

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD
HEALTH
ORGANIZATION



JOINT OFFICE: Viale delle Terme di Caracalla 00100 ROME Tel: 39 06 57051 www.codexalimentarius.net Email: codex@fao.org Facsimile: 39 06 5705 4593

Agenda Item 5 (a)

**CX/PR 02/03
March 2002**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON PESTICIDE RESIDUES

Thirty-fourth Session

The Hague, The Netherlands, 13 - 18 May 2002

5. DIETARY EXPOSURE IN RELATION TO MRL SETTING

(A) ACUTE DIETARY RISK ASSESSMENT

Prepared by WHO

1. In CAC Circular Letter CL 2000/27 - PR, Part 4 (B), governments were requested to provide data necessary for conducting acute exposure assessments of pesticide residues. This included large portion consumption data at the 97.5th percentile for eaters only for the general population and children ages 6 and under as well as body weights and ages of the relevant populations. In addition, information on mean/median weights of commodity units and percentage of edible portion was requested. The databases currently contain information from Australia, France, Japan, Netherlands, United Kingdom and United States of America.

2. No new usable data were provided since the thirty-third session of the Committee although several countries are known to be conducting appropriate food consumption surveys. Therefore, the current databases for acute exposure assessment of pesticide residues has not been altered from the previous version. The current databases for acute exposure assessment may be viewed at:

http://www.who.int/fsf/Chemicalcontaminants/Acute_Haz_Exp_Ass.htm

Countries holding such data are encouraged to compare their food consumption results with those currently listed and to report to GEMS/Food any instances where their population groups exceed those listed.

3. The last session of the Committee requested WHO to undertake intake calculations, especially acute intakes, for disulfoton (074) for its thirty-fourth session. Such calculations were conducted taking into consideration the proposed withdrawal of MRLs for rice and sorghum. The Dietary Intake Estimate (DIE) resulted in one of the five GEMS/Food Regional Diets still exceeding the ADI (see Table 1). Regarding the International Estimated Short-Term Intake (IESTI), a total of eight commodities resulted in IESTIs greater than the acute RfD for either children or for both children and adults. These commodities include broccoli, cabbages (head), cauliflower, lettuce head and leaf, poultry meat, rice and sorghum (see Tables 2 and 3). Note that when these eight commodities were deleted from the DIE, the resulting dietary intakes were well below the ADI for all GEMS/Food Regional Diets (see Table 4).

Table 1 - Disulfoton (74)

DIETARY INTAKE ESTIMATE (DIE)

PESTICIDE Code - 74
 Name - DISULFOTON
 ADI = 0.0003 mg/kg body weight or 0.018 mg for a 60 kg person

Commodity		MRL mg/kg	STMR mg/kg	Processing Factor	Notes	Adjusted STMR mg/kg	Middle Eastern		Far Eastern		African		Latin American		European	
Code	Name						Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day
GC 640	Barley	0.2	0.02				1	0	3.5	0.0001	1.8	0	6.5	0.0001	19.8	0.0004
VD 71	Beans (dry)	0.2	0.01				6.8	0.0001	6.8	0.0001	0	0	13.5	0.0001	4.3	0
VB 400	Broccoli	0.1	0.025				0.5	0	1	0	0	0	1.1	0	2.7	0.0001
VB 41	Cabbages, Head	0.2	0.02				4.5	0.0001	8.7	0.0002	0	0	9.5	0.0002	24.1	0.0005
VB 404	Cauliflower	0.05	0.01				1.3	0	1.5	0	0	0	0.3	0	13	0.0001
SB 716	Coffee beans	0.2		0.3	1/ 2/	0.06	5.3	0.0003	0.4	0	0	0	3.6	0.0002	7.9	0.0005
VP 526	Common bean (pods and/or immature seeds)	0.2			1/		3.5	0.0007	0.8	0.0002	0	0	4	0.0008	12	0.0024
SO 691	Cotton seed	0.1	0.03				0	0	0	0	0	0	0	0	0	0
PE 840	Eggs, chicken	0.02			1/		14.5	0.0003	13	0.0003	3.6	0.0001	11.8	0.0002	37.5	0.0008
VP 529	Garden pea, shelled	0.02	0.01				5.5	0.0001	0.7	0	0	0	0.3	0	14	0.0001
VL 482	Lettuce, Head	1	0.05				1.2	0.0001	0	0	0	0	2.9	0.0003	11.3	0.0011
VL 483	Lettuce, Leaf	1	0.11				1.1	0.0002	0	0	0	0	2.9	0.0006	11.2	0.0025
GC 645	Maize	0.02	0.01				16.5	0.0005	0	0.0003	0	0.0011	1.5	0.0004	0	0.0001
CF 1255	Maize flour		0.0025	0.25	3/	0.000625	31.8	0	31.2	0	106.2	0.0001	40.3	0	8.8	0
ML 107	Milks	0.01			1/		114.5	0.0011	32	0.0003	41.3	0.0004	160	0.0016	294	0.0029
GC 647	Oats	0.02	0				0	0	0	0	0.2	0	0.8	0	2	0
SO 697	Peanut	0.1	0.01				0.3	0	0.2	0	2.3	0	0.3	0	3	0
TN 672	Pecan	0.1	0.01				0	0	0	0	0	0	0	0	0.3	0
FI 353	Pineapple	0.1	0				0	0	0.8	0	10.2	0	3.1	0	15.8	0
VR 589	Potato	0.5	0.08	0.44	4/	0.0352	59	0.0021	19.2	0.0007	20.6	0.0007	40.8	0.0014	240.8	0.0085
PM 110	Poultry meat	0.02			1/		31	0.0006	13.2	0.0003	5.5	0.0001	25.3	0.0005	53	0.0011
VR 591	Radish, Japanese	0.2	0.025				0.1	0	0.1	0	0.1	0	0.1	0	0.1	0
VR 596	Sugar beet	0.2	0.02				0.5	0	0	0	0	0	0.3	0	2	0
GC 654	Wheat	0.2	0.02				4.3	0.0001	0.8	0	0	0	4.8	0.0001	2.3	0
CF 1211	Wheat flour		0.004	0.21	3/	0.00084	323	0.0003	114	0.0001	28.3	0	112	0.0001	175.8	0.0001

1/ STMR not determined

2/ Processing factor based on roasting

3/ Processing factor based on milling

4/ Processing factor based on peeling and boiling

Total =	0.006641	0.002514	0.0025314	0.0068389	0.021316
% ADI =	37%	14%	14%	38%	118%
Rounded % ADI =	40%	10%	10%	40%	120%

Table 2 - Disulfoton (074)

INTERNATIONAL ESTIMATE OF SHORT TERM INTAKE (IESTI)
TOTAL POPULATION

Acute RfD: 0.003 mg/kg body weight

Commodity		MRL	STMR or STMR-P	Processing factor	HR or HR-P	GEMS/ Food large portion	Country of high consumption	Body weight	Per capita large portion	Unit weight	Country of unit weight	Percent edible portion	Unit weight, edible portion	Variability factor	Case	IESTI	Percent acute RfD
Code	Name	mg/kg	mg/kg		mg/kg	g/kg bw		kg	g/person	g		%	g			mg/kg bw	%
VS 621	Asparagus	0.02	<u>0.02</u>		<u>0.02</u>	6.32	NLD	63	398.2	25	FRA	50	13	7	2a	0.00015	5
GC 640	Barley	0.2	0.02			6	NLD	63	378.0						3	0.00012	4
VD 71	Beans (dry)	0.2	0.01			4.1	FRA	62.3	255.4						3	0.00004	1
VB 400	Broccoli	0.1	0.025		0.11	5.79	USA	65	376.4	608	USA	78	474	5	2b	0.00318	106
VB 41	Cabbages, Head	0.2	0.02		0.32	5	FRA	62.3	311.5	908	USA	79	717	5	2b	0.00800	267
VB 404	Cauliflower	0.05	0.01		0.05	8.26	UNK	70.1	579.0	575	USA	39	224	5	2a	0.00105	35
SB 716	Coffee beans	0.2	<u>0.06</u>	0.3		1.04	NLD	63	65.5						3	0.00006	2
VP 526	Common bean, pods/im.seed	0.2	<u>0.2</u>			6.84	NLD	63	430.9						3	0.00137	46
SO 691	Cotton seed	0.1	0.03			0.05	USA	65	3.3						3	0.00000	0
PE 840	Eggs, chicken	0.02	0.02			3.51	FRA	62.3	218.7				0		3	0.00007	2
VP 529	Garden pea, shelled	0.02	0.01		0.01	4.77	NLD	63	300.5						1	0.00005	2
VL 482	Lettuce, Head	1	0.05		0.64	3.27	USA	65	212.6	539	USA	95	512	10	2b	0.02093	698
VL 483	Lettuce, Leaf	1	0.11		1.15	2.41	NLD	63	151.8	539	USA	95	512	10	2b	0.02772	924
GC 645	Maize	0.02	0.01		0.02	4.17	FRA	62.3	259.8	371	UNK	58	215		2a	0.00001	0
CF 1255	Maize flour		0.000625	0.25		1.34	AUS	67	89.8				0		3	0.00000	0
ML 107	Milks	0.01	<u>0.01</u>			29.65	AUS	67	1986.6				0		3	0.00030	10
GC 647	Oats	0.02	0			4.9	FRA	62.3	305.3				0		3	0.00000	0
SO 697	Peanut	0.1	0.01		0.09	2.59	FRA	62.3	161.4						1	0.00023	8
TN 672	Pecan	0.1	0.01		0.02	0.35	AUS	67	23.5						1	0.00001	0
FI 353	Pineapple	0.1	0		0	7.06	JPN	52.6	371.4	472	USA	52	245	5	2a	0.00000	0
VR 589	Potato	0.5	0.0352	0.44	0.136	10.9	NLD	63	686.7	122	USA	81	99	7	2a	0.00276	92
PM 110	Poultry meat	0.02	<u>0.02</u>			6.44	AUS	67	431.5						3	0.00013	4
VR 591	Radish, Japanese	0.2	0.025		0.17	5.07	JPN	52.6	266.7	1000	JPN	75	750	5	2b	0.00431	144
GC 649	Rice	0.5	<u>0.5</u>		<u>0.5</u>	5	FRA	62.3	311.5				0		1	0.00250	83
GC 651	Sorghum	1	<u>1</u>		<u>1</u>	0.27	USA	65	17.6				0		1	0.00027	9
GC 654	Wheat	0.2	0.02			5.89	USA	65	382.9						3	0.00012	4
CF 1211	Wheat flour		0.00084	0.21		5.62	USA	65	365.3						3	0.00000	0

1/ Values underlined indicate that the MRL has been used to estimate the STMR and/or the HR.

Maximum IESTI = 924

Table 3 - Disulfoton (74)

INTERNATIONAL ESTIMATE OF SHORT TERM INTAKE (IESTI) 1/
CHILDREN

Acute RfD: 0.003 mg/kg body weight

Commodity		MRL	STMR or	Processing factor	HR or	GEMS/ Food	Country of high	Body	Per	Unit	Country of unit	Percent	Unit	Variability	Case	IESTI	Percent
Code	Name	mg/kg	STMR-P														
			mg/kg		mg/kg	g/kg bw		kg	g/person	g		%	g				%
VS 621	Asparagus	0.02	<u>0.02</u>		<u>0.02</u>	11.88	USA	15	178.2	25	FRA	50	13		2a	0.00022	7
GC 640	Barley	0.2	0.02			0.73	AUS	19	13.9						3	0.00001	0
VD 71	Beans (dry)	0.2	0.01			11.76	FRA	17.8	209.3						3	0.00012	4
VB 400	Broccoli	0.1	0.025		0.11	10.95	USA	15	164.3	608	USA	78	474	5	2b	0.00602	201
VB 41	Cabbages, Head	0.2	0.02		0.32	8.92	JPN	15.9	141.8	908	USA	79	717	5	2b	0.01427	476
VB 404	Cauliflower	0.05	0.01		0.05	12.31	NLD	17	209.3	575	USA	39	224	5	2b	0.00308	103
SB 716	Coffee beans	0.2	<u>0.06</u>	0.3		1.12	NLD	17	19.0						3	0.00007	2
VP 526	Common bean, pods/im.seed	0.2	<u>0.2</u>			10.83	NLD	17	184.1						3	0.00217	72
SO 691	Cotton seed	0.1	0.03			0.05	USA	15	0.8						3	0.00000	0
PE 840	Eggs, chicken	0.02	0.02			7.5	FRA	17.8	133.5						3	0.00015	5
VP 529	Garden pea, shelled	0.02	0.01		0.01	8.59	NLD	17	146.0				0		1	0.00009	3
VL 482	Lettuce, Head	1	0.05		0.64	4.92	NLD	17	83.6	539	USA	95	512	10	2b	0.03149	1050
VL 483	Lettuce, Leaf	1	0.11		1.15	6	NLD	17	102.0	539	USA	95	512	10	2b	0.06900	2300
GC 645	Maize	0.02	0.01		0.02	8.33	FRA	17.8	148.3	371	UNK	58	215	7	2b	0.00117	39
CF 1255	Maize flour		0.000625	0.25		3.16	AUS	19	60.0						3	0.00000	0
ML 107	Milks	0.01	<u>0.01</u>			76.33	AUS	19	1450.3						3	0.00076	25
GC 647	Oats	0.02	0			4.15	USA	15	62.3						3	0.00000	0
SO 697	Peanut	0.1	0.01		0.09	5.18	USA	15	77.7				0		1	0.00047	16
TN 672	Pecan	0.1	0.01		0.02	1.17	AUS	19	22.2				0		1	0.00002	1
FI 353	Pineapple	0.1	0		0	13.61	JPN	15.9	216.4	472	USA	52	245	5	2b	0.00000	0
VR 589	Potato	0.5	0.0352	0.44	0.136	19.23	UNK	14.5	278.8	122	USA	81	99	7	2a	0.00818	273
PM 110	Poultry meat	0.02	<u>0.02</u>			11.78	AUS	17.8	209.7						3	0.00024	8
VR 591	Radish, Japanese	0.2	0.025		0.17	8.33	JPN	15.9	132.4	1000	JPN	75	750	5	2b	0.00708	236
GC 649	Rice	0.5	<u>0.5</u>			12.5	FRA	17.8	222.5				0		3	0.00625	208
GC 651	Sorghum	1	<u>1</u>														
GC 654	Wheat	0.2	0.02			10.07	USA	15	151.1						3	0.00020	7
CF 1211	Wheat flour		0.00084	0.21		10.23	AUS	19	194.4						3	0.00001	0

1/ Values underlined indicate that the MRL has been used to estimate the STMR and/or the HR.

Maximum IESTI = 2300

Table 4 - Disulfoton (074)

Commodity		MRL	STMR	Processing Factor	Notes	Adjusted STMR	Middle Eastern		Far Eastern		African		Latin American		European	
Code	Name	mg/kg	mg/kg			mg/kg	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day	Diet g/day	DIE mg/day
GC 640	Barley	0.2	0.02				1	0	3.5	0.0001	1.8	0	6.5	0.0001	19.8	0.0004
VD 71	Beans (dry)	0.2	0.01				6.8	1E-04	6.8	0.0001	0	0	13.5	0.0001	4.3	0
SB 716	Coffee beans	0.2		0.3	1/ 2/	0.06	5.3	3E-04	0.4	0	0	0	3.6	0.0002	7.9	0.0005
VP 526	Common bean (pods and/or immature seeds)	0.2			1/		3.5	7E-04	0.8	0.0002	0	0	4	0.0008	12	0.0024
SO 691	Cotton seed	0.1	0.03				0	0	0	0	0	0	0	0	0	0
PE 840	Eggs, chicken	0.02			1/		14.5	3E-04	13	0.0003	3.6	0.0001	11.8	0.0002	37.5	0.0008
VP 529	Garden pea, shelled	0.02	0.01				5.5	1E-04	0.7	0	0	0	0.3	0	14	0.0001
GC 645	Maize	0.02	0.01				16.5	5E-04	0	0.0003	0	0.0011	1.5	0.0004	0	0.0001
CF 1255	Maize flour		0.0025	0.25	3/	0.000625	31.8	0	31.2	0	106.2	0.0001	40.3	0	8.8	0
ML 107	Milks	0.01			1/		114.5	0.001	32	0.0003	41.3	0.0004	160	0.0016	294	0.0029
GC 647	Oats	0.02	0				0	0	0	0	0.2	0	0.8	0	2	0
SO 697	Peanut	0.1	0.01				0.3	0	0.2	0	2.3	0	0.3	0	3	0
TN 672	Pecan	0.1	0.01				0	0	0	0	0	0	0	0	0.3	0
FI 353	Pineapple	0.1	0				0	0	0.8	0	10.2	0	3.1	0	15.8	0
PM 110	Poultry meat	0.02			1/		31	6E-04	13.2	0.0003	5.5	0.0001	25.3	0.0005	53	0.0011
VR 596	Sugar beet	0.2	0.02				0.5	0	0	0	0	0	0.3	0	2	0
GC 654	Wheat	0.2	0.02				4.3	1E-04	0.8	0	0	0	4.8	0.0001	2.3	0
CF 1211	Wheat flour		0.004	0.21	3/	0.00084	323	3E-04	114	0.0001	28.3	0	112	0.0001	175.8	0.0001
1/ STMR not determined							Total =		0.004	0.0016239	0.0018043		0.0042642		0.0085609	
2/ Processing factor based on roasting							% ADI =		23%	9%	10%		24%		48%	
3/ Processing factor based on milling							Rounded % ADI =		20%	10%	10%		20%		50%	
4/ Processing factor based on peeling and boiling																