



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

FEB 18 1992

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OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

MEMORANDUM

SUBJECT: RfD Exceeders Project: DRES Analyses Using Percent Crop Treated Data for Endosulfan, Methyl Parathion, Naled, and Parathion

FROM: Stephen A. Schaible *Stephen A. Schaible*
Dietary Exposure Section
SACB/HED (H7509C)

TO: Paul Parsons
Special Review Branch
Special Review and Reregistration Division (H7508W)

THROUGH: James P. Kariya *James P. Kariya*
Chief, Dietary Exposure Section
Health Effects Division *WJ*

As part of the RfD Exceeders Project, Dietary Exposure Section was requested to perform DRES chronic exposure analyses for endosulfan, methyl parathion, naled, and parathion, using updated percent crop treated information from BEAD (in the form of Preliminary Quantitative Usage Analyses (PQUAs) for each of these chemicals).

DRES Interpretation of Percent Crop Treated Information

In the PQUAs, when the percent of crop treated data was given in ranges, the DRES analysis used the upper bound to the range reported. Similarly, when the percent of site treated was reported in the PQUA as being less than "X" percent of the total crop, the value entered into the DRES analysis was "X" (e.g. "< 5%" in the PQUA was represented as "5%" in the DRES analysis). For some sites, there was not enough information available to BEAD to accurately estimate the percent of crop treated, and they reported the percent of crop treated as being "not available" (N.A.). In the absence of percent crop treated data, it was assumed in the DRES analysis that 100 percent of that crop was treated with the chemical, which for most crops would be an overestimate.

Since the PQUA for naled had entries of "N.A." for all commodities evaluated, it was assumed that 100 percent of all commodities in the data base were treated with naled. A DRES analysis had already been performed for naled using 100 percent crop treated in relation to the Exceeders Project; therefore, a second analysis was deemed unnecessary.



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A short summary of the analysis for each chemical follows. The summary pages from the DRES analyses for endosulfan, methyl parathion, and parathion are attached as Tables 1, 2, and 3, respectively.

Endosulfan

The DRES analysis for endosulfan used an OPP Reference Dose (RfD) of 0.0005 mg/kg body weight/day, based on a lowest observed effect level (LEL) of 0.15 mg/kg bwt/day and an uncertainty factor of 300. The RfD was based on a two generation reproduction study in rats which demonstrated as an effect discoloration of kidney tubules. The RfD has been reviewed by the OPP RfD Peer Review Committee (9/7/90).

Food uses evaluated in this analysis were the published uses of endosulfan listed in 40 CFR 180.182. Percent crop treated information reported in a PQUA of endosulfan (G. Ali, 6/7/91) was used as well.

Using the refined percent crop treated information, the exposure to endosulfan for the overall U.S. population is decreased from 0.012105 mg/kg bwt/day, or 2421% of the RfD, to 0.006484 mg/kg bwt/day, or 1297% of the RfD. The exposure to the subgroup most highly exposed, non-nursing infants less than one year old, is decreased from 0.041880 mg/kg bwt/day (8376% of the RfD) to 0.019698 mg/kg bwt/day (3940% of the RfD). Since these exposure values are still in exceedance of the RfD, it is suggested that anticipated residue information be requested next.

Methyl Parathion

The DRES analysis for methyl parathion used a Reference Dose of 0.00025 mg/kg bwt/day, based on a no observed effect level (NOEL) of 0.025 mg/kg bwt/day and an uncertainty factor of 100. The RfD was taken from a two year feeding study in rats which for effects demonstrated decreased red blood cell cholinesterase and reduced hematocrit and hemoglobin. This RfD has been approved by the HED (10/10/86) and Agency (12/9/86) RfD committees.

Food uses evaluated were the published uses of methyl parathion as listed in 40 CFR 180.121. Percent crop treated information used was supplied by BEAD in a PQUA dated 10/18/91 (F. Hernandez memo to P. Parsons). In transferring this data to the DRES data base, several assumptions were made. The terms "green beans" and "green peas" in the PQUA were respectively matched to the DRES commodities "beans-succulent-green" and "peas-succulent-garden". In addition, the percent crop treated information for celery was also assumed to apply to fennel and the entry in the PQUA for "corn" was assumed to not include the DRES commodities "popcorn" or "corn, sweet". Secondary residues of methyl parathion in meat, milk, and poultry have not yet been characterized but would be expected to be low (personal communication with A. Rathman (CBRS), 2/12/92).

It should be noted that the proposed cancellation of the remaining nine uses of parathion would have a significant impact

on the use of methyl parathion, and was a factor included in estimating the percentage of crop treated (F. Hernandez, 10/18/91).

Using the updated percent crop treated information, the ARC for the overall U.S. population is 0.004431 mg/kg bwt/day, or 1772% of the RfD. By using percent crop treated estimates in the analysis instead of assuming 100 percent crop treated (as was done in the previous analysis on methyl parathion), the exposure was decreased from 0.010122 mg/kg bwt/day, or 4049% of the RfD. The subgroup most highly exposed, non-nursing infants less than one year old, has an exposure of 0.013354 (5341% of the RfD), decreasing from 0.028832 mg/kg bwt/day, or 11,533% of the RfD. The exposure values to methyl parathion using percent crop treated information still exceed the RfD, so pursuance of anticipated residue information is recommended.

Naled

The RfD for naled is 0.002 mg/kg bwt/day, based on a NOEL of 0.2 mg/kg bwt/day and an uncertainty factor of 100. The RfD was based on a two year feeding study in rats which demonstrated as effects inhibition of brain cholinesterase, and slight inhibition of red blood cell and plasma cholinesterase at the 10 mg/kg dose. This RfD has been approved by both HED (3/17/87) and Agency (4/15/87) RfD committees.

Because the PQUA for naled (K.F. Griffin, 1/8/91) offered no refinement in the percent of crop treated information that was used in the previous analysis of this chemical, no analysis was performed for the information in the PQUA. However, the exposure using tolerance level residues and 100 percent crop treated (assumptions from the previous run) to the overall U.S. population is 0.010464 mg/kg bwt/day, or 523% of the RfD. This level exceeds the RfD and generation of anticipated residues is recommended as a next step.

Parathion

The DRES chronic analysis for parathion used a Reference Dose of 0.00033 mg/kg bwt/day, based on a LEL of 0.01 mg/kg bwt/day and an uncertainty factor of 30. The RfD was based on a one year dog feeding study which exhibited plasma and red blood cell cholinesterase inhibition. This reference dose has been approved by the HED RfD committee (3/7/86) but was deferred by the Agency RfD committee (11/25/86), pending the Risk Assessment Council's approval of the Risk Assessment Forum's cholinesterase report.

Food uses evaluated in this analysis were the published tolerances of parathion on alfalfa, barley, canola, corn, cotton, sorghum, soybeans, sunflower, and wheat. The remaining published tolerances as reported in 40 CFR 180.121 were voluntarily cancelled by the registrants and so were not included in the analysis. Percent crop treated information used in the analysis was supplied by BEAD in a B. Torla memo dated 10/1/91. There is no entry for canola in DRES, so residue information for canola was included under the DRES commodity name rape seed. Rape seed

oil is basically the same thing as canola, differing mainly in that it has higher concentrations of erucic acid (personal communication with B. Schneider, CBTS, 2/4/92). Because use of parathion on canola will not occur until residue data are submitted, no percent crop treated data was given in the BEAD memo for canola, and therefore 100 percent crop treated was assumed in the DRES analysis. In addition, a default consumption value for rapeseed of 0.000001 g/kg bwt/day was assumed in DRES even though no consumption of rapeseed was reported in the USDA 1977-78 Nationwide Food Consumption Survey (NFCS) (from which the consumption values in DRES are derived) Both of these assumptions may lead to possible overestimation of exposure.

Using the updated percent crop treated information supplied by BEAD, the ARC from parathion use on these nine crops is 0.000099 mg/kg bwt/day, or 30% of the RfD. The subgroup most highly exposed, children aged one through six, has an ARC of 0.000225 mg/kg bwt/day, or 68% of the RfD. Since the risk from parathion from all of its remaining uses appears to be below the level of chronic concern for all subgroups, no further pursuit of refining data should be necessary. The values in this analysis suggest that the chronic dietary risk from this chemical on these uses is not of significant concern.

Attachments

cc: DES
CBTS(D. Edwards)
Caswell #s 372, 420, 586, 637

TABLE 1

TOLERANCE ASSESSMENT SYSTEM ROUTING CHRONIC ANALYSIS

DATE: 09/23/91

PAGE: 1

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Endosulfan Case No. 115-29-7 A.I. CODE: 079401 --CFR No. 100.182	2 year repro- rat NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.1500 mg/kg 3.00 ppm OMC: Negative- 2 species.	Discoloration of kidney tubules- No NOEL established for this effect. No evidence of oncogenicity in rat or mouse.	AD1 UF -->300 OPP RfD= 0.000500 EPA RfD= 0.000050	No data gaps. Developmental tox studies to be reviewed. Reproduction study to be looked at also.	HED complete 05/29/86. HED complete 03/06/87. EPA verified 03/18/87. RfD/PR reviewed 09/07/90. WHO last reviewed 1982. On IRIS.

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY)		NEW TMRC AS PERCENT OF RFD		DIFFERENCE AS PERCENT OF RFD		EFFECT OF ANTICIPATED RESIDUES	
	CURRENT TMRC*	NEW TMRC**	NEW TMRC AS PERCENT OF RFD	DIFFERENCE AS PERCENT OF RFD	ARC	XRFD		
U.S. POPULATION - 48 STATES	0.012105	0.012105	2421.087800	0.000000	0.006484	1296.79680		
U.S. POPULATION - SPRING SEASON	0.011587	0.011587	2317.388200	0.000000	0.006280	1255.99540		
U.S. POPULATION - SUMMER SEASON	0.012964	0.012964	2592.872000	0.000000	0.006872	1374.38740		
U.S. POPULATION - FALL SEASON	0.012011	0.012011	2402.137600	0.000000	0.006401	1280.28890		
U.S. POPULATION - WINTER SEASON	0.011832	0.011832	2366.313000	0.000000	0.006352	1270.34560		
NORTHEAST REGION	0.012439	0.012439	2487.789000	0.000000	0.006377	1275.37700		
NORTH CENTRAL REGION	0.011697	0.011697	2339.363600	0.000000	0.006108	1221.67360		
SOUTHERN REGION	0.011554	0.011554	2310.866600	0.000000	0.006712	1342.31980		
WESTERN REGION	0.013166	0.013166	2633.211200	0.000000	0.006739	1347.70740		
HISPANICS	0.012745	0.012745	2548.997600	0.000000	0.006914	1362.81400		
NON-HISPANIC WHITES	0.012302	0.012302	2460.462000	0.000000	0.006499	1299.72840		
NON-HISPANIC BLACKS	0.010412	0.010412	2082.323200	0.000000	0.006065	1212.98800		
NON-HISPANIC OTHERS	0.012588	0.012588	2517.640400	0.000000	0.006971	1394.21420		
NURSING INFANTS (< 1 YEAR OLD)	0.023150	0.023150	4630.072000	0.000000	0.009285	1857.02940		
NON-NURSING INFANTS (< 1 YEAR OLD)	0.041880	0.041880	8376.098400	0.000000	0.019698	3939.56720		
FEMALES (13+ YEARS, PREGNANT)	0.009571	0.009571	1914.188000	0.000000	0.005255	1050.90360		
FEMALES 13+ YEARS, NON-PREGNANT	0.011625	0.011625	2325.036000	0.000000	0.006265	1252.99920		
CHILDREN (1-6 YEARS OLD)	0.026343	0.026343	5268.661000	0.000000	0.013265	2652.94920		
CHILDREN (7-12 YEARS OLD)	0.017133	0.017133	3426.562200	0.000000	0.009021	1804.14780		
MALES (13-19 YEARS OLD)	0.010806	0.010806	2161.109200	0.000000	0.005964	1192.87700		
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.009700	0.009700	1939.902400	0.000000	0.005300	1059.92300		
MALES (20 YEARS AND OLDER)	0.008741	0.008741	1748.156600	0.000000	0.004857	971.39940		
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS.)	0.009185	0.009185	1837.071600	0.000000	0.005096	1019.20820		

*Current TMRC does not include new or pending tolerances.

**New TMRC includes new, pending, and published tolerances.

W/PCT, no AR

TABLE 2

TOLERANCE ASSESSMENT SYSTEM ROUTINE CHRONIC ANALYSIS

DATE: 11/04/91

PAGE: 1

CHEMICAL INFORMATION		STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Methyl parathion Caswell #372 CAS No. 298-00-0 A.I. CODE: 053501 CFR No. 180.121	2yr feeding- rat MOEL= 0.0250 mg/kg LEL= 0.50 ppm 0.2500 mg/kg 5.00 ppm	OMCQ: Negative- 1 species	Decreased, RBC, Ht, Hb, ChE; tentative pending submission of data for sciatic nerve changes. No evidence of oncogenicity in mice; rats pending.	PAD1 UF -->100 OPP RfD= 0.000250 EPA RfD= 0.000250	Chronic feeding- dog Chronic feeding- rat (Core-supplementary) ADI is tentative pending evaluation of sciatic nerve effects.	HED complete 10/10/86. EPA verified 12/09/86. WHO last reviewed 1984. On IRIS.

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY)		NEW TMRC AS PERCENT OF RFD		DIFFERENCE AS PERCENT OF RFD		EFFECT OF ANTICIPATED RESIDUES	
	CURRENT TMRC*	NEW TMRC**	NEW TMRC AS PERCENT OF RFD	DIFFERENCE AS PERCENT OF RFD	ARC	XRFD		
U.S. POPULATION - 48 STATES	0.010122	0.010122	4048.697600	0.000000	0.004431	1772.28760		
U.S. POPULATION - SPRING SEASON	0.009791	0.009791	3916.306400	0.000000	0.004372	1748.78520		
U.S. POPULATION - SUMMER SEASON	0.010290	0.010290	4115.871600	0.000000	0.004534	1813.46440		
U.S. POPULATION - FALL SEASON	0.010172	0.010172	4048.951200	0.000000	0.004362	1744.96360		
U.S. POPULATION - WINTER SEASON	0.010197	0.010197	4078.771600	0.000000	0.004419	1767.61640		
NORTHEAST REGION	0.011114	0.011114	4445.483200	0.000000	0.005150	2060.19080		
NORTH CENTRAL REGION	0.009805	0.009805	3953.934400	0.000000	0.004213	1685.04840		
SOUTHERN REGION	0.009082	0.009082	3632.601200	0.000000	0.003834	1533.60240		
WESTERN REGION	0.010882	0.010882	4352.626000	0.000000	0.004764	1905.60400		
HISPANICS	0.011775	0.011775	4709.661200	0.000000	0.005603	2241.37320		
NON-HISPANIC WHITES	0.010063	0.010063	4025.182800	0.000000	0.004301	1720.42400		
NON-HISPANIC BLACKS	0.009417	0.009417	3766.605600	0.000000	0.004456	1782.46120		
NON-HISPANIC OTHERS	0.012112	0.012112	4844.643200	0.000000	0.006061	2424.26080		
NURSING INFANTS (< 1 YEAR OLD)	0.016037	0.016037	6414.880800	0.000000	0.007332	2932.95920		
NON-NURSING INFANTS (< 1 YEAR OLD)	0.028832	0.028832	11532.692400	0.000000	0.013354	5341.47800		
FEMALES (13+ YEARS, PREGNANT)	0.007768	0.007768	3107.332800	0.000000	0.003581	1432.38040		
FEMALES 13+ YEARS, NURSING	0.008840	0.008840	3535.910400	0.000000	0.003646	1458.32400		
CHILDREN (1-6 YEARS OLD)	0.023353	0.023353	9341.048800	0.000000	0.010843	4337.03680		
CHILDREN (7-12 YEARS OLD)	0.014754	0.014754	5901.514400	0.000000	0.006269	2515.65240		
MALES (13-19 YEARS OLD)	0.009076	0.009076	3630.392400	0.000000	0.003594	1437.78600		
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.008060	0.008060	3223.817200	0.000000	0.003415	1366.18480		
MALES (20 YEARS AND OLDER)	0.007283	0.007283	2913.345200	0.000000	0.002909	1163.69960		
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS)	0.007462	0.007462	2984.883200	0.000000	0.003413	1365.06120		

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

TABLE 3

TOLERANCE ASSESSMENT SYSTEM ROUTINE CHRONIC ANALYSIS

DATE: 10/07/91

PAGE: 1

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Parathion Caswell #637 CAS No. 56-38-2 A.I. CODE: 057501 CFR No. 180.121	1yr feeding- dog NOEL= 0.0000 mg/kg LEL= 0.00 ppm LEL= 0.0100 mg/kg ONCO: Class C (TOX MOTE).	Plasma, RBC ChE inhibition; no NOEL. Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	PADI UF -->30 OPP RfD= 0.000330 EPA RfD= 0.000000	LEL used for ADI. No data gaps. Extra UF of 3 used for lack of NOEL in critical study. Q* not appropriate.	HED complete 03/07/86. EPA deferred 11/25/86. Pending RAC approval of RAF ChE report. WHO last reviewed 1967.

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY)		NEW TMRC AS PERCENT OF RFD		DIFFERENCE AS PERCENT OF RFD		EFFECT OF ANTICIPATED RESIDUES	
	CURRENT TMRC*	NEW TMRC**	AS PERCENT OF RFD	AS PERCENT OF RFD	AS PERCENT OF RFD	AS PERCENT OF RFD	ARC	29RFD
U.S. POPULATION - 48 STATES	0.002098	0.002098	635.805455	0.000000	0.000000	0.000000	0.000099	29.91303
U.S. POPULATION - SPRING SEASON	0.002025	0.002025	613.553939	0.000000	0.000000	0.000000	0.000094	28.41636
U.S. POPULATION - SUMMER SEASON	0.002104	0.002104	637.443030	0.000000	0.000000	0.000000	0.000101	30.71576
U.S. POPULATION - FALL SEASON	0.002141	0.002141	648.686970	0.000000	0.000000	0.000000	0.000100	30.29273
U.S. POPULATION - WINTER SEASON	0.002114	0.002114	640.748182	0.000000	0.000000	0.000000	0.000099	29.94606
NORTHEAST REGION	0.002058	0.002058	623.537273	0.000000	0.000000	0.000000	0.000095	28.78606
NORTH CENTRAL REGION	0.002142	0.002142	649.069091	0.000000	0.000000	0.000000	0.000102	30.82636
SOUTHERN REGION	0.002087	0.002087	632.494848	0.000000	0.000000	0.000000	0.000099	30.09364
WESTERN REGION	0.002094	0.002094	634.685758	0.000000	0.000000	0.000000	0.000097	29.38061
HISPANICS	0.002312	0.002312	700.493333	0.000000	0.000000	0.000000	0.000109	33.05636
NON-HISPANIC WHITES	0.002092	0.002092	633.798485	0.000000	0.000000	0.000000	0.000098	29.69727
NON-HISPANIC BLACKS	0.002039	0.002039	617.953030	0.000000	0.000000	0.000000	0.000098	29.59970
NON-HISPANIC OTHERS	0.001937	0.001937	586.935455	0.000000	0.000000	0.000000	0.000088	26.69848
NURSING INFANTS (< 1 YEAR OLD)	0.000971	0.000971	294.253030	0.000000	0.000000	0.000000	0.000045	13.57909
NON-NURSING INFANTS (< 1 YEAR OLD)	0.002727	0.002727	826.340000	0.000000	0.000000	0.000000	0.000133	40.43606
FEMALES (13+ YEARS, PREGNANT)	0.001468	0.001468	444.955455	0.000000	0.000000	0.000000	0.000069	21.00515
FEMALES 13+ YEARS, NURSING	0.001764	0.001764	534.688182	0.000000	0.000000	0.000000	0.000083	25.01273
CHILDREN (1-6 YEARS OLD)	0.004688	0.004688	1420.518182	0.000000	0.000000	0.000000	0.000225	68.21182
CHILDREN (7-12 YEARS OLD)	0.003449	0.003449	1045.228182	0.000000	0.000000	0.000000	0.000167	50.58909
MALES (13-19 YEARS OLD)	0.002390	0.002390	724.162424	0.000000	0.000000	0.000000	0.000113	34.14939
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.001847	0.001847	559.732121	0.000000	0.000000	0.000000	0.000088	26.65212
MALES (20 YEARS AND OLDER)	0.001696	0.001696	513.866364	0.000000	0.000000	0.000000	0.000075	22.82636
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS)	0.001331	0.001331	403.200606	0.000000	0.000000	0.000000	0.000063	18.95515

*Current TMRC does not include new or pending tolerances.

**New TMRC includes new, pending, and published tolerances.

W/RET, no file

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CHEMICAL		STUDY TYPE		EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS		STATUS
Parathion	1yr feeding- dog	0.0000 mg/kg	0.00 ppm	Plasma, RBC Che inhibi- tion; no NOEL.	PADI UF -->30	LEL used for ADI.	No data gaps.	HED complete 03/07/86.	
Caswell #637	NOEL=	0.0000 mg/kg	0.00 ppm	Evidence of oncogenicity	OPP RfD= 0.000330	Extra UF of 3 used for	lack of NOEL in critical	EPA deferred 11/25/86.	
CAS No. 56-38-2	LEL=	0.0100 mg/kg	0.00 ppm	in rats (adrenal cortex),	EPA RfD= 0.000000	study.	q* not appropriate.	Pending RAC approval of	
A.I. CODE: 057501	ONCO: Class C (TOX NOTE).			negative in the mouse.				RAF CHE report.	
CFR No. 180.121								WHO last reviewed 1967.	
FOOD CODE	FOOD	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)		
15004AA	CORN, POP		P 1.000000	1.000000		1.00	0.040000		
15005AA	CORN, SWEET		P 1.000000	1.000000		35.00	0.110000		
15005AA	CORN, SWEET		P 1.000000	1.000000		35.00	0.110000		
15005AA	CORN, SWEET		P 1.000000	1.000000		35.00	0.110000		
15018AA	SUNFLOWER-SEEDS		P 0.200000	0.200000		30.00	0.032000		
15029AA	SOYBEAN-SPROUTED		P 0.100000	0.100000		1.00	0.004000		
24001AA	BARLEY	0F0878	P 1.000000	1.000000		8.00	0.010000		
24002EA	CORN, GRAIN-ENDO		P 1.000000	1.000000		1.00	0.040000		
24002EA	CORN, GRAIN-ENDO		P 1.000000	1.000000		1.00	0.040000		
24002EA	CORN, GRAIN-ENDO		P 1.000000	1.000000		1.00	0.040000		
24002EA	CORN, GRAIN-ENDO		P 1.000000	1.000000		1.00	0.040000		
24002HA	CORN, GRAIN-BRAN		P 1.000000	1.000000		1.00	0.040000		
24002SA	CORN SUGAR		P 1.000000	1.000000		1.00	0.040000		
24002SA	CORN SUGAR		P 1.000000	1.000000		1.00	0.040000		
24002SA	CORN SUGAR		P 1.000000	1.000000		1.00	0.040000		
24006AA	SORGHUM	1F1091	P 0.100000	0.100000		11.00	0.010000		
24007AA	WHEAT-ROUGH	32	P 1.000000	1.000000		2.00	0.040000		
24007AA	WHEAT-ROUGH	32	P 1.000000	1.000000		2.00	0.040000		
24007AA	WHEAT-ROUGH	32	P 1.000000	1.000000		2.00	0.040000		
24007AA	WHEAT-ROUGH	32	P 1.000000	1.000000		2.00	0.040000		
24007GA	WHEAT-GERM	32	P 1.000000	1.000000		2.00	0.040000		
24007GA	WHEAT-GERM	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-BRAN	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-BRAN	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-BRAN	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-FLOUR	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-FLOUR	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-FLOUR	32	P 1.000000	1.000000		2.00	0.040000		
24007HA	WHEAT-FLOUR	32	P 1.000000	1.000000		2.00	0.040000		
270020A	CORN, GRAIN-OIL	0F0878	P 0.750000	0.750000		1.00	0.040000		
270030A	COTTONSEED-OIL	0F0878	P 0.750000	0.750000		4.00	0.015000		
270030A	COTTONSEED-MEAL	0F0878	P 0.100000	0.100000		1.00	0.004000		
270100A	SOYBEANS-OIL	8E0718	P 0.200000	0.200000		30.00	0.032000		
270110A	SUNFLOWER-OIL	3E1302	P 0.200000	0.200000		100.00	0.200000		
27017AA	RAPE SEED	0F0878	P 0.100000	0.100000		1.00	0.004000		
28023AA	SOYBEANS-UNSPEC	0F0878	P 0.100000	0.100000		1.00	0.004000		
28023AB	SOYBEANS-DRY	0F0878	P 0.100000	0.100000		1.00	0.004000		
28023AB	SOYBEANS-DRY	0F0878	P 0.100000	0.100000		1.00	0.004000		
28023AB	SOYBEANS-DRY	0F0878	P 0.100000	0.100000		1.00	0.004000		
28023AB	SOYBEANS-DRY	0F0878	P 0.100000	0.100000		1.00	0.004000		

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DATE: 10/07/91

ANTICIPATED RESIDUE INFORMATION FOR CASWELL NUMBER 637

CHEMICAL		STUDY TYPE		EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS		STATUS
Parathion Caswell #637 CAS No. 56-38-2 A.I. CODE: 057501 CFR No. 180.121	FOOD	1yr feeding- dog		Plasma, RBC ChE inhibition; no NOEL. Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	PADI	UF	--30	LEL used for ADI. No data gaps. Extra UF of 3 used for lack of NOEL in critical study. Q* not appropriate.	HED complete 03/07/86. EPA deferred 11/25/86. Pending RAC approval of RAF ChE report. WHO last reviewed 1967.
		NOEL=							
		0.0000 mg/kg							
		0.00 ppm							
		LEL=							
		0.0100 mg/kg							
		0.00 ppm							
		ONCO: Class C (TOX NOTE).							
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	31	COOKED-FRESH OR CANNED	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WA	SOY-FL, FULL FAT	21	COOKED-NFS	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WA	SOY-FL, FULL FAT	22	COOKED-FRESH-BAKED	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WA	SOY-FL, FULL FAT	31	COOKED-FRESH OR CANNED	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WB	SOY-FL, LOW FAT	21	COOKED-NFS	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WC	SOY-FL,DEFAT	10	RAW-FRESH OR NFS	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WC	SOY-FL,DEFAT	21	COOKED-NFS	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WC	SOY-FL,DEFAT	22	COOKED-FRESH-BAKED	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WC	SOY-FL,DEFAT	51	COOKED-CANNED	0F0878	P 0.100000	0.100000		1.00	0.004000
28023WC	SOY-FL,DEFAT	53	COOKED-CANNED-BOILED	0F0878	P 0.100000	0.100000		1.00	0.004000

DATE: 10/07/91

TOLERANCE ASSESSMENT SYSTEM ROUTINE CHRONIC ANALYSIS

CHEMICAL INFORMATION		STUDY TYPE	EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS	STATUS
Parathion Caswell #637 CAS No. 56-38-2 A.I. CODE: 057501 CFR No. 180.121	1yr feeding- dog NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.0100 mg/kg 0.00 ppm ONCO: Class C (TOX NOTE).		Plasma, RBC ChE inhibition; no NOEL. Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	PADI UF -->30 OPP RfD= 0.000330 EPA RfD= 0.000000	LEL used for ADI. No data gaps. Extra UF of 3 used for lack of NOEL in critical study. Q* not appropriate.		HED complete 03/07/86. EPA deferred 11/25/86. Pending RAC approval of RAF ChE report. WHO last reviewed 1967.

POPULATION SUBGROUP	TOTAL TMRC (MG/KG BODY WEIGHT/DAY)		NEW TMRC		DIFFERENCE		EFFECT OF ANTICIPATED RESIDUES	
	CURRENT TMRC*	NEW TMRC**	AS PERCENT OF RFD	AS PERCENT OF RFD	AS PERCENT OF RFD	ARC	%RFD	
U.S. POPULATION - 48 STATES	0.002098	0.002098	635.805455	0.000000	0.000000	0.000099	29.91303	
U.S. POPULATION - SPRING SEASON	0.002025	0.002025	613.553939	0.000000	0.000000	0.000094	28.41636	
U.S. POPULATION - SUMMER SEASON	0.002104	0.002104	637.443030	0.000000	0.000000	0.000101	30.71576	
U.S. POPULATION - FALL SEASON	0.002141	0.002141	648.686970	0.000000	0.000000	0.000100	30.29273	
U.S. POPULATION - WINTER SEASON	0.002114	0.002114	640.748182	0.000000	0.000000	0.000099	29.94606	
NORTHEAST REGION	0.002058	0.002058	623.537273	0.000000	0.000000	0.000095	28.78606	
NORTH CENTRAL REGION	0.002142	0.002142	649.069091	0.000000	0.000000	0.000102	30.82636	
SOUTHERN REGION	0.002087	0.002087	632.494848	0.000000	0.000000	0.000099	30.09364	
WESTERN REGION	0.002094	0.002094	634.685758	0.000000	0.000000	0.000097	29.38061	
HISPANICS	0.002312	0.002312	700.493333	0.000000	0.000000	0.000109	33.05636	
NON-HISPANIC WHITES	0.002092	0.002092	633.798485	0.000000	0.000000	0.000098	29.69727	
NON-HISPANIC BLACKS	0.002039	0.002039	617.953030	0.000000	0.000000	0.000098	29.59970	
NON-HISPANIC OTHERS	0.001937	0.001937	586.935455	0.000000	0.000000	0.000088	26.69848	
NURSING INFANTS (< 1 YEAR OLD)	0.000971	0.000971	294.253030	0.000000	0.000000	0.000045	13.57909	
NON-NURSING INFANTS (< 1 YEAR OLD)	0.002727	0.002727	826.340000	0.000000	0.000000	0.000133	40.43606	
FEMALES (13+ YEARS, PREGNANT)	0.001468	0.001468	444.955455	0.000000	0.000000	0.000069	21.00515	
FEMALES 13+ YEARS, NURSING	0.001764	0.001764	534.688182	0.000000	0.000000	0.000083	25.01273	
CHILDREN (1-6 YEARS OLD)	0.004688	0.004688	1420.518182	0.000000	0.000000	0.000225	68.21182	
CHILDREN (7-12 YEARS OLD)	0.003449	0.003449	1045.228182	0.000000	0.000000	0.000167	50.58909	
MALES (13-19 YEARS OLD)	0.002390	0.002390	724.162424	0.000000	0.000000	0.000113	34.14939	
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.001847	0.001847	559.732121	0.000000	0.000000	0.000088	26.65212	
MALES (20 YEARS AND OLDER)	0.001696	0.001696	513.866364	0.000000	0.000000	0.000075	22.82636	
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURS)	0.001331	0.001331	403.200606	0.000000	0.000000	0.000063	18.95515	

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

DATE: 10/07/91

TOLERANCE ASSESSMENT SYSTEM ROUTINE: CHRONIC ANALYSIS

CHEMICAL INFORMATION		STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Parathion	Caswell #637	1yr feeding- dog	Plasma, RBC ChE inhibition; no NOEL.	PADI UF -->30	LEL used for ADI.	HED complete 03/07/86.
	CAS No. 56-38-2	NOEL= 0.0000 mg/kg	Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	OPP RfD= 0.000330	No data gaps.	EPA deferred 11/25/86.
	A.I. CODE: 057501	LEL= 0.0100 mg/kg		EPA RfD= 0.000000	Extra UF of 3 used for lack of NOEL in critical study.	Pending RAC approval of RAF ChE report.
	CFR No. 180.121	ONCO: Class C (TOX NOTE).			q* not appropriate.	WHO last reviewed 1967.

COMMODITY CONTRIBUTION BY RAC FOR: U.S. POPULATION - 48 STATES

FOOD CODE	FOODNAME/FOODFORM	TOLERANCE (PPM)	TMRC TYPE (UG/KG/DAY)	%RFD	ANTICIPATED RESIDUE (PPM)	ARC (UG/KG/DAY)	%RFD
15018AA	SUNFLOWER-SEEDS	0.200	P	0.000346	0.105	0.03200	0.000055
270030A	10 RAW-FRESH OR NFS	0.750	P	0.015306	4.638	0.01500	0.000306
270030A	COTTONSEED-OIL	0.750	P	0.000088	0.027	0.01500	0.000002
270030A	18 PROCESSED OIL	0.200	P	0.000497	0.151	0.03200	0.000079
270110A	COTTONSEED-NEAL	0.200	P	0.000000	0.000	0.20000	0.000000
270110A	18 PROCESSED OIL	0.200	P	0.000000	0.000	0.20000	0.000000
27017AA	SUNFLOWER-OIL	0.200	P	0.000000	0.000	0.20000	0.000000
27017AA	RAPE SEED	0.200	P	0.000000	0.000	0.20000	0.000000
27017AA	00 NOT SPECIFIED (NO CONSUMPTION)	0.200	P	0.000000	0.000	0.20000	0.000000
CROP GROUP TOTALS FOR UNSPECIFIED:				0.016237	4.920	0.000442	0.134

CROP GROUP TOTALS FOR UNSPECIFIED:

15029AA	SOYBEANS-SPROUTED SEEDS	0.100	P	0.000000	0.000	0.00400	0.000000
270100A	00 NOT SPECIFIED (NO CONSUMPTION)	0.100	P	0.032216	9.762	0.00400	0.001289
270100A	SOYBEANS-OIL	0.100	P	0.000052	0.016	0.00400	0.000002
28023AA	18 PROCESSED OIL	0.100	P	0.000090	0.027	0.00400	0.000001
28023AA	SOYBEANS-UNSPECIFIED	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	21 COOKED-NFS	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	SOYBEANS-NATURE, SEEDS DRY	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	10 RAW-FRESH OR NFS	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	21 COOKED-NFS	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	23 COOKED-FRESH-BOILED	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	25 COOKED-FRESH-FRIED	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	31 COOKED-FRESH OR CANNED	0.100	P	0.000090	0.027	0.00400	0.000001
28023AB	SOYBEANS-FLOUR, FULL FAT	0.100	P	0.000292	0.088	0.00400	0.000004
28023AB	21 COOKED-NFS	0.100	P	0.000292	0.088	0.00400	0.000004
28023AB	22 COOKED-FRESH-BAKED	0.100	P	0.000292	0.088	0.00400	0.000004
28023AB	31 COOKED-FRESH OR CANNED	0.100	P	0.000292	0.088	0.00400	0.000004
28023AB	SOYBEANS-FLOUR, LOW FAT	0.100	P	0.000095	0.029	0.00400	0.000004
28023AB	21 COOKED-NFS	0.100	P	0.000095	0.029	0.00400	0.000004
28023AB	22 COOKED-FRESH-BAKED	0.100	P	0.000095	0.029	0.00400	0.000004
28023AB	31 COOKED-FRESH OR CANNED	0.100	P	0.000095	0.029	0.00400	0.000004
28023AB	SOYBEANS-FLOUR, DEFATTED	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	21 COOKED-NFS	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	10 RAW-FRESH OR NFS	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	21 COOKED-NFS	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	22 COOKED-FRESH-BAKED	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	51 COOKED-CANNED	0.100	P	0.001246	0.378	0.00400	0.000003
28023AB	53 COOKED-CANNED-BOILED	0.100	P	0.001246	0.378	0.00400	0.000003
CROP GROUP TOTALS FOR LEGUME VEGETABLES:				0.033991	10.300	0.001361	0.412

DATE: 10/07/91

TOLERANCE ASSESSMENT SYSTEM ROUTINE: CHRONIC ANALYSIS

CHEMICAL INFORMATION		STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Parathion Caswell #637 CAS No. 56-38-2 A.I. CODE: 057501 CFR No. 180.121	1yr feeding- dog NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.0100 mg/kg 0.00 ppm ONCO: Class C (TOX WOTE).		Plasma, RBC CHE inhibition; no NOEL. Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	PADI UF -->30 OPP RfD= 0.000330 EPA RfD= 0.000000	LEL used for ADI. No data gaps. Extra UF of 3 used for lack of NOEL in critical study. Q* not appropriate.	HED complete 03/07/86. EPA deferred 11/25/86. Pending RAC approval of RAF CHE report. WHO last reviewed 1967.

COMMODITY CONTRIBUTION BY RAC FOR: U.S. POPULATION - 48 STATES

FOOD CODE	FOODNAME/FOODFORM	TOLERANCE (PPM)	TYPE	TMRC (UG/KG/DAY)	%RFD	ANTICIPATED RESIDUE (PPM)	ARC (UG/KG/DAY)	%RFD
15004AA	CORN, POP	1.000	P	0.006771	2.052	0.04000	0.000271	0.082
15005AA	21 COOKED-NFS	1.000	P	0.236707	71.729	0.11000	0.000011	0.003
	10 RAW-FRESH OR NFS					0.11000	0.021924	6.644
	21 COOKED-NFS					0.11000	0.004103	1.243
24001AA	31 COOKED-FRESH OR CANNED	1.000	P	0.057301	17.364	0.01000	0.000573	0.174
24002EA	21 COOKED-NFS	1.000	P	0.165401	50.122	0.04000	0.000024	0.007
	CORN, GRAIN-ENDOSPERM					0.04000	0.000871	0.264
	10 RAW-FRESH OR NFS					0.04000	0.004916	1.490
	21 COOKED-NFS					0.04000	0.000805	0.244
	22 COOKED-FRESH-BAKED							
	23 COOKED-FRESH-BOILED							
24002HA	CORN, GRAIN-BRAN	1.000	P	0.000001	0.000	0.04000	0.000000	0.000
24002SA	00 NOT SPECIFIED (NO CONSUMPTION)	1.000	P	0.145749	44.166	0.04000	0.000227	0.069
	CORN SUGAR					0.04000	0.005055	1.532
	10 RAW-FRESH OR NFS					0.04000	0.000548	0.166
	21 COOKED-NFS							
	22 COOKED-FRESH-BAKED							
24006AA	SORGHUM (INCLUDING MILO)	0.100	P	0.002377	0.720	0.01000	0.000238	0.072
24007AA	00 NOT SPECIFIED (NO CONSUMPTION)	1.000	P	0.140612	42.610	0.04000	0.000000	0.000
	WHEAT-ROUGH					0.04000	0.000359	0.109
	10 RAW-FRESH OR NFS					0.04000	0.003435	1.041
	21 COOKED-NFS					0.04000	0.001830	0.555
	22 COOKED-FRESH-BAKED							
	23 COOKED-FRESH-BOILED							
24007GA	WHEAT-GERM	1.000	P	0.000805	0.244	0.04000	0.000000	0.000
	10 RAW-FRESH OR NFS					0.04000	0.000032	0.010
	22 COOKED-FRESH-BAKED							
24007HA	WHEAT-BRAN	1.000	P	0.012157	3.684	0.04000	0.000003	0.001
	10 RAW-FRESH OR NFS					0.04000	0.000006	0.002
	21 COOKED-NFS					0.04000	0.000477	0.145
	22 COOKED-FRESH-BAKED							
24007WA	WHEAT-FLOUR	1.000	P	1.257249	380.985	0.04000	0.000014	0.004
	10 RAW-FRESH OR NFS					0.04000	0.028072	8.507
	21 COOKED-NFS					0.04000	0.018474	5.598
	22 COOKED-FRESH-BAKED					0.04000	0.003730	1.130
	25 COOKED-FRESH-FRIED							
270020A	CORN, GRAIN-OIL	1.000	P	0.022800	6.909	0.04000	0.000912	0.276
	18 PROCESSED OIL							
CROP GROUP TOTALS FOR CEREAL GRAINS:					2.047930	620.585	0.096910	29.367

TOLERANCE ASSESSMENT SYSTEM ROUTINE - CHRONIC ANALYSIS

CHEMICAL INFORMATION		STUDY TYPE	EFFECTS	REFERENCE DOSES		DATA GAPS/COMMENTS	STATUS
Parathion	Caswell #637	1yr feeding- dog	Plasma, RBC CHE inhibition; no NOEL.	PADI UF -->30	LEL used for ADI.	LEL used for ADI.	HED complete 03/07/86.
	CAS No. 56-38-2	NOEL= 0.0000 mg/kg	Evidence of oncogenicity in rats (adrenal cortex), negative in the mouse.	OPP RfD= 0.000330	No data gaps.	No data gaps.	EPA deferred 11/25/86.
	A.I. CODE: 057501	LEL= 0.0100 mg/kg		EPA RfD= 0.000000	Extra UF of 3 used for lack of NOEL in critical study.	Extra UF of 3 used for lack of NOEL in critical study.	Pending RAC approval of RAF CHE report.
	CFR No. 180.121	ONCO: Class C (TOX NOTE).			Q* not appropriate.	Q* not appropriate.	WHO last reviewed 1967.

COMMODITY CONTRIBUTION BY RAC FOR: U.S. POPULATION - 48 STATES

FOOD CODE	FOODNAME/FOODFORM	TOLERANCE (PPM)	TMRC TYPE (UG/KG/DAY)	%RFD	ANTICIPATED RESIDUE (PPM)	ARC (UG/KG/DAY)	%RFD
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NO TOTALS FOR U.S. POPULATION - 48 STATES

TOLERANCE TYPE: N=NEW; A=PENDING; P=PUBLISHED
 TMRC=THEORETICAL MAXIMUM RESIDUE CONTRIBUTION
 ARC = ANTICIPATED RESIDUE CONTRIBUTION
 RFD = REFERENCE DOSE