5.5 CHLORANTRANILIPROLE (230)

RESIDUE AND ANALYTICAL ASPECTS

Chlorantraniliprole is a novel insecticide belonging to the class of selective ryanodine receptor agonists and was evaluated for the first time by JMPR in 2008 for toxicology and residues. The compound was listed for additional residue assessment by 2010 JMPR at the Forty-first Session of the CCPR.

The Meeting received information on chlorantraniliprole methods of residue analysis, national registered use patterns, supervised residue trials and fate of residues in processing.

The 2008 JMPR established an ADI and ARfD for chlorantraniliprole of 0–2 mg/kg bw/day and "not required" respectively.

Methods of analysis

A range of analytical methods have been reported for the analysis of chlorantraniliprole in plant and animal commodities. The basic approach employs extraction by homogenisation with acetonitrile:water, and column clean-up using solid phase extraction (hydrophilic-lipophilic balanced polymeric (HLB) and strong anion exchange (SAX) in sequence). Residues are determined by gas chromatography with an electron capture detector or liquid chromatography with mass spectrometric detection. The methods for chlorantraniliprole have been extensively validated with numerous recoveries on a wide range of substrates with LOQs of 0.01 mg/kg.

Results of supervised trials on crops

Supervised trials were available for the use of chlorantraniliprole on numerous crops: citrus (oranges, mandarins and tangelos), blackberries, raspberries, strawberries, Brassica vegetables (broccoli, cabbage and cauliflower), legume vegetables, sweet corn, maize, root and tuber vegetables (Japanese radish and turnips), soybeans, sugarcane, alfalfa and mint.

Residue trial data was made available from Brazil, Canada, member states of the European Union, Japan, The Philippines and the USA. Additionally for some crops residue trial data reported by the 2008 JMPR from Australia, New Zealand and member states of the European Union were not evaluated at that time as GAP was not available. These data are re-evaluated here where new GAP information has become available and the data would lead to a revised maximum residue level recommendation.

The NAFTA calculator was used as a tool in the estimation of the maximum residue level from the selected residue data set obtained from trials conducted according to GAP. As a first step, the Meeting reviewed all relevant factors related to each data set in arriving at a best estimate of the maximum residue level using expert judgement. Then, the NAFTA calculator was employed. If the statistical spreadsheet suggested a different value from that recommended by the JMPR, a brief explanation of the deviation was provided. Some common factors that may lead to rejection of the statistical estimate include those situations where the number of data points is less than 15 or where there are too many values below LOQ.

Additionally the Meeting has utilised a new tool that can provide additional useful information for estimating maximum residue levels. The tool is based on a compilation of residues in various crops following a single spray application where the data were normalised to an application rate of 1 kg ai/ha or 1 kg ai/hL (General Consideration Item 2.8). Estimates of high residues can be made for certain pesticides by combining the database of normalised day 0 residues with simple equations for decline. Chlorantraniliprole is a suitable candidate for using the approach to inform expert judgement.

Citrus fruits

Data for citrus with corresponding GAP information were available from supervised trials conducted in Brazil and the Republic of South Africa.

In Brazil chlorantraniliprole is permitted to be used on citrus with a maximum of one soil application at the equivalent of 240 g ai/ha and two foliar sprays at a spray concentration of 3 g ai/hL and a PHI of 5 days. Residues of chlorantraniliprole in citrus from four trials in Brazil approximating GAP were: 0.09, 0.09, 0.13 and 0.15 mg/kg.

In South Africa chlorantraniliprole is permitted to be used on citrus with a maximum of two foliar sprays at a spray concentration of 3.5 g ai/hL and a PHI of 7 days. Eight trials complied with GAP of South Africa with residues in whole fruit of 0.14, 0.15, 0.18, 0.22, 0.22, 0.25, 0.27 and 0.35 mg/kg. Residues in the edible portion (flesh) were 0.05, 0.05, 0.06, 0.07, 0.07, 0.08, 0.09 and 0.11 mg/kg. In peel residues were: 0.44, 0.49, 0.58, 0.62, 0.74, 0.78, 0.81 and 1.1 mg/kg.

The Meeting noted that the use patterns for citrus in Brazil and the Republic of South Africa were different and decided to use the data from South Africa for the purposes of estimating a maximum residue level and STMR and to make a recommendation for citrus fruit.

Residues in whole fruit in ranked order (n = 8) were: 0.14, 0.15, 0.18, 0.22, 0.22, 0.25, 0.27 and 0.35 mg/kg. The median residue in the edible portion was 0.07 mg/kg.

The Meeting estimated a maximum residue level for whole fruit and an STMR for the edible portion for chlorantraniliprole in citrus of 0.5 and 0.07 mg/kg respectively. Use of the NAFTA calculator yielded a value of 0.44 mg/kg while a day 0 decline model[29] yielded 0.35 mg/kg.

Berries and other small fruit

Data were available from supervised trials on raspberries and blackberries (dewberries) in Canada and the USA and strawberries in Japan.

The GAPs of Canada and the USA are similar and the GAP of the USA was used to evaluate trials on raspberries and blackberries from the two countries (USA GAP: 110 g ai/ha, PHI 3 days with a maximum seasonal application of 225 g ai/ha).

Residues of chlorantraniliprole in berries from eight trials in Canada and the USA complying with GAP of the USA were: 0.049, 0.091, 0.095, 0.235, 0.436, 0.481, 0.482 and 0.513 mg/kg.

Residues of chlorantraniliprole in strawberries from two trials in Japan complying with GAP (2.5 g ai/100L and PHI 1 day) were 0.23 and 0.30 mg/kg.

The Meeting noted that there are registrations for chlorantraniliprole in caneberries, cranberries, strawberries and grapes and that as these commodities constitute the majority of members of the commodity group berries and small fruit, it would be preferable to estimate a group maximum residue level. Using 17 trials matching GAP of the USA, the 2008 JMPR estimated a maximum residue level of 1 mg/kg for grapes and an STMR and HR of 0.119 and 0.52 mg/kg respectively. The Meeting agreed to recommend a group maximum residue level for berries and other small fruit of 1 mg/kg based on the trials in grapes and an STMR of 0.336 mg/kg based on trials on raspberries and blackberries. The recommendation for the commodity group berries and other small fruit replaces the previous recommendation of 1 mg/kg for grapes.

[29] Maclachlan DJ, Hamilton D. 2010 A new tool for the evaluation of crop residue trial data (day zero-plus decline). Food Additives & Contaminants: Part A,, 27:347–364

Brassica vegetables

New data were available from supervised trials on brassica vegetables conducted in Europe. Additionally new GAP has become available from Australia allowing residue trials reported by the 2008 JMPR to be evaluated against that countries GAP.

Residues in trials from Australian and New Zealand complying with the GAP of Australia (40 g ai/ha and PHI 7 days) were: broccoli 0.07, 0.12, 0.22 and 0.27 mg/kg; cauliflower 0.23 mg/kg; cabbage < 0.01, 0.08, 0.13, 0.17 and 0.20 mg/kg and Brussels sprouts 0.20 and 0.28 mg/kg.

In trials from Europe on brassica vegetables complying with the GAP of Spain (35 g ai/ha and PHI 1 day) residues were: cabbage < 0.01 (10), 0.095, 0.011, 0.012, 0.012, 0.015, 0.018, 0.04, 0.059 and 0.10 mg/kg.

Residues on broccoli were 0.064, 0.10, 0.10, 0.12, 0.14, 0.19 and 0.37 mg/kg, and on cauliflower residues were < 0.01, < 0.01, 0.012, 0.019, 0.036, 0.047 and 0.082 mg/kg.

Chlorantraniliprole is registered in the Canada for use on Brassica vegetables at 100 g ai/ha, PHI of 3 days and a maximum application per season of 2 g ai/ha. Trials were available from Canada and the USA (reported by the 2008 JMPR) in which crops were treated twice at three day intervals at 112 g ai/ha with harvest 3 days after the last spray. Residues on broccoli (n = 9) complying with the revised Canada GAP were: 0.12, 0.30, 0.32, 0.32, 0.35, 0.38, 0.40, 0.41 and 0.56 mg/kg.

Residues on cabbage (n = 10) complying with Canada GAP were: 0.033, 0.066, 0.10, 0.28, 0.29, 0.48, 0.51, 0.64, 0.75 and 1.1 mg/kg.

The Meeting noted that the registered use of chlorantraniliprole in Canada is for Brassica vegetables and decided to recommend a group MRL. Residues were highest in the cabbages and this dataset was used for the purposes of estimating a maximum residue level for the group. The Meeting estimated a maximum residue level and an STMR value for chlorantraniliprole in Brassica vegetables of 2 and 0.385 mg/kg, respectively. Use of the NAFTA calculator yielded a value of 2.45 mg/kg as an estimate of high residues while use of the day 0 plus decline approach[30] (median DT_{50} of 7 days) yielded 2.0 mg/kg.

Sweet corn

Chlorantraniliprole is registered in the US on sweet corn at 73 g ai/ha with a maximum seasonal rate of 225 g ai/ha and a PHI of 1 day. The minimum retreatment interval is 1 day.

Residues on sweet corn in 14 trials conducted in Canada and the USA at an exaggerated application rate (4 × 112 g ai/ha) were all < 0.01 (14) mg/kg. Although the intervals between the sprays were longer than the minimum specified on the approved USA labels, the Meeting considered the data to adequately reflect the residues in kernels and cobs with husk removed.

Trials were also available from Europe that approximated the GAP of Hungary (30 g ai/ha, last application at BBCH 87 and PHI determined by last application growth stage). Residues in 10 trials approximating GAP of Hungary were < 0.01 (10) mg/kg for kernels and cobs with husks removed.

The Meeting estimated maximum residue levels and STMR values for chlorantraniliprole in sweet corn (corn-on-the-cob) of 0.01* and 0.01 mg/kg respectively.

Legume vegetables

Residues trials conducted on green beans were made available from European countries however, chlorantraniliprole does not have a registered use on green beans in this region and the trials are not evaluated further.

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[30] ibid.

Residues in two trials from Japan on green soya beans (seed + pod) and complying with the GAP of that country (1.25 g ai/100 L and PHI 3 days) were 0.15 and 0.32 mg/kg.

In a single trial from the Philippines on pole beans matching the GAP of that country (37.5 g ai/ha and PHI 1 day) residues were 0.145 mg/kg.

The Meeting decided the number of trials was inadequate to estimate a maximum residue level for the legume vegetables pole beans and immature soya beans.

Soya beans (dry)

Trials on soya beans were reported from Brazil (GAP: 2 × 10 g ai/ha, at 14 day intervals and PHI of 21 days).

Chlorantraniliprole residues in soya bean grain from four trials from Brazil matching GAP in rank order (median underlined) were: 0.10, 0.11, 0.11 and 0.12 mg/kg.

Two trials were available from Japan complying with GAP (3 × 1.25 g ai/hL, at 7 day intervals and PHI of 7 days) from that country had residues in grain of < 0.01 and 0.03 mg/kg.

The Meeting decided that the number of trials available was not adequate to enable a recommendation of a maximum residue level for soya beans (dry).

Root and tuber vegetables

Trials on Japanese radish and turnips were reported from Japan however no GAP was available and the data were not evaluated further.

Maize

Trials on maize were reported from the USA (GAP: 73 g ai/ha, PHI of 14 days and a maximum application per season of 225 g ai/ha).

Chlorantraniliprole residues in twenty one trials from the USA approximating GAP in ranked order were: < 0.01 (20) and 0.013 mg/kg.

The Meeting noted that the residues in maize are adequately covered by the existing recommendation of the 2008 Meeting for cereal grains of 0.02 mg/kg.

Sugar cane

Trials on sugar cane were reported from Brazil (GAP: one soil application at 158 g ai/ha and one foliar application at 21 g ai/ha and PHI of 60 days).

Chlorantraniliprole residues in four trials from Brazil matching GAP in rank order were: 0.09, 0.13, 0.16 and 0.16 mg/kg.

No data were available on processing of cane into sugar products, e.g., molasses, bagasse or refined sugar.

The Meeting estimated a maximum residue level and an STMR value for chlorantraniliprole in sugar cane of 0.5 and 0.145 mg/kg, respectively.

Tree nuts

Trials were available to the 2008 JMPR from the USA on residues of chlorantraniliprole in almonds and pecans but could not be evaluated as no relevant GAP existed at the time of evaluation. GAP has since then become available.

Chlorantraniliprole residues in six trials on almonds from the USA approximating GAP (application at 110 g ai/ha, seasonal maximum 220 g ai/ha, interval 7 days and PHI 10 days) were < 0.01 (6) mg/kg.

Chlorantraniliprole residues in six trials on pecans from the USA approximating GAP (4 × 110 g ai/ha, interval 7 days and PHI 10 days) in rank order were: < 0.01 (4), 0.014 and 0.015 mg/kg.

The Meeting estimated a maximum residue level and an STMR value for chlorantraniliprole in tree nuts of 0.02 and 0.01 mg/kg respectively.

Mint

Chlorantraniliprole field trials on mint were made available to the Meeting from the USA (GAP: 73 g ai/ha, PHI of 3 days and a maximum application per season of 225 g ai/ha).

Chlorantraniliprole residues on mint were 2.2, 4.6, 4.6, 5.3 and 5.7 mg/kg (fresh weight basis). The Meeting estimated maximum residue level and STMR values for chlorantraniliprole in mint tops of 15 and 4.6 mg/kg (fresh weight basis). The NAFTA calculator suggested a high residue of 9.0 mg/kg (mean + 3sd).

Animal feedstuffs

Alfalfa

Chlorantraniliprole field trials on alfalfa were made available to the Meeting from the USA (GAP: 73 g ai/ha, one application/cutting, PHI of 0 days and a maximum application per season of 224 g ai/ha).

Trials were available where alfalfa was treated at 1.5 × the maximum rate. The present Meeting considered the proportionality of residue data with application rates and decided that proportionality could be used in certain circumstances in the estimation of maximum residue levels (General Consideration Item 2.6). Considering the evidence that residues scale with application rate for foliar sprays, the Meeting decided to use alfalfa as an initial example and to make use scaling in estimating maximum residue levels and levels for use in estimation of farm animal dietary burdens. Chlorantraniliprole residues on alfalfa forage treated at 1.5 × the maximum rate were 2.0, 2.1, 3.0, 3.0, 3.2, 3.7, 4.1, 4.6, 4.8, 5.2, 5.3, 5.4, 5.7, 5.7, 5.7, 5.9, 5.9, 6.2, 6.2, 6.3, 6.7, 6.8, 6.9, 6.9, 7.5, 7.6, 7.6, 7.8, 8.3 and 11 mg/kg (fresh weight basis). When corrected for reported moisture contents the residues were 9.5, 9.7, 11, 13, 14, 16, 19, 19, 20, 23, 23, 23, 24, 24, 25, 26, 26, 27, 29, 29, 30, 30, 31, 32, 33, 34, 34, 36, 42 and 43 mg/kg (dry weight basis). The residues scaled to the same application rate as GAP were calculated by dividing by 1.5 and are (n = 30): 6.3, 6.5, 7.3, 8.7, 9.3, 10.7, 12.7, 12.7, 13.3, 15.3, 15.3, 15.3, 16, 16, 16.7, 17.3, 17.3, 18, 19.3, 19.3, 20, 20, 20.7, 21.3, 22, 22.7, 22.7, 24, 28 and 28.7 mg/kg. Using the data scaled for application rate, the Meeting estimated an STMR value for chlorantraniliprole in alfalfa forage of 17 mg/kg (dry weight basis).

Chlorantraniliprole residues on alfalfa hay treated at 1.5 × the maximum rate were: 8.6, 9.9, 11, 11, 12, 15, 15, 15, 15, 18, 18, 18, 19, 19, 20, 20, 22, 22, 23, 23, 23, 25, 27, 27, 28, 29, 29, 32, 39 and 46 mg/kg (fresh weight basis). When corrected for reported moisture contents the residues were 9.6, 13, 13, 13, 17, 19, 22, 22, 23, 23, 24, 25, 25, 26, 26, 26, 27, 27, 27, 28, 31, 32, 32, 35, 38, 39, 40, 49, 56 and 57 mg/kg (dry weight basis). The residues scaled to the same application rate as GAP were calculated by dividing by 1.5 and are (n = 30): 6.4, 8.7, 8.7, 8.7, 11.3, 12.7, 14.7, 14.7, 15.3, 15.3, 16, 16.7, 16.7, 17.3, 17.3, 17.3, 18, 18, 18, 18.7, 20.7, 21.3, 21.3, 23.3, 25.3, 26, 26.7, 32.7, 37.3 and 38 mg/kg.

Using the data scaled for application rate, the Meeting estimated MRL and STMR values for chlorantraniliprole in alfalfa hay of 50 and 17.3 mg/kg (dry weight basis) respectively. Use of the NAFTA calculator yielded a value of 44 mg/kg (95 LnUCL) as an estimate of high residues.

Maize forage and fodder

Chlorantraniliprole field trials on corn forage and fodder were made available to the Meeting from the USA (GAP: 73 g ai/ha, a maximum application per season of 225 g ai/ha, PHI of 14 days for maize and 1 day for sweet corn).

Chlorantraniliprole residues on maize and corn forage (PHI 1 day, including sweet corn) were 0.30, 0.77, 1.0, 1.3, 1.5, 1.9, 2.0, 2.1, 2.4, 2.4, 2.7, 2.8, 2.9, 3.0, 3.7, 5.0, 5.1 and 5.7 mg/kg (fresh weight basis). Chlorantraniliprole residues on maize and corn fodder (PHI 14 days) were 0.26, 0.69, 0.82, 1.7, 2.1, 2.1, 2.2, 2.4, 2.8, 3.1, 3.1, 3.6, 3.7, 3.8, 4.0, 4.5, 5.3, 5.4, 7.1, 7.7 and 12 mg/kg (fresh weight basis).

Residues in trials from the USA were used to recommend STMRs for chlorantraniliprole in maize forage and fodder of 2.4 and 3.1 mg/kg (fresh weight basis) respectively and high residues of 5.7 and 12 mg/kg respectively. The Meeting also estimated a maximum residue level for chlorantraniliprole in maize fodder of 25 mg/kg (dry weight basis and assuming 83% dry matter content). Use of the NAFTA calculator yielded a value of 25.5 mg/kg (99 Ln) as an estimate of high residues.

Almond hulls

Chlorantraniliprole residues in almond hulls from six trials on almonds from the USA GAP (4 × 110 g ai/ha, interval 7 days and PHI 10 days) in rank order were (median underlined): 0.38, 0.52, 0.59, 0.88, 1.1 and 1.6 mg/kg (fresh weight basis). The Meeting estimated an STMR value for chlorantraniliprole in almond hulls of 0.735 mg/kg.

Fate of residues during processing

The fate of chlorantraniliprole residues has been examined in cabbages, oranges and mint processing studies. Estimated processing factors and STMRs are summarised below.

Summary of processing factors for chlorantraniliprole residues

Raw agricultural commodity (RAC)	Processed commodity	Calculated processing factors	PF (Mean, median or best estimate)	RAC-STMR (mg/kg)	Estimated processed commodity = residue RAC-STMR × PF (mg/kg)
Cabbage	Cooked	< 0.17, < 0.25, < 0.56, < 1	< 0.405	0.35	0.14175
	Sauerkraut	< 0.17, < 0.25, <0.56, <1	< 0.405		0.14175
Orange	Juice	0.08, < 0.11, < 0.11, 0.11, 0.11, 0.11, 0.13, 0.15, 0.15, < 0.17, 0.17, 0.20, 0.22, < 0.25, 0.25, 0.25, 0.29, 0.29, 0.30, 0.38	0.17	0.22	0.037
Mint	Oil	< 0.002, < 0.002	<0.002	4.6	0.0092

Chlorantraniliprole did not concentrate in any of the processed commodities studies. As the estimated residues for the processed commodities in the table above are below the maximum residue levels proposed for the raw agricultural commodities, the Meeting decided it was not necessary to make recommendations for maximum residue levels for these processed commodities. The STMR values listed above may be used for the purposes of dietary risk assessment.

Residues in animal commodities

Farm animal dietary burden

The Meeting estimated the dietary burden of chlorantraniliprole in farm animals on the basis of the diets listed in Appendix IX of the FAO Manual 2009 (Maximum proportion of agricultural commodities in animal feed). Calculation from highest residue, STMR (some bulk commodities) and STMR-P values provides the levels in feed suitable for estimating MRLs, while calculation from STMR and STMR-P values for feed is suitable for estimating STMR values for animal commodities. The percentage dry matter is taken as 100% when the highest residue levels and STMRs are already expressed as dry weight.

Estimated maximum and mean dietary burdens of farm animals

Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are provided in Annex 6. The calculations were made according to the animal diets from the USA-Canada (US/CAN), EU and Australia in the Maximum proportion of agricultural commodities in animal feed table (Appendix IX of the FAO Manual 2009).

Animal dietary burden, chlorantraniliprole, ppm of dry matter diet					
		US/CAN	EU	Australia	Japan
Beef cattle	max	8.6	24.4	36.1[a]	3.8
	mean	3.7	13.7	17.2[c]	1.7
Dairy cattle	max	14.2	23.8	28.6[b]	16.6
	mean	6.3	10.5	12.8[d]	7.3
Poultry—broiler	max	0.0117	0.007	0.007	1.4
	mean	0.012	0.007	0.007	0.85
Poultry—layer	max	0.012	1.8[e]	0.007	-
	mean	0.012	0.735[f]	0.007	-

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian meat

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry meat and eggs.

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry meat and eggs.

The chlorantraniliprole dietary burdens for animal commodity MRL and STMR estimation (residue levels in animal feeds expressed on dry weight) are: beef cattle 36.1 and 17.2 ppm, dairy cattle 28.6 and 12.8 ppm, poultry (broilers) 1.8 and 0.85 ppm and poultry (layers) 1.8 and 0.735 ppm.

Animal commodity maximum residue levels

The maximum dietary burden for beef and dairy cattle is 36.1 and 28.6 ppm respectively, so the levels of residues in tissues can be obtained by interpolation between the high residues obtained in tissues and at the 10 and 50 ppm feeding levels. Maximum residues expected in tissues are: fat 0.114 mg/kg, muscle 0.022 mg/kg, liver 0.0989 mg/kg, kidney 0.065 mg/kg and the mean residue for milk 0.013 mg/kg. At the 50 ppm dose level, average residues of chlorantraniliprole were 0.108 mg/kg in cream and 0.027 mg/kg in whole milk. The 2008 JMPR reported that expected residues in cream are 4 × the residues in whole milk or 4 × 0.013 = 0.052 mg/kg. The fat content of cream is 40–60% and the Meeting estimated the mean residue for milk fat to be 2 × the estimated mean cream residue or 2 × 0.052 = 0.104 mg/kg.

The Meeting estimated maximum residue levels for meat (from mammals other than marine mammals) 0.2 mg/kg (fat); edible offal (mammalian) 0.2 mg/kg, milks 0.05 mg/kg and 0.2 mg/kg for milk fat to replace the previous recommendations of 0.01* (fat), 0.01*, 0.01* and 0.1 mg/kg respectively.

The STMR dietary burdens for beef and dairy cattle are 17.2 and 12.8 ppm respectively. Residues in tissues can be obtained by interpolation between the mean residues obtained in tissues at the 10 and 50 ppm feeding levels. The estimated STMRs are: meat (from mammals other than marine mammals) 0.009 mg/kg, fat (from mammals other than marine mammals) 0.049 mg/kg, kidney of cattle, goats, pigs and sheep 0.030 mg/kg, liver of cattle, goats, pigs and sheep 0.047 mg/kg, milks 0.006 mg/kg and milk fat 0.048 mg/kg.

The highest individual tissue residue from the relevant feeding group was used in conjunction with the highest residue dietary burden to calculate the likely highest animal commodity residue level.

Dietary burden (mg/kg)[a] Feeding level [ppm][b]		Chlorantraniliprole residues, mg/kg [c]								
		Milk	Fat		Muscle		Liver		Kidney	
		Mean	High	mean	High	mean	high	mean	High	mean
MRL beef	(36.1) [50, 10] high		(0.114) 0.156		(0.022) 0.029		(0.099) 0.133		(0.065) 0.081	
MRL dairy	(28.6) [50, 10] high	(0.013) 0.022								
STMR beef	(17.2) [50, 10] av			(0.049) 0.14		(0.009) 0.019		(0.047) 0.13		(0.030) 0.068
STMR dairy	(12.8) [50, 10] av	(0.006) 0.022								

[a] Values in parentheses are the estimated dietary burdens

[b] Values in square brackets are the actual feeding levels in the transfer study

[c] Residue values in parentheses in italics are interpolated from the dietary burden, feeding levels in the transfer study and the residues found in the transfer study. High is the highest individual animal tissue residue in the relevant feeding group.

Mean is mean animal tissue (or milk) residue in the relevant feeding group.

The maximum dietary burden for poultry is 1.8 ppm. Maximum residues expected at 23 hours after last feeding are: muscle, skin/fat, liver and eggs are 0.00014, 0.0017, 0.0035 and 0.056 mg/kg.

The Meeting estimated maximum residue levels for poultry meat 0.01* mg/kg (fat); poultry offal 0.01* and eggs 0.1 mg/kg to replace the previous recommendations of 0.01* (fat), 0.01* and 0.01* mg/kg respectively.

The mean dietary burden for poultry is 0.85 ppm for tissues and 0.735 ppm for eggs. STMRs for poultry meat, skin/fat, edible offal and eggs are 0.00007, 0.0008, 0.0016 and 0.023 mg/kg respectively.

DIETARY RISK ASSESSMENT

Long-term intake

The evaluation of chlorantraniliprole has resulted in recommendations for MRLs and STMRs for raw and processed commodities. Consumption data were available for 31 food commodities and were used in the dietary intake calculation. The results are shown in Annex 3.

The International Estimated Daily Intakes for the 13 GEMS/Food regional diets, based on estimated STMRs were 0% (0.1–0.4%) of the maximum ADI of 2 mg/kg bw. The Meeting concluded that the long-term intake of residues of chlorantraniliprole from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2008 JMPR decided that an ARfD was unnecessary. The Meeting therefore concluded that the short-term intake of chlorantraniliprole residues is unlikely to present a public health concern.