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Member Update

Title: **Australian Grains Industry Post Harvest Chemical Usage Recommendations and Outturn Tolerances 2012/13**

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Distribution

- GTA Members – primary contact list. Please circulate to all appropriate internal parties

1. Issue

The Australian Grains Industry Post Harvest Chemical Usage, Recommendations and Outturn Tolerances 2012/13 is available on the GTA website www.graintrade.org.au

2. Background

The Chemical Usage Recommendations and Outturn Tolerances document should be referred to when marketing Australian grain to assist industry in adhering to the maximum residual limits (MRL).

The Australian Grains Industry Post Harvest Chemical Usage Recommendations and Outturn Tolerance document is referred to in a number of GTA publications. Members are advised this is the latest version and supersedes all prior versions.

The main changes from the previous year's Chemical Usage Recommendations and Outturn Tolerances document are:

- Clarification of how the document is developed and that it "Provides advice on post-harvest chemicals registered for use in the treatment of stored grain in Australia and the MRLs that apply to those chemicals on grains marketed in Australia and overseas. The document also lists those chemicals registered for use as a structural treatment in Australia".

- Minor word changes relating to the currently known status of specific overseas country MRLs where the MRLs to apply have not been confirmed.

- Updated links to websites where Australian and overseas country chemical MRLs on various commodities may be found.

- For various commodities, included an MRL reflecting that Deltamethrin can be used under the approved Stewardship Program.

- Removed the reference to various Carbaryl MRLs as this compound is no longer registered for use in the treatment of stored grain in Australia.

GRAIN TRADE AUSTRALIA

Australian Government
Department of Agriculture, Fisheries and Forestry
National Residue Survey

Australian Grains Industry Post Harvest Chemical Usage Recommendations and Outturn Tolerances 2012/13

Contents

This document was coordinated by NRS and was developed originally in consultation with:

Australian Oilseeds Federation
ABB Grain Ltd
AWB Ltd
CBH Ltd
Flour Millers Council of Australia
GrainCorp Operations Ltd
Grain Pool Pty Ltd
Grain Trade Australia
Grains Council of Australia
National Working Party on Grain Protection
Pulse Australia
WJ Murray Consulting

This document continues to be coordinated by NRS and updated following the annual National Working Party on Grain Protection meeting.

This document has the imprimatur of Grain Producers Australia and Grain Trade Australia.

1. Definitions

APVMA – Australian Pesticides and Veterinary Medicines Authority – is the Australian government authority responsible for the assessment and registration of pesticides and veterinary medicines. APVMA sets MRLs for agricultural and veterinary chemicals in agricultural produce.

Cereal grain – for the purposes of this document, only refers to wheat, barley, oats, sorghum, triticale, cereal rye and maize.

Codex – Codex Alimentarius Commission – is the international body responsible for developing food standards and guidelines for protecting the health of the consumers and ensuring fair trade practices in the food trade. Codex sets international MRLs.

FSANZ – Food Standards Australia New Zealand – administers the '*Australia New Zealand Food Standards Code'*. The code lists requirements for foods such as additives, food safety, labelling, GM foods and MRLs for Australian food.

LOD – Limit of Detection – is the minimum concentration of a residue that can be detected, but not necessarily quantified as an exact value. Sometimes the MRL, LOR and LOD can be at the same level.

LOR – Limit of Reporting – is the minimum concentration of a residue used for reporting purposes. Results of analyses lower than the LOR are not generally included in laboratory results reports.

Methyl Bromide - is an organic halogen compound used to fumigate grain, with the chemical formula CH_3Br. MRLs may apply to methyl bromide or inorganic bromide. Inorganic bromide may sometimes be recorded as bromide ion, or measured as bromide ion. Note that inorganic bromide also occurs at natural levels in some grains.

MRL – Maximum Residue Limit – is defined as the maximum concentration of a residue which is legally permitted or recognised as acceptable in or on a food, agricultural commodity or animal feed. It results from the officially authorised safe use of an agricultural or veterinary chemical, known as good agricultural practice (GAP). The concentration is expressed in milligrams per kilogram (mg/kg) of the commodity.

NRS - National Residue Survey - The NRS is an operational unit within the Australian Government Department of Agriculture, Fisheries and Forestry. The NRS monitors residues of agricultural and veterinary chemicals and environmental contaminants in Australian food commodities. The residue monitoring programs are funded by statutory NRS levies on agricultural production or farm-gate value. NRS residue monitoring results facilitate Australia's access to key export and domestic markets for participating industries by underpinning industry quality assurance programs.

Phosphine – is a fumigant with the chemical formula PH_3. MRLs may be recorded as hydrogen phosphide or metallic phosphides (such as aluminium, magnesium and zinc).

PRF – Pesticide Residue Free – means pesticide residue free but in practice it refers to free of post-harvest grain protectant treatments. Please see Section 2 for a broader description.

ROL – Recommended Outturn Limit – is a maximum recommended pesticide residue limit that has been agreed and used within the Australian grains industry. ROLs specified in this document do not have any legal basis.

Sulfuryl fluoride – is a fumigant with the chemical formula SO_2F_2. MRLs may apply to sulfuryl fluoride or inorganic fluoride (fluoride ion).

2. Introduction

The purpose of this document is to provide advice on post-harvest chemicals registered for use in the treatment of stored grain in Australia and the MRLs that apply to those chemicals on grains marketed in Australia and overseas. This document also lists those chemicals registered for use as a structural treatment in Australia.

The National Working Party on Grain Protection (NWPGP) meets on an annual basis to discuss common issues related to chemical usage and market requirements for MRLs. The NWPGP continues to agree that this document be maintained by the NRS with substantial input from a NWPGP sub-committee. It is to be available to industry through both the NRS and GTA website.

All grain sold within Australia must comply with the Food Standards Australia New Zealand, Food Standards Code http://www.foodstandards.gov.au/foodstandards/foodstandardscode.cfm , and all exported grains must also comply with the Food Standards Code at the time of exportation. In addition, States and Territories have pesticide control-of-use legislation that determines how agricultural chemicals are to be used. Most of the jurisdictions also require chemical treatments to be applied in such a manner that any resultant residue is under the Australian Pesticides and Veterinary Medicines (APVMA) MRLs - http://www.apvma.gov.au/residues/standard.php . In cases where grain commodity/chemical combinations do not have MRLs in either the Food Standards Code or the APVMA MRLs, zero tolerance applies.

Most countries either have set their own MRLs or default to Codex Alimentarius (Codex) residue standards or a combination of both. The NRS has a number of International MRL tables listed at http://www.daff.gov.au/agriculture-food/nrs/nrs-australian-and-overseas-mrl-database/international_grain_maximum_residue_limits MRLs. Codex is an international standard setting organisation that encourages the use of world-wide MRLs to facilitate the trade in agricultural commodities. Additionally, Codex MRLs are recognised as the benchmark in international trade by the WTO in the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). Codex MRLs may be utilised by WTO in dispute resolutions.

However, not all countries recognise Codex standards. Additionally, some countries are members of regional standard setting groups and others have default limits for chemical/commodity combinations. The default limit is usually set at 0.01mg/kg.

Some of Australia's overseas markets have traditionally received pesticide residue free (PRF) grain from Australian exporters. The decision to supply PRF grain was originally agreed within the Grains Industry when there were difficulties in determining the pesticide residue requirements of many major markets. Those PRF outturn standards are often set by industry, or major marketing organisations, based on a risk assessment of the importing country requirements. The marketing imperatives may be more stringent than foreign government standards established in the importing country. PRF markets are listed in this document and exporters should be wary of supplying non-PRF grain to those markets listed as PRF.

This document in the main refers to contact insecticides for registered post-harvest grain treatments and grain fumigants. It should be noted that all the compounds listed in this document may be applied providing they are registered for that grain commodity by the APVMA and are used in accordance with applicable labels. All treatments must also be conducted in accordance with State and Territory regulations where applicable. The treatment must also be compatible with permitted residue levels applicable for the market being supplied.

Periodically, APVMA issues minor use permits for off label use of chemicals. These uses are typically for unusual circumstances. Permits are usually issued for pre-harvest or for in-crop treatments but the situation may arise where a post-harvest grain permit is issued. An example would be where APVMA may issue a permit to control a specific insect in a grain crop where the numbers have built up in a specific area unexpectedly and threatens the crop in that region. In these situations, importing countries may not have an MRL and there may be a risk to trade. Users of chemicals under permit should contact purchasers of grain to ascertain whether the applications will impact on saleability of the grain to certain markets.

3. Pesticide Residue Free (PRF) Grain

PRF grain is generally understood to mean pesticide residue free. In practice, it originally meant Grain Protectant Residue Free. It is possible for PRF grain to contain residues arising from sources other than grain protectants such as herbicides, in-crop applications of fungicides and insecticides, and from fumigants such as phosphine. PRF grain should not have any detectable chemical residues from treatments that are applied directly to the grain as grain protectants for storage purposes.

This has necessitated specific segregations of contact insecticide (grain protectant) free grain by the storage sector. Marketing decisions to export "Grain Protectant Residue Free" has worked extremely well with major import countries in the past. Exporters are strenuously encouraged to maintain this outturn level.

4. Industry Outturn Target of (½) 50% the Australian MRL

In the late 1980s, the Grains Industry agreed to a target of ½ (50%) of the Australian MRL for all organophosphate grain protectants on outturn of all cereals to the human consumption and stockfeed markets in Australia and for international markets. This agreement does not apply to fumigants or new compounds such as spinosad.

This major commitment was introduced in the late 1980s to reduce the amount of grain protectants in use because of;

- A perception that some markets were moving towards a requirement for wheat with lower levels of pesticide residues, and;
- The regular emergence of insect populations that were resistant to residual grain protectants.

This agreement has continued to operate and will continue until further notice. As a result of this measure, Australia has been able to significantly reduce pesticide residue levels on all domestic and exported grain. The measure to move to ½ or 50% of the

Australian MRL on outturn has been of major benefit to the Australian Grains Industry in permitting it to export grain with pesticide residues at low levels commensurate with the requirements of many importing countries.

The need to continue utilising a target of ½ (50%) of the Australian MRL on outturn continues to receive extremely strong support from the NWPGP. The NWPGP agrees that the ½ (50%) of the MRL outturn target continues to apply. It will continue to not apply to fumigants and spinosad.

5. Utilising this Document

This document is for the use of grains industry participants and attempts to be as simple as possible in a complex commodity trading industry where import tolerances can differ significantly based on the end-use. The outturn requirements are grouped under crop type or commodity, followed by the end use and then the sector.

A hyper-link is provided to individual country's MRLs that are detailed on the NRS webpage under Australian and International Maximum Residue Limits - see the link http://www.daff.gov.au/agriculture-food/nrs/nrs-australian-and-overseas-mrl-database and click on the relevant bullet point. Users of this document are encouraged to utilise these links to obtain MRL information. If users discover errors, changes or new information please also supply that information to the NRS.

This document uses the term recommended outturn limit (ROL) instead of MRL where the standard is not the same as the Australian MRL. The ROL reflects situations where industry has recommended that the MRL should not apply because of market requirements. An example is where industry recommended that in the Australian domestic market grain should be outturned at 50% of the Australian MRL (see 4 - Industry Outturn Target) or lower. PRF tolerances are also an unofficial standard but are vigorously recommended to be continued.

6. Wheat

6.1. Wheat – Milling Wheat – Export

This section applies to wheat exported from Australia in any manner. There may be differences between MRLs for milling wheat and stockfeed wheat in certain markets.

6.1.1 The traditional markets that have been identified for PRF wheat for market access purposes are listed below. These markets do have their own MRLs for various chemical/commodity combinations and are discussed in more detail later. Exporters are encouraged to treat these markets as PRF and ensure that there are no grain protectant residues present. The markets include:

- China
- India
- Italy
- Japan
- South Korea
- Spain

- Taiwan
- Thailand
- Potentially, other markets

6.1.2 Chemical treatments that are normally allowable for PRF markets are:

Chemical Name	MRL (mg/kg)
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05

* Measured as inorganic bromide

6.1.3 The table below contains Codex MRLs and should be noted for those markets which recognise Codex. The Codex MRLs for grain protectants and fumigants are:

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	10.0
dichlorvos	5.0
fenitrothion	6.0
pirimiphos-methyl	7.0
deltamethrin	2.0
methoprene	10.0
piperonyl butoxide	30.0
pyrethrins	0.3
spinosad	1.0
carbaryl	2.0#
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05

Specific products only registered for use in Australia.
* Listed and measured as bromide ion.

6.1.4 The countries listed below may not follow Codex and have their own specific regulations covering pesticide limits.

a) China – Unconfirmed advice indicates that China will accept Codex MRLs. Previously, wheat exported to China was PRF wheat and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	5.0
dichlorvos	0.1
fenitrothion	5.0
pirimiphos-methyl	5.0
deltamethrin	0.5#
methyl bromide	5.0
phosphine	0.05

China does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin products.

b) India – Exporters are strongly advised to seek up-to-date information from Indian importers and the Indian Government before consigning commodities. Previously, wheat exported to India was PRF wheat and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
dichlorvos	1.0
fenitrothion	0.02
pirimiphos-methyl	5.0
deltamethrin	0.5#
pyrethrins	nil
methyl bromide	25*
phosphine	Nil

India does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin and pyrethrin products.
* Measured as inorganic bromide.

c) Indonesia – Indonesia is expected to finalise MRLs for many agri-chemicals in the near future.

Chemical Name	MRL (mg/kg)
All chemicals	#

Exporters are advised to contact Indonesian importers in regard to chemical residues as industry sources are unable to determine the exact MRLs that apply to grains at this point of time.

Indonesia has provided the following unofficial advice:

- Where an Indonesian MRL is 'not set' the Codex MRL will apply.
- In the event that there is no Codex MRL the Australian MRL will apply.

Once official notification is provided, this document will be updated. There are also a number of other MRLs being drafted but not promulgated into law as yet.

d) Japan – Previously, wheat exported to Japan was PRF and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	10.0
dichlorvos	0.2
fenitrothion	10.0
pirimiphos-methyl	1.0
deltamethrin	1.0
methoprene	5.0

Chemical Name	MRL (mg/kg)
piperonyl butoxide	24.0
pyrethrins	3.0
spinosad	0.02
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.1

* Measured as inorganic bromide.

e) Korea (South or Republic of) – Korea has advised that it will accept Codex MRLs where there is no Korean MRL for that chemical/commodity combination (Please note this is under review as Korea develops a positive list – and the default to Codex MRLs may be removed). Previously, wheat exported to Korea was PRF and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	6.0
dichlorvos	2.0
fenitrothion	6.0
pirimiphos-methyl	5.0
deltamethrin	1.0
methoprene	5.0
pyrethrins	3.0
carbaryl	3.0#
methyl bromide	50*
phosphine	0.1

Specific products only registered for use in Australia.
* Measured as bromide ion.

f) Taiwan – Previously, wheat exported to Taiwan was PRF and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	5.0
deltamethrin	1.0
fenitrothion	0.5
methoprene	2.0
phosphine	#
piperonyl butoxide	15.0
pirimiphos-methyl	5.0
spinosad	1.0

Taiwan does not have an MRL for phosphine and is currently reviewing phosphine with the intention of proposing an MRL.

g) Thailand – Thailand has indicated in unofficial communications that in accordance with food safety legislation, it will accept Codex MRLs. Previously, wheat exported to Thailand was PRF and exporters are strongly recommended to continue this practice.

Chemical Name	MRL (mg/kg)
phosphine	0.1

6.1.5 Milling wheat exported to markets other than those referred to above must meet the foreign government MRLs. Exporters should note that in these countries MRLs may differ from those listed above.

As outlined in section 4, industry has agreed to outturn wheat to all countries with residue levels at ½ (50%) of the Australian MRL (see 4. Industry Outturn Target) providing it does not contravene the importing country MRL.

6.2. Wheat – Milling Wheat – Domestic

6.2.1 Includes wheat destined for the domestic flour milling market. Although the Australian wheat MRLs (as applied by the APVMA through State Government control-of-use legislation) are higher than those ROLs listed below, industry recommends that in the Australian domestic market, wheat should be outturned at ½ (50%) of the Australian MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
chlorpyrifos-methyl	5.0
dichlorvos	2.5
fenitrothion	5.0
pirimiphos-methyl	5.0
deltamethrin	1.0#
methoprene	1.0
piperonyl butoxide	20.0
pyrethrins	3.0
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05
ethyl formate	^

As agreed by the Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.

* Recorded separately as inorganic bromide and methyl bromide

^ Permitted for use but no MRL level required.
The Australian wheat milling industry has an agreed position that wheat is not to be treated with diatomaceous earth or any other inert silica dust.

6.3. Wheat – Starch and Gluten – Domestic

6.3.1 Includes wheat destined for the domestic starch and gluten trade. Industry recommends that in the Australian domestic market wheat for the starch and gluten trade should be outturned at ½ (50%) of the MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
chlorpyrifos-methyl #	5.0
fenitrothion	4.0
methoprene	1.0
synergised pyrethrins +	1.5
methyl bromide	50*
phosphine	0.1
ethyl formate	^

Not accepted by some markets.
* Recorded separately as inorganic bromide and methyl bromide.
^ Permitted for use but no MRL level required.
+ Associated with piperonyl butoxide in many products.

6.4. Wheat – Stockfeed – Domestic & Export

6.4.1 Wheat that is designated for livestock feed within Australia must comply with Australian MRLs if being used in the domestic market although certain State and Territory jurisdictions do apply different MRLs for stockfeed.

The industry recommends that for the Australian stockfeed market, feed wheat should be outturned at ½ (50%) of the MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
chlorpyrifos-methyl	5.0
dichlorvos	2.5
fenitrothion	5.0
pirimiphos-methyl	5.0
carbaryl	2.5~
deltamethrin	1.0#
methoprene	1.0
piperonyl butoxide	20.0
pyrethrins	3.0
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05
ethyl formate	^

~ Specific products only registered for use in Australia.

As agreed by Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.
* Recorded separately as inorganic bromide and methyl bromide.
^ permitted for use but no MRL level required.

6.4.2 In the event that feed wheat is exported it must meet the foreign government MRLs. Exporters should note that in some countries different import tolerances for feed wheat are applied compared to milling wheat.

7. Barley

In some instances, malting barley and general purpose (feed) barley have the same MRLs within a particular country. For the purposes of this document, malting barley MRLs and permitted chemicals refer to all barley except feed barley. Barley that is exported as feed may have different import tolerances applied in particular markets and is listed separately.

7.1. Barley – Malting Barley – Export

7.1.1 Chemical treatments that are normally allowable for PRF markets are:

Chemical Name	MRL (mg/kg)
phosphine	0.1
sulfuryl fluoride	0.05

7.1.2 The table below contains Codex MRLs and should be noted for those markets which recognise Codex. The Codex MRLs for grain protectants and fumigants are:

Chemical Name	MRL (mg/kg)
dichlorvos	5.0
fenitrothion	6.0
pirimiphos-methyl	7.0*
deltamethrin	2.0
methoprene	10.0
piperonyl butoxide	30.0
pyrethrins	0.3
spinosad	1.0
methyl bromide	50#
phosphine	0.1
sulfuryl fluoride	0.05

* The Australian barley industry has an agreed position that malting barley is not to be treated with chlorpyrifos-methyl, pirimiphos methyl or carbaryl.
# Listed and measured as bromide ion. The Australian barley industry has an agreed position that malting barley is not to be fumigated with

methyl bromide. Note that naturally occurring inorganic bromide may be present at low levels in malting barley.

7.1.3 The countries listed below may not adopt Codex MRLs and have their own specific regulations covering pesticide limits.

a) China – Unconfirmed advice indicates that China may accept Codex MRLs.

Chemical Name	MRL (mg/kg)
deltamethrin	0.5*
dichlorvos	0.1
fenitrothion	5.0
methyl bromide	5.0#
phosphine	0.05

* China does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin products.

The Australian Barley industry has an agreed position that malting barley is not to be fumigated with methyl bromide.

b) Taiwan – Taiwan has recently developed additional MRLs for some grain protectants.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	3.0#
deltamethrin	1.0
fenitrothion	0.3
methoprene	2.0
piperonyl butoxide	15.0
pirimiphos-methyl	5.0#
spinosad	1.0

The Australian Barley industry has an agreed position that malting barley is not to be treated with chlorpyrifos-methyl or pirimiphos-methyl.

7.1.4 In the event that malting barley is exported it must meet the relevant foreign government MRLs. The MRLs that apply may or may not be those as listed in 7.1.1 to 7.1.3 above.

7.2. Barley – Malting Barley – Domestic

7.2.1 Includes malting barley destined for the domestic malting market. Although the Australian barley MRLs (as applied by the APVMA through State Government control-of-use legislation) are higher than those ROLs listed below, industry recommends that in the Australian domestic market malting barley should be outturned at ½ (50%) of the MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
dichlorvos	2.5
deltamethrin	1.0
fenitrothion	5.0
methoprene	1.0
piperonyl butoxide	10.0
methyl bromide	#
phosphine	0.1
sulfuryl fluoride	0.05

The Australian Barley industry has an agreed position that malting barley is not to be fumigated with methyl bromide.
The Australian barley industry has an agreed position that malting barley is not to be treated with chlorpyrifos-methyl, pirimiphos methyl or carbaryl.

7.3. Barley – Feed Barley – Domestic and Export

7.3.1 Barley that is designated for livestock feed within Australia must comply with Australian MRLs if being used in the domestic market although certain State and Territory jurisdictions do apply different MRLs for stockfeed.

The industry recommends that for the Australian stockfeed market, feed barley should be outturned at ½ (50%) of the MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
chlorpyrifos-methyl	5.0
dichlorvos	2.5
fenitrothion	5.0
pirimiphos-methyl	3.5
carbaryl	7.5~
deltamethrin	1.0#
methoprene	1.0
piperonyl butoxide	10.0
pyrethrins	3.0
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05
ethyl formate	^

~ Specific products only registered for use in Australia.
# As agreed by Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.
* Recorded separately as inorganic bromide and methyl bromide.
^ Permitted for use but no MRL level required for domestic only.

7.3.2 In the event that feed barley is exported it must meet the foreign government MRLs. Exporters should note that in some countries different import tolerances are applied for feed and malting barley.

a) China

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	5.0
deltamethrin	0.5*
dichlorvos	0.1
fenitrothion	5.0
methoprene	1.0
methyl bromide	5.0
phosphine	0.05

* China does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin products.

b) South Korea

Chemical Name	MRL (mg/kg)
dichlorvos	0.1

c) Taiwan

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	3.0
deltamethrin	1.0
fenitrothion	0.3
methoprene	2.0
piperonyl butoxide	15.0
pirimiphos-methyl	5.0
spinosad	1.0

d) USA

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	6.0
deltamethrin	1.0
dichlorvos	0.5
methoprene	^
piperonyl butoxide	20.0
pyrethrins	3.0
spinosad	1.5
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.1

* measured as inorganic bromide.

^Methoprene is exempt from the requirement of a tolerance in or on all food commodities when used to control insect larvae.

8. Other Cereal Grains

Other Cereal Grains generally refer to cereal grains except wheat and barley. Please see the Definition of Cereal Grains. Note the Codex Classification of Foods and Animal Feeds crop group GC 020 has a different and complete list of Cereal Grains.

Different MRLs may apply for other cereal grains used for human consumption and stockfeed. For the purposes of this document, other cereal grains refer to use as stockfeed and for human consumption.

8.1. Other Cereal Grains – Export

8.1.1 Chemical treatments that are normally allowable for PRF markets are:

Chemical Name	MRL (mg/kg)
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05

* measured as inorganic bromide.

8.1.2 The table below contains Codex MRLs and should be noted for those markets which recognise Codex. The Codex MRLs for grain protectants and fumigants are:

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl except sorghum	Nil 10.0
dichlorvos	5.0
fenitrothion	6.0
pirimiphos-methyl	7.0
deltamethrin	2.0#
carbaryl (maize only)	0.02~
methoprene	10.0
piperonyl butoxide	30.0
pyrethrins	0.3
spinosad	1.0
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05

As agreed by Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.

~ Specific products only registered for use in Australia.

* Measured as bromide ion.

8.1.3 The countries listed below may not accept Codex MRLs and have their own specific regulations covering pesticide limits for other cereal grains. In the event that other cereal grains are exported they must meet the foreign government MRLs. Exporters should note that in some countries different import tolerances are applied for different uses of other cereal grains. Refer also to export stockfeed wheat and export feed barley.

a) China (includes Cereal Rye, Oats. Excludes Wheat and Barley)

Chemical Name	MRL (mg/kg)
deltamethrin	0.5#

As agreed by Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.

b) South Korea

Chemical Name	MRL (mg/kg)
dichlorvos (oats, rye, sorghum)	2.0
dichlorvos (maize only)	0.1

c) Taiwan (except wheat and barley)

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl (oats, sorghum)	3.0
deltamethrin (sorghum only)	2.0
deltamethrin (other cereals except sorghum)	0.05
fenitrothion (other cereals except sorghum)	0.2
piperonyl butoxide (sorghum only)	8.0

d) USA (Sorghum)

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	6.0
deltamethrin	1.0
dichlorvos	0.5
methoprene	^
pirimiphos- methyl	8.0
piperonyl butoxide	8.0
pyrethrins	1.0
methyl bromide	50*

* Measured as inorganic bromide.

^Methoprene is exempt from the requirement of a tolerance in or on all food commodities when used to control insect larvae.

e) USA (except Sorghum, Wheat and Barley)

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	6.0
deltamethrin	1.0
dichlorvos	0.5
methoprene	^
piperonyl butoxide	8.0
pyrethrins	1.0
methyl bromide	50*

* Measured as inorganic bromide.
^Methoprene is exempt from the requirement of a tolerance in or on all food commodities when used to control insect larvae.

8.2. Other Cereal Grains – Domestic

8.2.1 Includes cereal grains other than wheat and barley destined for the domestic Australian human consumption and stockfeed market. Although the Australian MRLs (as applied by the APVMA through State Government control-of-use legislation) are higher than those ROLs listed below, industry recommends that in the Australian domestic market other cereal grains should be outturned at ½ (50%) of the MRL (see 4. Industry Outturn Target) and therefore the following ROLs should apply.

Chemical Name	ROL (mg/kg)
chlorpyrifos-methyl	5.0
dichlorvos	2.5
fenitrothion	5.0
pirimiphos-methyl except maize and oats	5.0 3.5
carbaryl (feed grains except barley and sorghum) carbaryl (barley for stockfeed) carbaryl (sorghum for stockfeed)	2.5~ 7.5~ 5.0~
deltamethrin	1.0#
methoprene	1.0
piperonyl butoxide	20.0
pyrethrins	3.0
methyl bromide	50*
phosphine	0.1
sulfuryl fluoride	0.05
ethyl formate	^

~ Specific products only registered for use in Australia.
# As agreed by Australian livestock industries, APVMA, the chemical registrant and grains industry, for use only under the approved Stewardship Program.
* Recorded separately as inorganic bromide and methyl bromide.
^ Permitted for use but no MRL level required.

9. Pulses

Please see Codex Classification of Foods and Animal Feeds crop group VD 015 for a complete list. Includes but is not limited to field pea, chickpea, lupin, mung bean, cowpea, faba/broad bean, pigeon pea, lentil, vetch, navy bean and adzuki bean. The Codex classification lists soybean as both an oilseed and a pulse. For the purposes of this document soybean is listed as an oilseed but where the pulse MRL is lower it is recommended to use that MRL.

Pulses may absorb chemicals from direct applications and surrounding surfaces. In most countries there are no or very few MRLs and any residue detection may be considered a contravention. Please consider the use of chemical compounds carefully and seek advice from the export or domestic market if unsure of market requirements.

Different MRLs may apply for pulses used for human consumption and stockfeed.

9.1. Pulses – Export

9.1.1 The table below contains Codex MRLs and should be noted for those markets which recognise Codex. The Codex MRLs for grain protectants and fumigants are:

Chemical Name	MRL (mg/kg)
malathion (beans, dry only)	2.0
deltamethrin	1.0
piperonyl butoxide	0.2
pyrethrins	0.1

9.1.2 The table below contains EU MRLs for pulses. Individual countries may have separate/different MRLs for piperonyl butoxide.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	0.05
dichlorvos	0.01
fenitrothion	0.01
pirimiphos-methyl	0.05
carbaryl	0.05~
deltamethrin	1.0
methoprene	0.05
pyrethrins	3.0
spinosad	0.02
methyl bromide	50*
phosphine except chickpeas and field peas	0.05 0.10
sulfuryl fluoride	0.01

~ Specific products only registered for use in Australia.

* Measured as bromide ion.

9.1.3 In the event that pulses are exported they must meet the relevant foreign government MRLs. The MRLs that apply may or may not be those as listed in 9.1.1 and 9.1.2 above.

9.2. Pulses – Domestic

9.2.1 The following MRLs apply for pulses to the Australian domestic market.

Chemical Name	MRL (mg/kg)
carbaryl	0.1~
chlorpyrifos-methyl (lupin, dry only)	10.0
dichlorvos (lentil, dry & soybean, dry only)	2.0
fenitrothion	T0.1
malathion (lentil, dry & beans, dry only)	8.0
deltamethrin	0.1#
spinosad - beans (except broad bean and soybean), peas	0.5*
spinosad - other pulses	0.01*
phosphine	0.01
ethyl formate	^

~ Arising from structural treatment.
# Australia does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin and pyrethrin products.
* In crop use only.
^ Permitted for use but no MRL level required.

10. Oilseeds

Please see Codex Classification of Foods and Animal Feeds crop group SO 023 for a complete list. Includes but is not limited to canola (rapeseed), sunflower seed, safflower seed, linseed, soybean, cotton seed and mustard seed. The Codex classification lists soybean as both an oilseed and a pulse. For the purposes of this document soybean is listed as an oilseed but where the pulse MRL is lower it is recommended to use that MRL.

Oilseeds readily absorb chemicals from direct applications and surrounding surfaces. In most countries there are no or very few MRLs and any residue detection may be considered a contravention. Please consider the use of chemical compounds carefully and seek advice from the export or domestic market if unsure of market requirements.

Different MRLs may apply for oilseeds and their processed products and for use in the human consumption and stockfeed markets.

10.1. Oilseeds – Export

10.1.1 The table below contains Codex MRLs and should be noted for those markets which recognise Codex. The Codex MRLs for grain protectants and fumigants are:

Chemical Name	MRL (mg/kg)
fenitrothion (soybean dry only)	0.01
malathion (cotton seed only)	20.0
carbaryl (soybean dry and sunflower seed only)	0.2~
deltamethrin (sunflower only)	0.05#
piperonyl butoxide (peanuts only)	1
pyrethrins (peanuts only)	0.5#
spinosad (cotton seed/soybean dry only)	0.01*

~ Specific products only registered for use in Australia.
# Codex does not have an MRL for piperonyl butoxide, which is a synergist in many deltamethrin and pyrethrin products.
* In crop use only.

10.1.2 The table below contains EU MRLs for oilseeds. Individual countries may have separate/different MRLs for piperonyl butoxide.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl	0.05
dichlorvos	0.01
fenitrothion	0.01
malathion except cottonseed	0.02 20.0
pirimiphos-methyl	0.05
deltamethrin except rapeseed (canola), mustard seed	0.05 0.1
methoprene	0.05
pyrethrins	3.0
methyl bromide except peanuts	20* 50
phosphine except rapeseed (canola), sunflower seed	0.05 0.10
sulfuryl fluoride	0.05

* Measured as bromide ion.

10.1.3 In the event that oilseeds are exported they must meet the relevant foreign government MRLs. The MRLs that apply may or may not be those as listed in 10.1.1 and 10.1.2 above.

10.2. Oilseeds – Domestic

10.2.1 The table below lists MRLs for oilseeds.

Chemical Name	MRL (mg/kg)
chlorpyrifos-methyl (cottonseed only)	0.01
dichlorvos (soybean dry, peanuts only) (rapeseed/canola only)	2.0 T0.1
fenitrothion	T0.1
malathion (peanuts only)	8
carbaryl except cottonseed	0.1~ 3#
deltamethrin	0.1
piperonyl butoxide	8.0
pyrethrins	1
spinosad - cottonseed spinosad - safflower seed	0.01* T0.01*
phosphine	0.01

~ Arising from structural treatment.
# Specific products only registered for use in Australia.
* In crop use only.

11.Structural and/or Handling Equipment Treatments

Any currently registered structural treatment may be used, however care must be taken that residues do not cross contaminate the grain subsequently stored in that facility or handled using that equipment. All labels detailing application rates must be followed for each chemical and commodity where linked.

Care must be taken to ensure that Australian and overseas countries MRLs are complied with when using the following treatments. Note that there are no Codex MRLs in place for azamethiphos.

Permitted chemicals are listed in the table below.

Permitted Chemicals	
azamethiphos	carbaryl#
chlorpyrifos-methyl	dichlorvos
deltamethrin	fenitrothion
pirimiphos-methyl	
Desiccant dust treatments (activated amorphous silica or diatomaceous earth)	

Specific products only registered for use in Australia.

CAUTION: The use of these compounds as a structural treatment has special significance when oilseeds come into contact with structures. Oilseeds readily absorb these chemicals and in most countries there are no MRLs and any residue detection is a contravention. The same situation may also apply to pulses and all other

commodities. Domestic flour milling markets may also not permit the use of some of these treatments.

12.Pre-Shipment Fumigation

Many countries have a pre-shipment fumigation requirement, which is usually recorded in the contract. It may also be an importing country quarantine requirement. It is important for exporters to identify and comply with contractual and quarantine requirements.

13.Capping Treatments

The use of diatomaceous earth, or other inert silica dust, as a capping treatment for wheat continues to be subject to agreement with the domestic flour milling industry.

Diatomaceous earth or other silica dusts should not be admixed to a general bulk of wheat if that grain is to be delivered to the domestic flour milling industry or general storage system for potential export.

Export markets may consider the detection of diatomaceous earth in all grain commodities as a physical or chemical contaminant and reject the consignment.