.000020	0.4%
Children 7-12 yrs	0.000013	0.3%
Females 13-19 (not preg or nursing)	0.000010	0.2%
Females 20+ (not preg or nursing)	0.000014	0.3%
Females 13-50 yrs	0.000013	0.3%
Females 13+ (preg/not nursing)	0.000014	0.3%
Females 13+ (nursing)	0.000019	0.4%
Males 13-19 yrs	0.000010	0.2%
Males 20+ yrs	0.000012	0.2%
Seniors 55+	0.000014	0.3%
Children 1-2 yrs	0.000021	0.4%
Children 3-5 yrs	0.000020	0.4%
Children 6-12 yrs	0.000013	0.3%
Youth 13-19 yrs	0.000010	0.2%
Adults 20-49 yrs	0.000013	0.3%
Adults 50+ yrs	0.000014	0.3%
Females 13-49 yrs	0.000013	0.3%

Acute and Chronic Food Residue Input file (Lifeline)

Annual Commodity Factors Entered													
Code	Crop Group	Code	Commodity	Code	FoodForm	Residue	Dehydration	Washing	Heating	Refining	Storage	Other	Use Factor
95	MISC.	001860	Honey		All	0.02							
95	MISC.	001861	Honey- babyfood		All	0.02							

Acute Drinking Water Residue Input file (Lifeline)

LifeLine. Build 06302002	Last refreshed: 03/01/2005-14:48		
	C:\LifeLine\rkgfiles\tau fluvalinate.rkg		
Risk group			
Tapwater concentration	Your tapwater		
	C:\LifeLine\twcfiles\tau fluvalinate_acute_PRZ MEXAMS.twc		
Tau-fluvalinate			
North East	Public or private water system		
Spring	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
Summer	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
Fall	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131
Winter	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131

	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00131	0.00131

Note: Only the portion of the input file for North East Public or Private Water Systems is shown. The same residue (0.00131 ppm) was used for the other regions and water source types; however, they are not printed here due to the length of the full input file.

Chronic Drinking Water Residue Input file (Lifeline)

LifeLine. Build 06302002	Last refreshed: 03/01/2005-14:52		
Risk group	C:\LifeLine\rkgfiles\tau fluvalinate.rkg		
Tapwater concentration	Your tapwater		
	C:\LifeLine\twcfiles\tau fluvalinate_chronic_PRZMEXAMS.twc		
Tau-fluvalinate			
North East	**Public or private water system**		
Spring	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
Summer	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
Fall	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065
Winter	Rural	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065

	Urban	Minimum concentration (mg/l)	Maximum concentration (mg/l)
		0.00065	0.00065

Note: Only the portion of the input file for North East Public or Private Water Systems is shown. The same residue (0.00065 ppm) was used for the other regions and water source types; however, they are not printed here due to the length of the full input file.

Acute Results file (Lifeline)

Population Subgroup	Acute PAD (mg/kg/day)	Acute Exposure 95th %ile (mg/kg/day)	% aPAD 95th %ile	Acute Exposure 99th %ile (mg/kg/day)	% aPAD 99th %ile	Acute Exposure 99_9th %ile (mg/kg/day)	% aPAD 99_9th %ile
1. U.S. Population	0.005	0.000060	1.20	0.000110	2.21	0.000189	3.78
2. All infants < 1	0.005	0.000197	3.93	0.000239	4.78	0.000270	5.41
3. Children 1-2	0.005	0.000126	2.52	0.000186	3.72	0.000241	4.82
4. Children 3-5	0.005	0.000103	2.05	0.000147	2.94	0.000181	3.63
5. Children 6-12	0.005	0.000062	1.25	0.000099	1.99	0.000131	2.62
6. Youth 13-19	0.005	0.000046	0.93	0.000080	1.59	0.000119	2.38
7. Adults 20-49	0.005	0.000051	1.02	0.000089	1.79	0.000136	2.72
8. Adults 50+	0.005	0.000051	1.03	0.000090	1.79	0.000138	2.76
9. Females 13-49	0.005	0.000056	1.12	0.000097	1.95	0.000143	2.86

Chronic Results file (Lifeline)

LifeLine Chronic Exposure Analysis Results:Tau-fluvalinate

Population Subgroup	Chronic PAD mg/kg/day	Chronic Exposure mg/kg/day	% cPAD
1. U.S. Population	0.005	0.000010	0.19
2. All infants < 1	0.005	0.000038	0.75
3. Children 1-2	0.005	0.000020	0.40
4. Children 3-5	0.005	0.000017	0.35
5. Children 6-12	0.005	0.000010	0.21
6. Youth 13-19	0.005	0.000007	0.14
7. Adults 20-49	0.005	0.000008	0.17
8. Adults 50+	0.005	0.000009	0.18
9. Females 13-49	0.005	0.000009	0.18

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