



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

MEMORANDUM

APR 28 1992

OFFICE OF
PESTICIDES AND TOXIC
SUBSTANCES

SUBJECT: RfD Exceeders Project: Dietary Exposure Analysis for Endosulfan

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

TO: Jack Housenger, Acting Chief
Special Review Branch
Special Review and Reregistration Division (H7508W)

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

As part of the RfD Exceeders Project, Dietary Exposure Section was requested by SRRD to conduct a DRES chronic exposure analysis for endosulfan, using anticipated residues generated by CBRS and percent of crop treated information supplied by BEAD. After this analysis was performed (and its results were included in RfD Exceeders Project briefing papers for Doug Campt and Linda Fisher), the Reference Dose was reassessed and a temporary RfD threefold larger was decided on for endosulfan. Exposure estimates as a percent of this present RfD will also be discussed.

Toxicological Endpoints

A reference dose (RfD) of 0.0005 mg/kg body weight/day was used in the initial analysis dated 2/26/92, based on a lowest observed effect level (LEL) of 0.15 mg/kg bwt/day and an uncertainty factor of 300. This RfD is based on a two generation reproduction study in rats which demonstrated as an effect discoloration of kidney tubules. This RfD has been reviewed by the OPP RfD Peer Review Committee (9/7/90).

The HED RfD Peer Review Committee met on March 20, 1992 to evaluate new data submitted in support of endosulfan registration. It was decided at this meeting that the lowest effect level (LEL) from which the RfD of 0.0005 mg/kg bwt/day is based on should in fact be considered a no observed effect level (NOEL). This decision has the effect of decreasing the uncertainty factor from 300 to 100, which in turn increases the RfD to 0.0015 mg/kg bwt/day. This present RfD should be considered as a provisional value, as it will be reevaluated

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CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Endosulfan Caswell #420 CAS No. 115-29-7 A.I. CODE: 079401 CFR No. 180.182	2gen reprod- rat NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.1500 mg/kg 3.00 ppm ONCO: Negative- 2 species.	Discoloration of kidney tubules- No NOEL established for this effect. No evidence of oncogenicity in rat or mouse.	ADI 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.

FOOD CODE	FOOD	FOOD FORM	PET. #	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
04001DA	APPLES-DRIED	10 RAW-FRESH OR NFS		P 2.000000	0.030000	FDA MON.	100.00	0.030000
04001DA	APPLES-DRIED	22 COOKED-FRESH-BAKED		P 2.000000	0.030000	FDA MON.	100.00	0.030000
04001DA	APPLES-DRIED	62 COOKED-FRESH OR FROZEN-BAKED		P 2.000000	0.030000	FDA MON.	100.00	0.030000
04001JA	APPLES-JUICE	15 RAW-FRESH OR CANNED		P 2.000000	0.030000C	FDA MON + PROC	100.00	0.030000
04001JA	APPLES-JUICE	31 COOKED-FRESH OR CANNED		P 2.000000	0.030000C	FDA MON + PROC	100.00	0.030000
04003AA	PEARS-FRESH	10 RAW-FRESH OR NFS	280	P 2.000000	0.040000	FDA MON.	100.00	0.040000
04003AA	PEARS-FRESH	31 COOKED-FRESH OR CANNED	280	P 2.000000	0.040000	FDA MON.	100.00	0.040000
04003AA	PEARS-FRESH	51 COOKED-CANNED	280	P 2.000000	0.040000	FDA MON.	100.00	0.040000
04003AA	PEARS-FRESH	62 COOKED-FRESH OR FROZEN-BAKED	280	P 2.000000	0.040000	FDA MON.	100.00	0.040000
04003DA	PEARS-DRIED	10 RAW-FRESH OR NFS	280	P 2.000000	0.040000C	FDA MON + PROC	100.00	0.040000
04003DA	PEARS-DRIED	21 COOKED-NFS	280	P 2.000000	0.040000C	FDA MON + PROC	100.00	0.040000
05001AA	APRICOTS-FRESH	10 RAW-FRESH OR NFS	280	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05001AA	APRICOTS-FRESH	21 COOKED-NFS	280	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05001AA	APRICOTS-FRESH	31 COOKED-FRESH OR CANNED	280	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05001DA	APRICOTS-DRIED	10 RAW-FRESH OR NFS	280	P 2.000000	0.060000C	FDA MON + PROC	100.00	0.060000
05001DA	APRICOTS-DRIED	22 COOKED-FRESH-BAKED	280	P 2.000000	0.060000C	FDA MON + PROC	100.00	0.060000
05002AA	CHERRIES-FRESH	10 RAW-FRESH OR NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002AA	CHERRIES-FRESH	21 COOKED-NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002AA	CHERRIES-FRESH	31 COOKED-FRESH OR CANNED	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002AA	CHERRIES-FRESH	62 COOKED-FRESH OR FROZEN-BAKED	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002DA	CHERRIES-DRIED	00 NOT SPECIFIED (NO CONSUMPTION)	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002JA	CHERRIES-JUICE	15 RAW-FRESH OR CANNED	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05002JA	CHERRIES-JUICE	21 COOKED-NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05003AA	NECTARINES	10 RAW-FRESH OR NFS	280	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05004AA	PEACHES-FRESH	10 RAW-FRESH OR NFS	280	P 2.000000	0.060000	FDA MON.	100.00	0.060000
05004AA	PEACHES-FRESH	21 COOKED-NFS	280	P 2.000000	0.060000	FDA MON.	100.00	0.060000
05004AA	PEACHES-FRESH	31 COOKED-FRESH OR CANNED	280	P 2.000000	0.060000	FDA MON.	100.00	0.060000
05004DA	PEACHES-DRIED	10 RAW-FRESH OR NFS	280	P 2.000000	0.060000	FDA MON.	100.00	0.060000
05004DA	PEACHES-DRIED	21 COOKED-NFS	280	P 2.000000	0.180000C	FDA MON + PROC	100.00	0.180000
05005AA	PLUMS-FRESH	10 RAW-FRESH OR NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005AA	PLUMS-FRESH	31 COOKED-FRESH OR CANNED	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005DA	PLUMS-PRUNES	10 RAW-FRESH OR NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005DA	PLUMS-PRUNES	21 COOKED-NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005DA	PLUMS-PRUNES	31 COOKED-FRESH OR CANNED	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005JA	PRUNE-JUICE	10 RAW-FRESH OR NFS	338	P 2.000000	0.030000	FDA MON.	100.00	0.030000
05005JA	PRUNE-JUICE	62 COOKED-FRESH OR FROZEN-BAKED	7F0526	P 2.000000	0.023000	FDA MON.	100.00	0.023000
06013AA	PINEAPPLE-PULP	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.023000	FDA MON.	100.00	0.023000
06013AA	PINEAPPLE-PULP	21 COOKED-NFS	7F0526	P 2.000000	0.023000	FDA MON.	100.00	0.023000
06013AA	PINEAPPLE-PULP	31 COOKED-FRESH OR CANNED	7F0526	P 2.000000	0.023000	FDA MON.	100.00	0.023000

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CHEMICAL	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Endosulfan Caswell #420 CAS No. 115-29-7 A.I. CODE: 079401 CFR No. 180.182	2gen reprod- rat NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.1500 mg/kg 3.00 ppm ONCO: Negative- 2 species.	Discoloration of kidney tubules- No NOEL established for this effect. No evidence of oncogenicity in rat or mouse.	ADI UF -->300 OPP Rfd= 0.000500 EPA Rfd= 0.000050	No data gaps. Developmental tox studies to be rereviewed. 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.

FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
11005JA	TOMATOES-JUICE	10 RAW-FRESH OR NFS	280	P 2.000000	0.010000C	FDA MON + PROC	100.00	0.010000
11005JA	TOMATOES-JUICE	21 COOKED-NFS	280	P 2.000000	0.010000C	FDA MON + PROC	100.00	0.010000
11005RA	TOMATOES-PUREE	10 RAW-FRESH OR NFS	280	P 2.000000	0.050000C	FDA MON + PROC	100.00	0.050000
11005RA	TOMATOES-PUREE	21 COOKED-NFS	280	P 2.000000	0.050000C	FDA MON + PROC	100.00	0.050000
11005RA	TOMATOES-PUREE	31 COOKED-FRESH OR CANNED	280	P 2.000000	0.050000C	FDA MON + PROC	100.00	0.050000
11005RA	TOMATOES-PUREE	32 COOKED-FRESH OR CANNED-BAKED	280	P 2.000000	0.050000C	FDA MON + PROC	100.00	0.050000
11005RA	TOMATOES-PUREE	51 COOKED-CANNED	280	P 2.000000	0.050000C	FDA MON + PROC	100.00	0.050000
11005TA	TOMATOES-PASTE	21 COOKED-NFS	280	P 2.000000	0.020000C	FDA MON + PROC	100.00	0.020000
11005TA	TOMATOES-PASTE	22 COOKED-FRESH-BAKED	280	P 2.000000	0.020000C	FDA MON + PROC	100.00	0.020000
11005TA	TOMATOES-PASTE	31 COOKED-FRESH OR CANNED	280	P 2.000000	0.020000C	FDA MON + PROC	100.00	0.020000
11005UA	TOMATOES-CATSUP	21 COOKED-NFS	280	P 2.000000	0.050000C	FDA PROC TRANSI	100.00	0.050000
13002AA	CELERY	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.080000	FDA MON.	100.00	0.080000
13002AA	CELERY	21 COOKED-NFS	7F0526	P 2.000000	0.080000	FDA MON.	100.00	0.080000
13005AA	BROCCOLI	21 COOKED-NFS	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13005AA	BROCCOLI	31 COOKED-FRESH OR CANNED	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13005AA	BROCCOLI	63 COOKED-FRESH OR FROZEN-BOILED	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13006AA	BRUSSEL SPROUTS	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13006AA	BRUSSEL SPROUTS	23 COOKED-FRESH-BOILED	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13007AA	CABBAGE	10 RAW-FRESH OR NFS	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13007AA	CABBAGE	11 RAW-FRESH-PICKLED,CORNED,OR CURED	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13007AA	CABBAGE	21 COOKED-NFS	349	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13008AA	CAULIFLOWER	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13008AA	CAULIFLOWER	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13009AA	COLLARDS	51 COOKED-CANNED	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13009AA	COLLARDS	63 COOKED-FRESH OR FROZEN-BOILED	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13011AA	KALE	63 COOKED-FRESH OR FROZEN-BOILED	7F0526	P 2.000000	0.080000	FDA MON.	100.00	0.080000
13013AA	LETTUCE-LEAFY	10 RAW-FRESH OR NFS	8F0723	P 2.000000	0.110000	FDA MON.	100.00	0.110000
13018AA	ARTICHOKE-GLOBE	21 COOKED-NFS	8F0723	P 2.000000	0.730000	FIELD TRIAL	100.00	0.730000
13020AA	LETTUCE-UNSPEC	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.110000	FDA MON TRANSI	100.00	0.110000
13021AA	MUSTARD GREENS	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13021AA	MUSTARD GREENS	63 COOKED-FRESH OR FROZEN-BOILED	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13024AA	SPINACH	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.180000	FDA MON.	100.00	0.180000
13024AA	SPINACH	21 COOKED-NFS	7F0526	P 2.000000	0.180000	FDA MON.	100.00	0.180000
13024AA	SPINACH	31 COOKED-FRESH OR CANNED	7F0526	P 2.000000	0.180000	FDA MON.	100.00	0.180000
13026AA	TURNIPS-TOPS	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.180000	FDA MON.	100.00	0.180000
13026AA	TURNIPS-TOPS	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13026AA	TURNIPS-TOPS	31 COOKED-FRESH OR CANNED	7F0526	P 2.000000	0.030000	FDA MON.	100.00	0.030000
13027AA	WATERCRESS	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.030000	REMNANT TOL (IMP	100.00	2.000000
13027AA	WATERCRESS	21 COOKED-NFS	7F0526	P 2.000000	0.030000	REMNANT TOL (IMP	100.00	2.000000
13045AA	LETTUCE-HEAD	10 RAW-FRESH OR NFS	8F0723	P 2.000000	0.070000	FDA MON.	100.00	0.070000

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FOOD CODE	FOOD	FOOD FORM	PET.#	TOLERANCE (ppm)	ANTICIPATED RESIDUE (ppm)	AR STATISTIC TYPE	% CROP TREATED	RES. VALUE USED IN TAS RUN (ppm)
15009AA	PEAS SUCC-GARDEN	31 COOKED-FRESH OR CANNED		P 2.000000	0.030000	FDA MON.	100.00	0.030000
15013AA	MUNG BEANS	10 RAW-FRESH OR NFS	7F0526	P 2.000000	0.180000	FDA MON TRANS	100.00	0.180000
15013AA	MUNG BEANS	21 COOKED-NFS	7F0526	P 2.000000	0.180000	FDA MON TRANS	100.00	0.180000
15018AA	SUNFLOWER-SEEDS	10 RAW-FRESH OR NFS	7F0526	P 2.000000	2.000000		100.00	2.000000
15022AA	BEANS-DRY-BROAD	00 NOT SPECIFIED (NO CONSUMPTION)	7F0526	P 2.000000	2.000000		100.00	2.000000
15022AB	BEANS-SUCC-BROAD	00 NOT SPECIFIED (NO CONSUMPTION)	7F0526	P 2.000000	2.000000		100.00	2.000000
15023AA	BEANS-DRY-PIGEON	21 COOKED-NFS	7F0526	P 2.000000	0.023000	FDA MON TRANS	100.00	0.023000
15027AA	BEANS-UNSPEC	21 COOKED-NFS	7F0526	P 2.000000	2.000000	FDA MON TRANS	100.00	2.000000
15030AA	BEANS-DRY-HYAC	00 NOT SPECIFIED (NO CONSUMPTION)	7F0526	P 2.000000	2.000000		100.00	2.000000
15030AB	BEANS-SUCC-HYAC	00 NOT SPECIFIED (NO CONSUMPTION)	7F0526	P 2.000000	0.023000	FDA MON TRANS	100.00	0.023000
15031AA	BLKEYE PEAS-DRY	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON TRANS	100.00	0.030000
15032AA	BEANS-DRY	21 COOKED-NFS	7F0526	P 2.000000	0.030000	FDA MON TRANS	100.00	0.030000
15032AA	BEANS-DRY	31 COOKED-FRESH OR CANNED	7F0526	P 2.000000	0.023000	FDA MON TRANS	100.00	0.023000
24001AA	BARLEY	21 COOKED-NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24003AA	OATS	21 COOKED-NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24003AA	OATS	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24003AA	OATS	23 COOKED-FRESH-BOILED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24005AA	RYE-ROUGH	00 NOT SPECIFIED (NO CONSUMPTION)	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24005GA	RYE-GERM	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24005WA	RYE-FLOUR	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007AA	WHEAT-ROUGH	10 RAW-FRESH OR NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007AA	WHEAT-ROUGH	21 COOKED-NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007AA	WHEAT-ROUGH	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007AA	WHEAT-ROUGH	23 COOKED-FRESH-BOILED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007GA	WHEAT-GERM	10 RAW-FRESH OR NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007GA	WHEAT-GERM	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007HA	WHEAT-BRAN	10 RAW-FRESH OR NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007HA	WHEAT-BRAN	21 COOKED-NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007HA	WHEAT-BRAN	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007WA	WHEAT-FLOUR	10 RAW-FRESH OR NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007WA	WHEAT-FLOUR	21 COOKED-NFS	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007WA	WHEAT-FLOUR	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
24007WA	WHEAT-FLOUR	25 COOKED-FRESH-FRIED	1F1028	P 0.100000	0.023000	FDA MON TRANS	100.00	0.023000
25002SA	BET SUGAR	10 RAW-FRESH OR NFS	1F1028	P 0.100000	0.030000	FDA MON TRANS	100.00	0.030000
25002SA	BET SUGAR	21 COOKED-NFS	1F1028	P 0.100000	0.030000	FDA MON TRANS	100.00	0.030000
25002SA	BET SUGAR	22 COOKED-FRESH-BAKED	1F1028	P 0.100000	0.030000	FDA MON TRANS	100.00	0.030000
25002SA	BET SUGAR	31 COOKED-FRESH OR CANNED	1F1028	P 0.100000	0.030000	FDA MON TRANS	100.00	0.030000
25003SA	CANE SUGAR	10 RAW-FRESH OR NFS	7F0526	P 0.500000	0.140000	REMANITOL PROP	100.00	0.140000
25003SA	CANE SUGAR	21 COOKED-NFS	7F0526	P 0.500000	0.140000	REMANITOL PROP	100.00	0.140000

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53002BB	GOAT-OTH ORGAN	00 NOT SPECIFIED (NO CONSUMPTION)	8F0632	P 0.200000	0.200000		100.00	0.200000
53002FA	GOAT-FAT	23 COOKED-FRESH-BOILED	8F0632	P 0.200000	0.003000		100.00	0.003000
53002KA	GOAT-FAT	25 COOKED-FRESH-FRIED	8F0632	P 0.200000	0.003000		100.00	0.003000
53002LA	GOAT-KIDNEY	00 NOT SPECIFIED (NO CONSUMPTION)	8F0632	P 0.200000	0.200000		100.00	0.200000
53002MA	GOAT-LIVER	00 NOT SPECIFIED (NO CONSUMPTION)	8F0632	P 0.200000	0.200000		100.00	0.200000
53002MA	GOAT-LEAN	23 COOKED-FRESH-BOILED	8F0632	P 0.200000	0.001000		100.00	0.001000
53002MA	GOAT-LEAN	25 COOKED-FRESH-FRIED	8F0632	P 0.200000	0.001000		100.00	0.001000
53003AA	HORSE	00 NOT SPECIFIED (NO CONSUMPTION)	8F0632	P 0.200000	0.200000		100.00	0.200000
53005BA	SHEEP-MEAT BYP	21 COOKED-NFS	8F0632	P 0.200000	0.002000		100.00	0.002000
53005BB	SHEEP-OTH ORGAN	21 COOKED-NFS	8F0632	P 0.200000	0.002000		100.00	0.002000
53005FA	SHEEP-FAT	21 COOKED-NFS	8F0632	P 0.200000	0.003000		100.00	0.003000
53005LA	SHEEP-KIDNEY	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53005LA	SHEEP-LIVER	00 NOT SPECIFIED (NO CONSUMPTION)	8F0632	P 0.200000	0.200000		100.00	0.200000
53005MA	SHEEP-LEAN	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53005MA	SHEEP-LEAN	31 COOKED-FRESH OR CANNED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006BA	PORK-MEAT BYP	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006BB	PORK-OTH ORGAN	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006BB	PORK-OTH ORGAN	26 COOKED-FRESH-PICKLED,CORNE,OR CURED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006FA	PORK-FAT	10 RAW-FRESH OR NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006FA	PORK-FAT	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006FA	PORK-FAT	23 COOKED-FRESH-BOILED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006FA	PORK-FAT	25 COOKED-FRESH-FRIED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006FA	PORK-FAT	26 COOKED-FRESH-PICKLED,CORNE,OR CURED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006KA	PORK-KIDNEY	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006LA	PORK-LIVER	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006LA	PORK-LIVER	25 COOKED-FRESH-FRIED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006MA	PORK-LEAN	21 COOKED-NFS	8F0632	P 0.200000	0.001000		100.00	0.001000
53006MA	PORK-LEAN	25 COOKED-FRESH-FRIED	8F0632	P 0.200000	0.001000		100.00	0.001000
53006MA	PORK-LEAN	26 COOKED-FRESH-PICKLED,CORNE,OR CURED	8F0632	P 0.200000	0.001000		100.00	0.001000
55008BA	TURKEY-BYP	21 COOKED-NFS	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008BA	TURKEY-BYP	26 COOKED-FRESH-PICKLED,CORNE,OR CURED	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008LA	TURKEY ORGAN	21 COOKED-NFS	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008LA	TURKEY ORGAN	25 COOKED-FRESH-FRIED	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MA	TURKEY W/O SKIN	21 COOKED-NFS	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MA	TURKEY W/O SKIN	31 COOKED-FRESH OR CANNED	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MA	TURKEY W/O SKIN	62 COOKED-FRESH OR FROZEN-BAKED	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MB	TURKEY+SKIN	21 COOKED-NFS	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MB	TURKEY+SKIN	25 COOKED-FRESH-FRIED	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55008MC	TURKEY-UNSPEC	21 COOKED-NFS	NEEDTOL	N 0.001000	0.001000		100.00	0.001000
55013BA	POULTRY_OTH-BYP	00 NOT SPECIFIED (NO CONSUMPTION)	NEEDTOL	N 0.001000	0.001000		100.00	0.001000

CHEMICAL INFORMATION	STUDY TYPE	EFFECTS	REFERENCE DOSES	DATA GAPS/COMMENTS	STATUS
Endosulfan Cashell #420 CAS No. 115-29-7 A.I. CODE: 079A01 CFR No. 180.182	2gen reprod- rat NOEL= 0.0000 mg/kg 0.00 ppm LEL= 0.1500 mg/kg 3.00 ppm ONCO: Negative- 2 species.	Discoloration of kidney tubules- No NOEL established for this effect. No evidence of oncogenicity in rat or mouse.	ADI UF -->300 OPP Rfd= 0.000500 EPA Rfd= 0.000050	No data gaps. Developmental tox studies to be re-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**			ARC	XRFD
U.S. POPULATION - 48 STATES	0.012105	0.012107	2421.305000	0.217200	0.001208	241.63640
U.S. POPULATION - SPRING SEASON	0.011587	0.011588	2317.607600	0.219400	0.001245	248.98960
U.S. POPULATION - SUMMER SEASON	0.012964	0.012965	2593.085400	0.213400	0.001418	283.69520
U.S. POPULATION - FALL SEASON	0.012011	0.012012	2402.356600	0.219000	0.001096	219.11740
U.S. POPULATION - WINTER SEASON	0.011832	0.011833	2366.530000	0.217000	0.001073	214.52780
NORTHEAST REGION	0.012439	0.012440	2488.002200	0.213200	0.001124	224.79640
NORTH CENTRAL REGION	0.011697	0.011698	2339.551000	0.187400	0.001002	200.49300
SOUTHERN REGION	0.011554	0.011556	2311.106600	0.240000	0.001554	310.78500
WESTERN REGION	0.013166	0.013167	2633.437800	0.226600	0.001021	204.16040
HISPANICS	0.012745	0.012747	2549.302800	0.305200	0.000807	161.46660
NON-HISPANIC WHITES	0.012302	0.012303	2460.659800	0.197800	0.001284	256.84580
NON-HISPANIC BLACKS	0.010412	0.010413	2082.617200	0.294000	0.000893	178.60460
NON-HISPANIC OTHERS	0.012588	0.012590	2517.933000	0.292600	0.001301	260.13800
NURSING INFANTS (< 1 YEAR OLD)	0.023150	0.023151	4630.234600	0.162600	0.000613	122.59100
NON-NURSING INFANTS (< 1 YEAR OLD)	0.041880	0.041882	8376.429800	0.331400	0.001357	271.48620
FEMALES (13+ YEARS, PREGNANT)	0.009571	0.009572	1914.333600	0.145600	0.001163	232.57900
FEMALES 13+ YEARS, NURSING CHILDREN (1-6 YEARS OLD)	0.011625	0.011626	2325.228800	0.190000	0.001792	358.48840
CHILDREN (7-12 YEARS OLD)	0.026343	0.026346	5269.127400	0.466400	0.001718	343.50920
CHILDREN (13-19 YEARS OLD)	0.017133	0.017134	3426.836800	0.274600	0.001287	257.40740
MALES (13-19 YEARS OLD)	0.010806	0.010807	2161.317400	0.208200	0.001011	202.28000
FEMALES (13-19 YEARS OLD, NOT PREG. OR NURSING)	0.009700	0.009700	1940.075400	0.173000	0.001007	201.49460
MALES (20 YEARS AND OLDER)	0.008741	0.008742	1748.344200	0.187600	0.001011	202.13680
FEMALES (20 YEARS AND OLDER, NOT PREG. OR NURSING)	0.009185	0.009186	1837.239600	0.168000	0.001268	253.51780

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

Run with IRIS (FOR PRCN)
4 PCT (for IRIS) - add to IRIS (DA Model data)