1-15-97

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

JAN 15 1997

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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Dietary Exposure Analysis for Cypermethrin in Support of the Reregistration Eligibility Decision.

FROM: Brian Steinwand BS
Dietary Risk Evaluation Section
Science Analysis Branch/HED (7509C)

Through: Elizabeth Doyle, Section Head Elizabeth A. Doyle
Dietary Risk Evaluation Section
SAB/Health Effects Division

TO: Mike Metzger, Chief
Risk Characterization Analysis Branch
Health Effects Division (7509C)

Action Requested

Provide a dietary exposure analysis to estimate the chronic and acute dietary exposure and risk from cypermethrin for uses which are being supported through reregistration.

Discussion

Toxicological Endpoint:

The Reference Dose (RfD) used in the analysis is 0.01 mg/kg bwt/day, based on a NOEL of 1.0 mg/kg bwt/day from a one year feeding study in dogs with an uncertainty factor of 100 that demonstrated gastrointestinal disturbances as endpoints (See TES Document, 9/16/96). Cypermethrin is classified as a Group C - possible human carcinogen. No Q_1^* is required to support registrations (See TES Document, 9/16/96).

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The endpoint for acute dietary risk assessment is the NOEL of 1.0 mg/kg bwt/day from a chronic study in dogs based on gastrointestinal disturbances at 5 mg/kg observed in the first week of the study.

Residue Information

Tolerances for cypermethrin are published in 40 CFR §180.418. Tolerances for cypermethrin residues are currently expressed in terms of methidathion per se. The available data support the established tolerances in/on the brassica crop group, cabbage, the fat, meat and meat bypd of cattle, goats, hogs, horses, and sheep, cottonseed, milk, dry bulb onions and pecans; the established tolerances for residues in/on head lettuce should be decreased from 10 ppm to 4 ppm (See RED chapter). Tolerance level residues and 100 percent crop treated assumptions were made for all commodities. No anticipated residue (AR) information was used in this analysis. No food/feed additive tolerances have been established. (See memo, C. Olinger, 9/12/96).

Results

Chronic Exposure:

A summary of the residue information considered in this analysis is attached as Table 1. A DRES chronic exposure analysis was performed using tolerance level residues and 100 percent crop treated information to estimate the Theoretical Maximum Residue Contribution (TMRC) for the general population and 22 subgroups. Summaries of the TMRCs and their representations as percentages of the Reference Dose (RfD) are included as Table 2 and 3.

Existing tolerances (and pending tolerances on green onions, sweet corn, alfalfa sprouts, an increase in the existing tolerance on milk and meat products, poultry and eggs) result in a TMRC which represents 54.4% of the RfD for the U.S. general population. The highest subgroup, Non-Hispanic Others occupies 90.5% of the RfD.

The analysis for cypermethrin is a worst case estimate of dietary exposure with all residues at tolerance level and 100 percent of the commodities assumed to be treated with cypermethrin. Even including the pending tolerances and the higher tolerance for head lettuce, it appears that chronic dietary risk from the uses recommended through reregistration, is not of concern.

Acute Exposure:

Two acute analyses were performed. Table 4 shows the results of the analysis using all presently registered commodities. Table 5 demonstrates results which would occur following the recommendations of CBRS.

The Margin of Exposure (MOE) is a measure of how close the high end exposure comes to the NOEL (the highest dose at which no effects were observed in the laboratory test), and is calculated as the ratio of the NOEL to the exposure (NOEL/exposure = MOE). Generally, acute dietary margins of exposure greater than 100 tend to cause no dietary concern when results are compared to animal-derived data. The MOE values demonstrate that there is cause for concern regarding the acute dietary exposure from methidathion both for existing and proposed uses:

Presently registered commodities result in the following MOEs: U.S. POP = 20; Infants (< 1 year) = 55; Children (1-6 years) = 10; Females (13+ years) = 20; and Males (13+ years) = 25.

Following the recommendations of CBRS (which includes the reduction of the head lettuce tolerance from 10 ppm to 4 ppm) results in the following MOEs: U.S. POP = 25; Infants (< 1 year) = 55; Children (1-6 years) = 10; Females (13+ years) = 25; and Males (13+ years) = 25.

All subgroups exceed the Agency's level of concern regarding acute exposure for both existing published tolerances and with the proposed decrease in the head lettuce tolerance.

Attachments

cc: DRES; Caswell 378B

TABLE 1

CHEMICAL INFORMATION FOR CASWELL NUMBER 268AA DATE: 12/13/96 PAGE: 1

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Cypermethrin (Ammo) Caswell #268AA CAS No. 52315-07-8 A.I. CODE: 109702 CFR No. 180.418	1yr feeding- dog NOEL= 1.0000 mg/kg 0.00 ppm LEL= 5.0000 mg/kg 0.00 ppm ONCO: C (HED)	G.I. tract disturbance. Evidence of carcinogenicity in mice (lung).	ADI UF -->100 OPP RfD= 0.010000 EPA RfD= 0.010000	No data gaps. (Cypermethrin, d-trans-beta, PC Code: 109704; Cas No. 66841-24-5; Caswell No. 271DD).	WHO reviewed 1981 HED reviewed 12/05/88 EPA verified 01/18/89 RfD/PR reviewed 06/06/96 RfD/PR reviewed 07/11/96 On IRIS.

FOOD CODE	FOOD NAME		PETITION NUMBER	TOLERANCE (PPM) NEW	PENDING	PUBLISHED
03008AA	PECANS	(exp.11/97)	4F2986			0.050000
13005AA	BROCCOLI		4F4291			2.000000
13006AA	BRUSSEL SPROUTS		4F4291			2.000000
13007AA	CABBAGE-GREEN AND RED		4F3011			2.000000
13008AA	CAULIFLOWER		4F4291			2.000000
13009AA	COLLARDS		4F4291			14.000000
13010AA	CABBAGE-CHINESE/CELERY, INC. BOK CHOY		4F4291			14.000000
13011AA	KALE		4F4291			14.000000
13012AA	KOHLRABI		4F4291			2.000000
13021AA	MUSTARD GREENS		4F4291			14.000000
13045AA	LETTUCE-HEAD VARIETIES	(exp.11/97)	3F2824			10.000000
14007AA	GARLIC		7F3498			0.100000
14010AA	LEEKS		5E4463		6.000000	
14011AA	ONIONS-DRY-BULB (CIPOLLINI)		7F3498			0.100000
14011DA	ONIONS-DEHYDRATED OR DRIED		7F3498			0.100000
14017AA	SHALLOTS		7F3498			0.100000
15005AA	CORN,SWEET		4F3012		0.100000	
15021AA	ALFALFA SPROUTS		4F4399		0.500000	
16004AA	ONIONS-GREEN		5E4463	6.000000		
27003OA	COTTONSEED-OIL	(exp.11/97)	2F2623			0.500000
27003WA	COTTONSEED-MEAL	(exp.11/97)	2F2623			0.500000
50000DB	MILK-NON-FAT SOLIDS	(exp.11/97)	2F2623			0.050000H
50000DB	MILK-NON-FAT SOLIDS		4F4399		0.150000	H
50000FA	MILK-FAT SOLIDS	(exp.11/97)	2F2623			0.050000H
50000FA	MILK-FAT SOLIDS		4F4399		0.950000	H
50000SA	MILK SUGAR (LACTOSE)	(exp.11/97)	2F2623			0.050000
50000SA	MILK SUGAR (LACTOSE)		4F4399		0.150000	
53001BA	BEEF-MEAT BYPRODUCTS	(exp.11/97)	2F2623			0.050000
53001BB	BEEF(ORGAN MEATS)-OTHER	(exp.11/97)	2F2623			0.050000
53001DA	BEEF-DRIED	(exp.11/97)	2F2623			0.050000
53001DA	BEEF-DRIED		4F4399		0.250000	
53001FA	BEEF(BONELESS)-FAT (BEEF TALLOW)		2F2623			0.050000*
53001FA	BEEF(BONELESS)-FAT (BEEF TALLOW)		4F4399		2.050000	
53001KA	BEEF(ORGAN MEATS)-KIDNEY	(exp.11/97)	2F2623			0.050000
53001LA	BEEF(ORGAN MEATS)-LIVER	(exp.11/97)	2F2623			0.050000
53001MA	BEEF(BONELESS)-LEAN (W/O REMOVEABLE FAT)		2F2623			0.050000*
53001MA	BEEF(BONELESS)-LEAN (W/O REMOVEABLE FAT)		4F4399		0.250000	
53002BA	GOAT-MEAT BYPRODUCTS	(exp.11/97)	2F2623			0.050000
53002BB	GOAT(ORGAN MEATS)-OTHER	(exp.11/97)	2F2623			0.050000
53002FA	GOAT(BONELESS)-FAT	(exp.11/97)	2F2623			0.050000

CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Cypermethrin (Ammo) Caswell #268AA CAS No. 52315-07-8 A.I. CODE: 109702 CFR No. 180.418	1yr feeding- dog NOEL= 1.0000 mg/kg 0.00 ppm LEL= 5.0000 mg/kg 0.00 ppm ONCO: C (HED)	G.I. tract disturbance. Evidence of carcinogenicity in mice (lung).	ADI UF -->100 OPP RfD= 0.010000 EPA RfD= 0.010000	No data gaps. (Cypermethrin, d-trans-beta, PC Code: 109704; Cas No. 66841-24-5; Caswell No. 271DD).	WHO reviewed 1981 HED reviewed 12/05/88 EPA verified 01/18/89 RfD/PR reviewed 06/06/96 RfD/PR reviewed 07/11/96 On IRIS.

FOOD CODE	FOOD NAME	PETITION NUMBER	TOLERANCE (PPM) NEW	PENDING	PUBLISHED
53002FA	GOAT(BONELESS)-FAT	4F4399		2.050000	
53002KA	GOAT(ORGAN MEATS)-KIDNEY (exp.11/97)	2F2623			0.050000
53002LA	GOAT(ORGAN MEATS)-LIVER (exp.11/97)	2F2623			0.050000
53002MA	GOAT(BONELESS)-LEAN (W/O REMOVEABLE FAT)	2F2623			0.050000*
53002MA	GOAT(BONELESS)-LEAN (W/O REMOVEABLE FAT)	4F4399		0.250000	
53003AA	HORSE (exp.11/97)	2F2623			0.050000
53005BA	SHEEP-MEAT BYPRODUCTS (exp.11/97)	2F2623			0.050000
53005BB	SHEEP(ORGAN MEATS)-OTHER (exp.11/97)	2F2623			0.050000
53005FA	SHEEP(BONELESS)-FAT (exp.11/97)	2F2623			0.050000
53005FA	SHEEP(BONELESS)-FAT	4F4399		2.050000	
53005KA	SHEEP(ORGAN MEATS)-KIDNEY (exp.11/97)	2F2623			0.050000
53005LA	SHEEP(ORGAN MEATS)-LIVER (exp.11/97)	2F2623			0.050000
53005MA	SHEEP(BONELESS)-LEAN (W/O REMOVEABLE FAT	2F2623			0.050000*
53005MA	SHEEP(BONELESS)-LEAN (W/O REMOVEABLE FAT	4F4399		0.250000	
53006BA	PORK-MEAT BYPRODUCTS (exp.11/97)	2F2623			0.050000
53006BB	PORK(ORGAN MEATS)-OTHER (exp.11/97)	2F2623			0.050000
53006FA	PORK(BONELESS)-FAT (INCLUDING LARD)	2F2623			0.050000*
53006FA	PORK(BONELESS)-FAT (INCLUDING LARD)	4F4399		2.050000	
53006KA	PORK(ORGAN MEATS)-KIDNEY (exp.11/97)	2F2623			0.050000
53006LA	PORK(ORGAN MEATS)-LIVER (exp.11/97)	2F2623			0.050000
53006MA	PORK(BONELESS)-LEAN (W/O REMOVEABLE FAT)	2F2623			0.050000*
53006MA	PORK(BONELESS)-LEAN (W/O REMOVEABLE FAT)	4F4399		0.250000	
55008BA	TURKEY-BYPRODUCTS	4F4399		0.050000	
55008LA	TURKEY-GIBLETS (LIVER)	4F4399		0.050000	
55008MA	TURKEY-FLESH(W/O SKIN, W/O BONES)	4F4399		0.050000	
55008MB	TURKEY-FLESH(+SKIN,W/O BONES)	4F4399		0.050000	
55008MC	TURKEY-UNSPECIFIED	4F4399		0.050000	
55013BA	POULTRY,OTHER-BYPRODUCTS	4F4399		0.050000	
55013LA	POULTRY,OTHER-GIBLETS(LIVER)	4F4399		0.050000	
55013MA	POULTRY,OTHER-FLESH (+SKIN,W/O BONES)	4F4399		0.050000	
55014AA	EGGS-WHOLE	4F4399		0.050000	
55014AB	EGGS-WHITE ONLY	4F4399		0.050000	
55014AC	EGGS-YOLK ONLY	4F4399		0.050000	
55015BA	CHICKEN-BYPRODUCTS	4F4399		0.050000	
55015LA	CHICKEN-GIBLETS(LIVER)	4F4399		0.050000	
55015MA	CHICKEN-FLESH(W/O SKIN,W/O BONES)	4F4399		0.050000	
55015MB	CHICKEN-FLESH(+SKIN,W/O BONES)	4F4399		0.050000	

TABLE 2

TOLERANCE ASSESSMENT SYSTEM ROUTINE CHRONIC ANALYSIS

DATE: 12/13/96

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Cypermethrin (Ammo) Caswell #268AA CAS No. 52315-07-8 A.I. CODE: 109702 CFR No. 180.418	1yr feeding- dog NOEL= 1.0000 mg/kg 0.00 ppm LEL= 5.0000 mg/kg 0.00 ppm ONCO: C (HED)	G.I. tract disturbance. Evidence of carcinogenicity in mice (lung).	ADI UF -->100 OPP RfD= 0.010000 EPA RfD= 0.010000	No data gaps. (Cypermethrin, d-trans-beta, PC Code: 109704; Cas No. 66841-24-5; Caswell No. 271DD).	WHO reviewed 1981 HED reviewed 12/05/88 EPA verified 01/18/89 RfD/PR reviewed 06/06/96 RfD/PR reviewed 07/11/96 On IRIS.

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	0.003209	0.005438	54.384820	22.299770		
U.S. POPULATION - SPRING SEASON	0.003297	0.005493	54.931100	21.959350		
U.S. POPULATION - SUMMER SEASON	0.003180	0.005435	54.345450	22.547140		
U.S. POPULATION - FALL SEASON	0.003167	0.005435	54.353310	22.679840		
U.S. POPULATION - WINTER SEASON	0.003189	0.005390	53.904910	22.014000		
NORTHEAST REGION	0.003088	0.005335	53.350930	22.467380		
NORTH CENTRAL REGION	0.002875	0.005184	51.836210	23.081360		
SOUTHERN REGION	0.003260	0.005382	53.816380	21.212480		
WESTERN REGION	0.003769	0.006051	60.508230	22.816060		
HISPANICS	0.002979	0.005678	56.776460	26.988520		
NON-HISPANIC WHITES	0.002957	0.005160	51.596370	22.026250		
NON-HISPANIC BLACKS	0.004555	0.006717	67.166990	21.620600		
NON-HISPANIC OTHERS	0.006615	0.009048	90.481010	24.335940		
NURSING INFANTS (< 1 YEAR OLD)	0.000230	0.001405	14.051360	11.748920		
NON-NURSING INFANTS (< 1 YEAR OLD)	0.001005	0.005050	50.498480	40.450400		
FEMALES (13+ YEARS, PREGNANT)	0.003003	0.004589	45.892140	15.864820		
FEMALES 13+ YEARS, NURSING	0.003291	0.005061	50.605400	17.692180		
CHILDREN (1-6 YEARS OLD)	0.003325	0.008015	80.154990	46.907380		
CHILDREN (7-12 YEARS OLD)	0.003648	0.006973	69.734690	33.254870		
MALES (13-19 YEARS OLD)	0.002762	0.005246	52.456660	24.837710		
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.002903	0.004838	48.383340	19.351410		
MALES (20 YEARS AND OLDER)	0.002924	0.004817	48.167020	18.926540		
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS)	0.003490	0.005000	49.995110	15.093350		

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

TABLE 3

TOLERANCE ASSESSMENT SUMMARY FOR Cypermethrin (Ammo) DATE: 12/13/96
CASWELL #268AA

ANALYSIS FOR POPULATION SUB-GROUP: U.S. POPULATION - 48 STATES

EXISTING TOLERANCES (PUBLISHED ONLY)		
RESULT IN A TMRC OF:	0.003209	MG/KG/DAY
THE EXISTING TMRC IS EQUIVALENT TO:	32.085	% OF THE ADI.
PROPOSED NEW TOLERANCES (CURRENT PETITION ONLY)		
RESULT IN A TMRC OF:	0.000012	MG/KG/DAY
THESE NEW TOLERANCES WILL OCCUPY:	0.117	% OF THE ADI.
IF THE NEW TOLERANCES (CURRENT PETITION ONLY)		
ARE APPROVED THE RESULTANT TMRC WILL BE:	0.003221	MG/KG/DAY
THE NEW TMRC WILL OCCUPY	32.202	% OF THE ADI.
OTHER PENDING TOLERANCES EXCLUDING THE		
CURRENT NEW PETITION HAVE A TMRC OF:	0.002219	MG/KG/DAY
THIS TMRC WILL OCCUPY	22.182	% OF THE ADI.
IF ALL PENDING TOLERANCES (INCLUDING THE		
CURRENT NEW PETITION) ARE GRANTED		
THE RESULTANT TMRC WILL BE:	0.005439	MG/KG/DAY
THE TOTAL TMRC WILL OCCUPY	54.385	% OF THE ADI.

ANALYSIS FOR POPULATION SUB-GROUP: NON-HISPANIC OTHERS

EXISTING TOLERANCES (PUBLISHED ONLY)		
RESULT IN A TMRC OF:	0.006615	MG/KG/DAY
THE EXISTING TMRC IS EQUIVALENT TO:	66.145	% OF THE ADI.
PROPOSED NEW TOLERANCES (CURRENT PETITION ONLY)		
RESULT IN A TMRC OF:	0.000018	MG/KG/DAY
THESE NEW TOLERANCES WILL OCCUPY:	0.176	% OF THE ADI.
IF THE NEW TOLERANCES (CURRENT PETITION ONLY)		
ARE APPROVED THE RESULTANT TMRC WILL BE:	0.006633	MG/KG/DAY
THE NEW TMRC WILL OCCUPY	66.322	% OF THE ADI.
OTHER PENDING TOLERANCES EXCLUDING THE		
CURRENT NEW PETITION HAVE A TMRC OF:	0.002416	MG/KG/DAY
THIS TMRC WILL OCCUPY	24.160	% OF THE ADI.
IF ALL PENDING TOLERANCES (INCLUDING THE		
CURRENT NEW PETITION) ARE GRANTED		
THE RESULTANT TMRC WILL BE:	0.009049	MG/KG/DAY
THE TOTAL TMRC WILL OCCUPY	90.481	% OF THE ADI.

TABLE 4

1DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 09:21 Wednesday, December 18, 1996 22

*NAME: CYPERMETHRIN
*CASWELL NO: 271DD CFR NO: CFR180.418
*CAS NO: 52315-07-8 SHAUGHNESSY NO: 109702
*STATUS CODES:
*RDV INFO: The LD value used in this analysis is 0.01 MG/KG of BODY WEIGHT/DAY
FILE INFO: No Tolerance Data Are Used--Without User Modifications. AR DATA: No User Modifications

STUDY	RDV	NOEL	SF	STUDY TYPE	SPECIES	EFF. LEV.	CORE GRADE	DOC. NO.
A	00000.0250	000050.000	000100	Subchronic	Rat	Systemic	Minimum	
B	00000.0350	001400.000	002000	Terata	Rat	Systemic	Minimum	
C	00000.0125	000500.000	002000	Reprodctn	Rat	Systemic	Minimum	0000002391

-U.S. POP.--48 STATES

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.64	0.003218	32.18

0 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	32	24	17	12	9	6	5	4	3	2	1	1	0	0	0	0

0INFANTS(<1 YEAR)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	88.47	0.000966	9.66

0 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	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0

0CHILDREN(1-6 YRS)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.89	0.003342	33.42

0 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	20	17	14	11	9	7	6	5	4	3	2	1	1	0	0	0

1DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 09:21 Wednesday, December 18, 1996 23

*NAME: CYPERMETHRIN		STUDY	RDV	NOEL	SF	STUDY TYPE	SPECIES	EFF. LEV.	CORE GRADE	DOC. NO.*
*CASWELL NO: 271DD	CFR NO: CFR180.418	A	00000.0250	000050.000	000100	Subchronic	Rat	Systemic	Minimum	*
*CAS NO: 52315-07-8	SHAUGHNESSY NO: 109702	B	00000.0350	001400.000	002000	Terata	Rat	Systemic	Minimum	*
*STATUS CODES:		C	00000.0125	000500.000	002000	Reprodctn	Rat	Systemic	Minimum	0000002391*

*RDV INFO: The LD value used in this analysis is 0.01 MG/KG of BODY WEIGHT/DAY *

FILE INFO: No Tolerance Data Are Used--Without User Modifications. AR DATA: No User Modifications

-FEMALES(13+ YRS)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.72	0.003396	33.96

0 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	35	26	19	14	10	7	5	4	3	3	1	1	0	0	0	0

0MALES(13+ YRS)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.86	0.002886	28.86

0 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	33	23	16	10	7	5	4	3	2	2	1	0	0	0	0	0

General U.S. Population

Exposure = RDV x X
= 0.01 x 5
High End Exposure = 0.05

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.05 mg/kg/day
MOE = 20

Infants (< 1 year)

Exposure = RDV x X
= 0.01 x 1.8
High End Exposure = 0.018

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.018 mg/kg/day
MOE = 55

Children (1-6 years)

Exposure = RDV x X
= 0.01 x 10
High End Exposure = 0.1

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.1 mg/kg/day
MOE = 10

Females (13+ Years:

Exposure = RDV x X
= 0.01 x 5
High End Exposure = 0.05

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.05 mg/kg/day
MOE = 20

Males (13+ Years:

Exposure = RDV x X
= 0.01 x 4
High End Exposure = 0.04

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.04 mg/kg/day
MOE = 25

T7

271DD	03008AA10	0.0500	PECANS
271DD	03008AA21	0.0500	PECANS
271DD	03008AA22	0.0500	PECANS
271DD	03008AA23	0.0500	PECANS
271DD	03008AA62	0.0500	PECANS
271DD	13005AA21	2.0000	BROCCOLI
271DD	13005AA31	2.0000	BROCCOLI
271DD	13005AA63	2.0000	BROCCOLI
271DD	13006AA21	2.0000	BRUSSEL SPROUTS
271DD	13006AA23	2.0000	BRUSSEL SPROUTS
271DD	13007AA10	2.0000	CABBAGE
271DD	13007AA11	2.0000	CABBAGE
271DD	13007AA21	2.0000	CABBAGE
271DD	13008AA10	2.0000	CAULIFLOWER
271DD	13008AA21	2.0000	CAULIFLOWER
271DD	13009AA51	14.0000	COLLARDS
271DD	13009AA63	14.0000	COLLARDS
271DD	13010AA10	14.0000	CABBAGE-CHINESE
271DD	13010AA21	14.0000	CABBAGE-CHINESE
271DD	13011AA63	14.0000	KALE
271DD	13012AA21	2.0000	KOHLRABI
271DD	13021AA21	14.0000	MUSTARD GREENS
271DD	13021AA63	14.0000	MUSTARD GREENS
271DD	13045AA10	10.0000	LETTUCE-HEAD
271DD	13045AA21	10.0000	LETTUCE-HEAD
271DD	14007AA10	0.1000	GARLIC
271DD	14007AA21	0.1000	GARLIC
271DD	14007AA32	0.1000	GARLIC
271DD	14011AA10	0.1000	ONIONS-DRY-BULB
271DD	14011AA21	0.1000	ONIONS-DRY-BULB
271DD	14011AA22	0.1000	ONIONS-DRY-BULB
271DD	14011AA31	0.1000	ONIONS-DRY-BULB
271DD	14011DA12	0.1000	ONIONS-DRIED
271DD	14017AA00	0.1000	SHALLOTS
271DD	27003OA18	0.5000	COTTONSEED-OIL
271DD	27003WA18	0.5000	COTTONSEED-MEAL
271DD	50000DB10	0.0500	CMILK-NON-FAT SOL
271DD	50000DB21	0.0500	CMILK-NON-FAT SOL
271DD	50000DB51	0.0500	CMILK-NON-FAT SOL
271DD	50000FA10	0.0500	CMILK-FAT SOLIDS
271DD	50000FA21	0.0500	CMILK-FAT SOLIDS
271DD	50000FA51	0.0500	CMILK-FAT SOLIDS
271DD	50000SA21	0.0500	MILK SUG (LACT)
271DD	50000SA51	0.0500	MILK SUG (LACT)
271DD	53001BA21	0.0500	BEEF-MEAT BYP
271DD	53001BA26	0.0500	BEEF-MEAT BYP
271DD	53001BB21	0.0500	BEEF-OTH ORGAN
271DD	53001BB51	0.0500	BEEF-OTH ORGAN
271DD	53001DA21	0.0500	BEEF-DRIED
271DD	53001FA10	0.0500	BEEF-FAT
271DD	53001FA21	0.0500	BEEF-FAT
271DD	53001FA22	0.0500	BEEF-FAT
271DD	53001FA23	0.0500	BEEF-FAT
271DD	53001FA24	0.0500	BEEF-FAT
271DD	53001FA25	0.0500	BEEF-FAT
271DD	53001KA21	0.0500	BEEF-KIDNEY
271DD	53001LA25	0.0500	BEEF-LIVER
271DD	53001LA31	0.0500	BEEF-LIVER
271DD	53001MA10	0.0500	BEEF-LEAN
271DD	53001MA21	0.0500	BEEF-LEAN
271DD	53001MA22	0.0500	BEEF-LEAN
271DD	53001MA23	0.0500	BEEF-LEAN
271DD	53001MA24	0.0500	BEEF-LEAN
271DD	53002BA00	0.0500	GOAT-MEAT BYP
271DD	53002BB00	0.0500	GOAT-OTH ORGAN
271DD	53002FA23	0.0500	GOAT-FAT
271DD	53002FA25	0.0500	GOAT-FAT
271DD	53002KA00	0.0500	GOAT-KIDNEY
271DD	53002LA00	0.0500	GOAT-LIVER
271DD	53002MA23	0.0500	GOAT-LEAN
271DD	53002MA25	0.0500	GOAT-LEAN
271DD	53003AA00	0.0500	HORSE
271DD	53005BA21	0.0500	SHEEP-MEAT BYP
271DD	53005BB21	0.0500	SHEEP-OTH ORGAN
271DD	53005FA21	0.0500	SHEEP-FAT
271DD	53005KA21	0.0500	SHEEP-KIDNEY
271DD	53005LA00	0.0500	SHEEP-LIVER
271DD	53005MA21	0.0500	SHEEP-LEAN
271DD	53005MA31	0.0500	SHEEP-LEAN
271DD	53006BA21	0.0500	PORK-MEAT BYP
271DD	53006BB21	0.0500	PORK-OTH ORGAN
271DD	53006BB26	0.0500	PORK-OTH ORGAN
271DD	53006FA10	0.0500	PORK-FAT
271DD	53006FA21	0.0500	PORK-FAT
271DD	53006FA23	0.0500	PORK-FAT
271DD	53006FA25	0.0500	PORK-FAT
271DD	53006FA26	0.0500	PORK-FAT
271DD	53006KA21	0.0500	PORK-KIDNEY
271DD	53006LA21	0.0500	PORK-LIVER
271DD	53006LA25	0.0500	PORK-LIVER
271DD	53006MA21	0.0500	PORK-LEAN
271DD	53006MA25	0.0500	PORK-LEAN
271DD	53006MA26	0.0500	PORK-LEAN

TABLE 5

RED

1DETAILED ACUTE ANALYSIS INCLUDING AR'S: ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION 08:50 Wednesday, December 18, 1996 22

*NAME: CYPERMETHRIN
*CASWELL NO: 271DD CFR NO: CFR180.418
*CAS NO: 52315-07-8 SHAUGHNESSY NO: 109702
*STATUS CODES:
*RDV INFO: The LD value used in this analysis is 0.01 MG/KG of BODY WEIGHT/DAY
*FILE INFO: No Tolerance Data Are Used--Without User Modifications.

STUDY	RDV	NOEL	SF	STUDY TYPE	SPECIES	EFF. LEV.	CORE GRADE	DOC. NO.
A	00000.0250	000050.000	000100	Subchronic	Rat	Systemic	Minimum	*
B	00000.0350	001400.000	002000	Terata	Rat	Systemic	Minimum	*
C	00000.0125	000500.000	002000	Reprodctn	Rat	Systemic	Minimum	0000002391*

AR DATA: No User Modifications*

-U.S. POP.--48 STATES

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.64	0.001942	19.42

0 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	25	12	6	4	2	2	2	1	1	1	1	0	0	0	0	0

0INFANTS(<1 YEAR)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	88.47	0.000966	9.66

0 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	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0

0CHILDREN(1-6 YRS)

	ESTIMATED % OF POTENTIAL	MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY	
ESTIMATES BASED ON	PERSON DAYS THAT ARE USER-DAYS	MG/KG BODY WEIGHT/DAY	AS PERCENT OF RDV
TOLERANCES:	0.00	0.000000	0.00
ANTICIPATED RESIDUES:	99.89	0.002373	23.73

0 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	18	12	8	5	4	3	2	2	2	1	1	1	1	0	0	0

13

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1DETAILED ACUTE ANALYSIS INCLUDING AR'S:  ALL STATISTICS BASED ON USERS' DAILY CONSUMPTION     08:50 Wednesday, December 18, 1996  23
*****************************************************************************************************************************
*NAME: CYPERMETHRIN                          STUDY     RDV     NOEL      SF    STUDY TYPE   SPECIES   EFF. LEV.  CORE GRADE   DOC. NO.*
*CASWELL NO: 271DD    CFR NO: CFR180.418      A  00000.0250 000050.000 000100 Subchronic     Rat     Systemic   Minimum            *
*CAS NO: 52315-07-8 SHAUGHNESSY NO:  109702 B  00000.0350 001400.000 002000 Terata         Rat     Systemic   Minimum            *
*STATUS CODES:                               C  00000.0125 000500.000 002000 Reprodctn      Rat     Systemic   Minimum    0000002391*
*RDV INFO:  The LD  value used in this analysis is  0.01        MG/KG  of BODY WEIGHT/DAY                                        *
*FILE INFO:  No Tolerance Data Are Used--Without User Modifications.                                  AR DATA;  No User Modifications*
*****************************************************************************************************************************
-FEMALES(13+ YRS)
 --------------------          ESTIMATED % OF POTENTIAL          MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY

   ESTIMATES BASED ON          PERSON DAYS THAT ARE USER-DAYS    MG/KG BODY WEIGHT/DAY       AS PERCENT OF RDV
              TOLERANCES:                0.00                          0.000000                    0.00
      ANTICIPATED RESIDUES:              99.72                          0.001947                   19.47
0                             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    27    13     7     4     3     2     2     1     1     1     1     0     0     0     0     0


0MALES(13+ YRS)
 --------------------          ESTIMATED % OF POTENTIAL          MEAN DAILY RESIDUE CONTRIBUTION PER USER-DAY

   ESTIMATES BASED ON          PERSON DAYS THAT ARE USER-DAYS    MG/KG BODY WEIGHT/DAY       AS PERCENT OF RDV
              TOLERANCES:                0.00                          0.000000                    0.00
      ANTICIPATED RESIDUES:              99.86                          0.001729                   17.29
0                             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    24    10     5     3     2     1     1     1     1     1     1     0     0     0     0     0
```

General U.S. Population

Exposure = RDV x X
= 0.01 x 4
High End Exposure = 0.04

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.04 mg/kg/day
MOE = 25

Infants (< 1 year)

Exposure = RDV x X
= 0.01 x 1.8
High End Exposure = 0.018

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.018 mg/kg/day
MOE = 55

Children (1-6 years)

Exposure = RDV x X
= 0.01 x 10
High End Exposure = 0.1

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.1 mg/kg/day
MOE = 10

Females (13+ Years:

Exposure = RDV x X
= 0.01 x 4
High End Exposure = 0.04

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.04 mg/kg/day
MOE = 25

Males (13+ Years:

Exposure = RDV x X
= 0.01 x 4
High End Exposure = 0.04

MOE = Noel + Exposure
= 1.0 mg/kg/day + 0.04 mg/kg/day
MOE = 25