3. DIETARY RISK ASSESSMENT FOR PESTICIDE RESIDUES IN FOODS

Assessment of risk from long-term dietary intake

Risks associated with long-term dietary intake were assessed for compounds for which MRLs were recommended and STMRs estimated at the present Meeting. International Estimated Daily Intakes (IEDIs) were calculated by multiplying the concentrations of residues (STMRs, STMR-Ps or MRL) by the average daily per capita consumption estimated for each commodity on the basis of the 13 GEMS/Food Consumption cluster diets (General Consideration 2.3)[29]. IEDIs are expressed as a percentage of the ADI for a 55 kg or 60 kg person, depending on the cluster diet.

The percentages are rounded to one whole number up to 9 and to the nearest 10 above that. Percentages above 100 should not necessarily be interpreted as giving rise to a health concern because of the conservative assumptions used in the assessments. The detailed calculations of long-term dietary intakes are given in Annex 3.

The data provided to the Meeting did not allow the allocation of an ADI for aminopyralid and no long-term intake assessment was conducted for this compound.

Cyfluthrin (includes beta-cyfluthrin), cypermethrin (including alpha and zeta-cypermethrin) and cyromazine were evaluated at this Meeting under the periodic review programme and new ADIs were allocated. The long-term dietary risk assessment for these compounds will be considered during the periodic review for residues at a subsequent Meeting.

The assessment for boscalid was not conducted as STMR values could not be recommended for annual crops due to lack of data and a complete dietary assessment could not be calculated.

The assessment for haloxyfop was not conducted as the residue data available is not appropriate. The assessment for this compound will be considered during the periodic review for residues at a future Meeting.

The evaluation of aldicarb, dimethoate, disulfoton, fenamiphos, pirimiphos-methyl and thiophanate methyl performed at this Meeting do not affect the long-term dietary assessment conducted by previous JMPR for these compounds

The long-term intake of acephate, chlorpyrifos, imidacloprid, methoxyfenozide and propiconazole made at the present Meeting, from the consumption of cranberry contributed to 0% ADI of each compound, and do not affect the final conclusion of the long-term dietary assessment conducted by the previous JMPR for these compounds. The detailed calculations for these compounds are not shown in Annex 3.

A summary of the long-term dietary of risk assessments conducted by the present meeting is shown on Table 1. Calculations of dietary intake can be further refined at the national level by taking into account more detailed information, as described in the Guidelines for predicting intake of pesticide residues[30].

Table 1. Summary of long-term dietary of risk assessments conducted by the 2006 JMPR.

CCPR code	Compound Name	ADI (mg/kg bw)	Range of IEDI or EDI*, as % of maximum ADI
219	*Bifenazate*	*0 - 0.01*	*1 – 20*
022	*Diazinon*	*0 - 0.005*	*5 – 60**

[29] The GEMS/Food Consumption Cluster Diets http://www.who.int/foodsafety/chem/gems/en/index1.html

[30] WHO (1997) Guidelines for predicting dietary intake of pesticide residues. 2nd revised edition, GEMS/Food Document WHO/FSF/FOS/97.7, Geneva

CCPR code	Compound Name	ADI (mg/kg bw)	Range of IEDI or EDI*, as % of maximum ADI
032	*Endosulfan*	*0 – 0.006*	*2 – 20*
185	*Fenpropathrin*	*0 – 0.03*	*3 - 80*
211	*Fludioxinil*	*0 – 0.4*	*0 – 2*
101	*Pirimicarb*	*0 - 0.02*	*1 – 10*
148	*Propamocarb*	*0 - 0.4*	*0 – 1*
113	*Propargite*	*0 - 0.01*	*2 – 30*
210	*Pyraclostrobin*	*0 - 0.03*	*0 – 7*
222	*Quinoxyfen*	*0 - 0.2*	*0 – 1*
065	*Thiabendazole*	*0 – 0.1*	*2 – 20*
223	*Thiacloprid*	*0 - 0.01*	*1 – 10*

* the assessment includes residues at MRL level for most of the commodities

Assessment of risk from short-term dietary intake

Risks associated with short-term dietary intake were assessed for compounds for which STMR and HR values were estimated at the present Meeting and for which acute reference doses (ARfDs) had been established, in commodities for which data on consumption were available. The procedures for calculating the short-term intake were defined primarily in 1997 at an FAO/WHO Geneva Consultation[31], refined at the International Conference on Pesticide Residues Variability and Acute Dietary Risk Assessment sponsored by the Pesticide Safety Directorate and at subsequent JMPR Meetings. Data on the consumption of large portions were provided by the governments of Australia, France, The Netherlands, Japan, South Africa, the UK and the USA. Data on unit weights and per cent edible portions were provided by the governments of France, Sweden, the UK and the USA. The body weights of adults and children aged ≤ 6 years were provided by the governments of Australia, France, The Netherlands, South Africa, the UK and the USA. The consumption, unit weight and body weight data used for the short-term intake calculation were compiled by GEMS/FOOD and are available at www.who.int/foodsafety/chem/acute_data/en/. The documents are dated 01/01/2003 (large portions and body weights) and 05/02/2003 (unit weights).

The procedures used for calculating the International Estimated Short-Term Intake (IESTI) are described in detail in Chapter 3 of the 2003 JMPR report. A detailed guidance on setting ARfD are described in Section 2.1 of the 2004 JMPR report[32].

Cyfluthrin (includes beta-cyfluthrin), cypermethrin (including alpha- and zeta-cypermethrin) and cyromazine were evaluated at this Meeting under the periodic review programme and ARfD were allocated. The short-term dietary risk assessment for these compounds will be considered during the periodic review for residues at a subsequent Meeting.

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[31] WHO (1997) Food consumption and exposure assessment of chemicals. Report of a FAO/WHO Consultation. Geneva, Switzerland, 10-14 February 1997, Geneva

[32] *Pesticide residues in food.* 2003. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Expert Group on Pesticide Residues. Chapter 3, FAO Plant Production and Protection Paper 176, Food and Agriculture Organization, Rome, 2004

The data provided to the Meeting did not allow the allocation of an ARfD for aminopyralid and no short-term intake assessment was conducted for this compound.

An ARfD for fenpropathrin might be necessary but has as yet not been considered by the Meeting. Furthermore, the short-term assessment was not finalized for this compound.

The assessment was not conducted for haloxyfop as the residue data available is not appropriate. The assessment for this compound will be considered during the periodic review for residues in the future.

The evaluation of aldicarb and dimethoate performed at this Meeting do not affect the short-term dietary assessment conducted by the previous JMPR for these compounds

On the basis of data received by the present or previous Meeting, the establishment of an ARfD for bifenazate, boscalid, fludioxinil, propargite, quinoxyfen and thiophanate methyl was considered to be unnecessary. Therefore, the short-term intakes of these compounds were not estimated.

The short-term intakes as percentages of the ARfDs for the general population and for children are summarized in Table 2. The percentages are rounded to one whole number up to 9 and to nearest 10 above that. Percentages above 100 should not necessarily be interpreted as giving rise to a health concern because of the conservative assumptions used in the assessments.

The detailed calculations of short-term dietary intakes are given in Annex 4. Detailed calculations for acephate, chlorpyrifos, diazinon, disulfoton, imidacloprid, methoxyfenozide and propiconazole are not included as only the intake from the consumption of one commodity was assessed in each case.

Table 2: Summary of short-term dietary risk assessments conducted by the 2006 JMPR.

CCPR code	Compound Name	ArfD (mg/kg bw)	Commodity	Percentage of ARf D	
				General population	Children aged ≤ 6 years
095	*Acephate*	*0.1*	*Cranberry*	*1*	*1*
017	*Chlorpyrifos*	*0.1*	*Cranberry*	*2*	*4*
022	*Diazinon*	*0.03*	*Cranberry*	*2*	*3*
074	*Disulfoton*	*0.02*	*Cauliflowers*	*150*	*380*
033	*Endosulfan*	*0.02*	*Broccoli*	*210*	*390*
			Celery	*120*	*270*
			Cherries	*40*	*120*
			Tomato	*40*	*110*
			Other 24-26 commodities	*0 - 90*	*0 - 100*
085	*Fenamiphos*	*0.003*	*Melons, except watermelon*	*40*	*90*
			Watermelon	*120*	*310*
086	*Pirimiphos-methyl*	*0.2*	*All 20 commodities*	*0 - 10*	*0 - 30*
206	*Imidacloprid*	*0.4*	*Cranberry*	*0*	*0*
209	*Methoxyfenozide*	*0.9*	*Cranberry*	*0*	*0*
101	*Pirimicarb*	*0.1*	*All 48 commodities*	*0 – 40*	*0 – 70*
148	*Propamocarb*	*2*	*All 17 commodities*	*0 – 40*	*0 – 80*
160	*Propiconazole*	*0.3*	*Cranberry*	*0*	*0*
210	*Pyraclostrobin*	*0.05*	*All 60 commodities*	*0 - 30*	*0 – 80*
065	*Thiabendazole*	*1*	*All 16 commodities*	*0 – 20*	*0 – 60*
		*0.3**		*0 – 70**	
223	*Thiacloprid*	*0.03*	*All 58 commodities*	*0 - 30*	*0 - 90*

* For women of childbearing age