



## Animal Residue Data Sheet

### Chlorpyrifos-methyl

Chlorpyrifos-methyl is registered in Australia for use on cotton and stored cereal grains. Details of the registered use patterns can be found on the approved labels of registered products containing chlorpyrifos-methyl as the active constituent. This Animal Residue Data Sheet provides information on the possible residues in feed commodities obtained from crops treated with chlorpyrifos-methyl. It also provides information on the anticipated maximum dietary exposure of animals fed treated commodities, which should not result in the violation of animal MRLs.

#### Current MRLs

The Australian MRLs for chlorpyrifos-methyl in food and animal feed commodities, as listed in Table 1 and Table 4 of the *MRL Standard* (as at March 2004) are shown below. The residue definition of chlorpyrifos-methyl is the parent compound *per se*.

Code	Food	MRL, mg/kg
<b>Food Commodities</b>		
CG 0080	Cereal grains [except rice]	10
SO 0691	Cotton seed	0.05
OC 0691	Cotton seed oil, crude	0.1
GC 0649	Rice	0.1
VD 0545	Lupin (dry)	10
CM 0654	Wheat bran, unprocessed	20
CF 1210	Wheat germ	30
<b>Animal commodities</b>		
MO 0105	Edible offal (mammalian)	*0.05
PE 0112	Eggs	*0.05
MM 0095	Meat [mammalian] [in the fat]	*0.05
ML 0106	Milks [in the fat]	*0.05
PO 0111	Poultry, Edible offal of	*0.05
PM 0110	Poultry meat [in the fat]	*0.05
<b>Animal feed commodities</b>		

#### Summary of maximum feeding levels and livestock dietary intakes

The Maximum Feeding Level (MFL, the feeding level at which the MRLs are based), the equivalent Daily Dietary Intake For Livestock (DDIL) and the equivalent daily intake of chlorpyrifos-methyl are summarised below.

Species	MFL, ppm in diet	Equivalent DDIL, mg/kg bw	Equivalent intake of chlorpyrifos-methyl, mg/animal/day
Cattle <sup>a</sup>	10	0.4	200
Sheep <sup>b</sup>	10	0.42	25.2
Pig <sup>c</sup>	10	0.42	25.2
Poultry <sup>d</sup>	10	0.75	1.5

<sup>a</sup> Based on a 500 kg animal consuming 20 kg DM/day  
<sup>b</sup> Based on a 60 kg animal consuming 2.5 kg DM/day  
<sup>c</sup> Based on a 60 kg animal consuming 2.5 kg DM/day  
<sup>d</sup> Based on a 2 kg animal consuming 150 g DM/day

## Detailed information

### All feed commodities

Feed commodities that may contain residues of chlorpyrifos-methyl are listed in the table below. The theoretical maximum proportion of the diet that the commodity can comprise, when residues are present at the MRL, without the significant risk of animal commodity MRLs being violated is also given. For instance, were apple pomace to be fed to cattle at 50% of the diet, the remainder of the diet would need to be free of residues of chlorpyrifos-methyl to minimise the risk of cattle commodity MRLs being violated. It should be noted that the feeding levels assumed by the APVMA when setting animal commodity MRLs are theoretical values, and they should not be taken as recommendations of appropriate rations for livestock.

Commodity <sup>a</sup>	Assumed Maximum proportion of diet (%) <sup>b</sup>	Feed intake (kg/animal/day) <sup>c</sup>	STMR/STMR-P (mg/kg) <sup>d</sup>	Maximum intake of chlorpyrifos-methyl from commodity (mg/animal/day) <sup>e</sup>	Theoretical maximum proportion of diet (%) <sup>f</sup>
<b>Cattle (Based on a 500 kg animal consuming 20 kg DM/day)</b>					
Cereal grains	100	20	4.25 <sup>g</sup>	85	100
Processed grain fractions	40	8	17.85 <sup>h</sup>	142.8	56
Cotton seed	30	6	0.02	0.12	100
Cottonseed meal	30	6	0.02 <sup>i</sup>	0.12	100
<b>Sheep (Based on a 60 kg animal consuming 2.5 kg DM/day)</b>					
Cereal grains	100	2.5	4.25 <sup>g</sup>	25	100
Cotton seed	30	0.75	0.02	0.015	100
Cottonseed meal	20	0.5	0.02 <sup>i</sup>	0.01	100
<b>Pigs (Based on a 60 kg animal consuming 2.5 kg DM/day)</b>					
Cereal grains	100	2.5	4.25 <sup>g</sup>	10.625	100
Processed grain fractions	40	1	17.85 <sup>h</sup>	17.85	56
Cotton seed	30	0.75	0.02	0.015	100
Cottonseed meal	30	0.75	0.02 <sup>i</sup>	0.015	100
<b>Poultry (Based on a 2 kg animal consuming 150 g DM/day)</b>					
Cereal grains	100	0.15	4.25 <sup>g</sup>	0.64	100
Processed grains fractions	20	0.03	17.85 <sup>h</sup>	0.5355	56
Cotton seed	30	0.045	0.02	0.002	100
Cottonseed meal	20	0.03	0.02 <sup>i</sup>	0.0006	100

<sup>a</sup> The feed commodities that may contain residues of chlorpyrifos-methyl, and may form more than 20% of an animals diet.

<sup>b</sup> The maximum % of the diet that the commodity is assumed to comprise for the purposes of setting MRLs, based on Stockfeed Information Document 1

<sup>c</sup> The equivalent amount of feed for an animal of designated weight and feed intake that is assumed for the purposes of setting MRLs

<sup>d</sup> The MRL for each feed commodity (correction for dry weight basis where required)

<sup>e</sup> The maximum intake of chlorpyrifos-methyl when the commodity is fed at the maximum assumed level (Column 1) in the absence of other sources of chlorpyrifos-methyl.

<sup>f</sup> The maximum % of the diet at which the commodity could theoretically be fed without significant risk of exceeding animal commodity MRLs. It is assumed that the residue in the feed commodity is present at the MRL (or dry weight equivalent) and other dietary sources of chlorpyrifos-methyl are absent.

<sup>g</sup> STMR estimated for wheat

<sup>h</sup> STMR-P calculated for wheat germ using the STMR for wheat and a processing factor of 4.2

<sup>i</sup> Extrapolation from cotton seed STMR. Data indicate that residues will not concentrate in hulls and meal.



## Abbreviations and definitions

**DM:** Dry matter. The feed consumption for livestock and the residue levels in feed commodities are expressed on a dry matter basis.

**DDIL:** Daily Dietary Intake for Livestock. The level of dietary exposure for a specified chemical in a specified species that should not result in exceedance of the relevant animal commodity MRLs. Expressed in mg chemical/kg bodyweight.

**MFL:** Maximum Feeding Level. The level of dietary exposure for a specified chemical in a specified species that should not result in exceedance of the relevant animal commodity MRLs. Expressed in terms of ppm in the feed.

**MRL:** The concentration of a chemical residue, in units of mg/kg, that is legally permitted in or on a food or food commodity.

**ppm in the feed:** Parts per million in the feed. An alternate way of expressing the level of dietary exposure for a chemical. The level of chemical intake is calculated as though it were present uniformly in the total feed intake. The ppm in the feed is calculated using the following formula:  $DDIL \text{ (mg chemical/kg bw)} \times \text{body weight (kg)} \div \text{daily feed intake (kg)}$ .

**STMR-P:** Supervised Trial Median Residue of the processed commodity. The highest residue that livestock are likely to be exposed to in practice when fed processed commodities over a prolonged period. This is derived from the STMR of the whole commodity multiplied by the processing factor.



## Attachment 1: Anticipated maximum dietary exposure

The following calculations outline the theoretical diet used to calculate the maximum anticipated dietary exposure, maximum feeding level (MFL) and the daily dietary intake for livestock (DDIL) for cattle, sheep, pigs and poultry.

### Cattle

Feed group	Feed commodity	% in the diet	Feed intake, kg/animal/day <sup>a</sup>	STMR, mg/kg	% DM <sup>b</sup>	Intake of chlorpyrifos-methyl, mg/animal/day <sup>c</sup>
Cereal grains [100% maximum]	Grain	60	12	4.25 <sup>d</sup>	-	51
Processed grain fractions [40% maximum]	Wheat germ	40	8	17.85 <sup>d</sup>	-	142.8
Total		100	20			193.8

<sup>a</sup>Based on assumed feed consumption of 20 kg dry matter/day  
<sup>b</sup>Estimate of percentage dry matter. Applied to MRLs expressed on a fresh weight basis  
<sup>c</sup>Based on assumed bodyweight of 500 kg  
<sup>d</sup>STMR (grain) and SMR-P (germ) derived from milling data provided to JMPR 1991

Maximum anticipated dietary exposure: 193.8 mg/animal/day  
 equivalent to: 0.3876 mg/kg bw  
 equivalent to: 9.69 ppm in the diet

MFL (Based on the available animal feeding data (Attachment 2)): 10 ppm in the diet  
 equivalent DDIL: 0.4 mg/kg bw

### Sheep

Feed group	Feed commodity	% in the diet	Feed intake, kg/animal/day <sup>a</sup>	STMR, mg/kg	% DM <sup>b</sup>	Intake of chlorpyrifos-methyl, mg/animal/day <sup>c</sup>
Cereal grain [100% maximum]	grain	100	2.5	4.25		10.625
Total		100	2.5			10.625

<sup>a</sup>Based on assumed feed consumption of 2.5 kg dry matter/day  
<sup>b</sup>Estimate of percentage dry matter. Applied to MRLs expressed on a fresh weight basis  
<sup>c</sup>Based on assumed bodyweight of 60 kg

Maximum anticipated dietary exposure: 10.625 mg/animal/day  
 equivalent to: 0.1771 mg/kg bw  
 equivalent to: 4.25 ppm in the diet

MFL (Based on the available animal feeding data (Attachment 2)): 10 ppm in the diet  
 equivalent DDIL: 0.42 mg/kg bw



### Pigs

Feed group	Feed commodity	% in the diet	Feed intake, kg/animal/day <sup>a</sup>	STMR, mg/kg	% DM <sup>b</sup>	Intake of chlorpyrifos-methyl, mg/animal/day <sup>c</sup>
Cereal grain [100% maximum]	grain	60	1.5	4.25		6.375
Processed grain fractions [40% maximum]	wheat germ	40	1	17.85		17.85
Total		100	2.5			24.225

<sup>a</sup>Based on assumed feed consumption of 2.5 kg dry matter/day  
<sup>b</sup>Estimate of percentage dry matter. Applied to MRLs expressed on a fresh weight basis  
<sup>c</sup>Based on assumed bodyweight of 60 kg

Maximum anticipated dietary exposure: 24.225 mg/animal/day  
equivalent to: 0.4 mg/kg bw  
equivalent to: 9.7 ppm in the diet

MFL (Based on the available animal feeding data (Attachment 2)):  
equivalent DDIL: 0.42 mg/kg bw

### Poultry

Feed group	Feed commodity	% in the diet	Feed intake, kg/animal/day <sup>a</sup>	STMR, mg/kg	% DM <sup>b</sup>	Intake of chlorpyrifos-methyl, mg/animal/day <sup>c</sup>
Cereal grain [100% maximum]	Grain	80	0.12	4.25		0.51
Processed grain fractions [20% maximum]	wheat germ	20	0.03	17.85		0.5355
Total		100	0.150			1.0455

<sup>a</sup>Based on assumed feed consumption of 0.150 kg dry matter/day  
<sup>b</sup>Estimate of percentage dry matter. Applied to MRLs expressed on a fresh weight basis  
<sup>c</sup>Based on assumed bodyweight of 2 kg

Maximum anticipated dietary exposure: 1.0455 mg/animal/day  
equivalent to: 0.523 mg/kg bw  
equivalent to: 6.97 ppm in the diet

MFL (Based on the available animal feeding data (Attachment 2)):  
equivalent DDIL: 0.75 mg/kg bw

