GRAIN TRADE AUSTRALIA

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Member Update

Title: **Grain Trade Australia – Nil Tolerance Discussion Paper**

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Distribution

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

1. Issue

GTA has developed a Nil Tolerance Discussion Paper for use by GTA Members and is calling for industry comment. Industry comment on the draft paper should be received by GTA at admin@graintrade.org.au by the **COB Friday 24 January 2014.**

2. Background

During development of the 2012/13 and 2013/14 Trading Standards, industry submissions were received seeking a review of the application and definition of nil tolerance in GTA Standards.

Feedback is sought from industry regarding the impact of the proposed changes on individual company operations, including current and future exceptions to Standards included in commercial contracts and in Storage and Handling Contracts

A copy of the paper is attached below for industry review.

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Grain Trade Australia Standards Committee Discussion Paper

Definition of Nil Tolerance

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1. Purpose

During development of the 2012/13 and 2013/14 Trading Standards, industry submissions were received seeking a review of the application and definition of nil tolerance in GTA Standards.

This paper documents a revised definition of nil tolerance as considered by the GTA Standards Committee (Committee) and seeks industry feedback on the proposed revised Standards for 2014/15.

2. Industry Feedback Sought

Please provide feedback to GTA on the issues outlined in this document by Friday 24 January 2014. Industry submissions are to be made by email to admin@graintrade.gov.au and the heading should be titled "2013/14 Nil Tolerance Review".

While industry may provide a submission on any aspect related to this topic, industry is encouraged to consider the impact of the recommended changes on:

- The current standards, definitions and tolerances for all commodities;
- Industry sectors operating at all stages of the supply chain;
- Individual company operations, including current and future exceptions to Standards included in commercial contracts and Storage and Handling Contracts; and
- Potential timing for the introduction of any changes.

For the Committee to make an informed decision on this proposal, please supply appropriate supporting data to GTA. GTA will compile data (and where required alter) to preserve its confidentiality. Data may be in any form and cover aspects including but not limited to:

- Number of consignments/frequency, tonnage affected by market and destination/end-use/location in supply chain
- Financial aspects of affected grain (direct and indirect costs etc)
- Levels of nil tolerance parameters detected
- Mitigation strategies employed where incidents have arisen
- Implications of proposed revised tolerances on the above incidents and supplied data

Following a review of all feedback and data supplied by industry, the Committee will review its position on this topic and provide its proposed findings for further industry consideration as part of the first round seeking industry submissions on potential changes to standards for 2014/15 in late February 2014.

3. Recommended Changes to Nil Tolerance

3.1. The revised tolerances as listed in tables 1-3 below apply to cereal commodities as listed.
3.2. Tolerances to be applied for the 2014/15 standards.
3.3. An annual review is to occur to ensure tolerances and definitions remain applicable.
3.4. Additional quality parameters are to be considered in future seasons.
3.5. The Committee will approach other industry standards-setting bodies to adopt the same strategy in the same timeline for commodity groups such as oilseeds and pulses.

Table 1: Heat Damaged, Bin Burnt, Storage Mould

Maximum Tolerance to Apply	Commodity & Grade
1 grain by count per 0.5L	Wheat – All milling grades, including AUH2, AGP1, SFT2, ANW2, DR1-3, HPS1, SFW1
	Barley – All malt grades, F1
	Triticale
	Cereal Rye
	Oats – all grades
5 grains by count per 0.5L	Wheat –FED1
	Barley – F2
No change to the existing Tolerance for Heat Damaged, Bin Burnt (0.6% by wt). Includes a new maximum for Storage Mould of 0.05% (by wt).	Sorghum – All grades. Note – Definition now includes Heat Damaged, Bin Burnt, Storage Mould
No change to Tolerance	Maize – no change to definition or tolerance.

Discussion:

- Market Requirements for Heat Damaged, Bin Burnt, Storage Mould vary:
  - At receival there is a desire for a nil tolerance.
  - On outturn, many contracts require nil tolerance in the inspected sample.
  - Low levels detected in a consignment are unlikely to cause a food safety issue in the grain.
  - High levels in a consignment are not desired as they may be readily visually detected and be a food safety issue as determined via relevant objective tests such as mycotoxin analysis.
- Heat Damaged, Bin Burnt, Storage Mould arises through various means:
  - The type of storage where the grain was held.

- The moisture content of grain may lead to moisture migration.
- Failure to use or improper use of Aeration.
- Inadvertent contamination through the handling process.
- Poor hygiene, unsuitable storage conditions, poor grain quality.

- Current industry Storage and Handling Agreements permit varying levels of up to 6 grains per half litre to be present in outturned grain.
- The proposal:
  - For milling grades is unlikely to create an impact on the end-product.
  - Should reduce the risk of rejection for inadvertent contamination thus creating a more efficient supply chain.
  - For the lower quality grades is unlikely to create a food safety issue.
  - Includes a change to the definition. Rotted is to be deleted from the Standards as there is little difference between Rotted and Storage Mould. Note also that where a commercially unacceptable odour is detected, the nil tolerance would continue to apply.
  - For sorghum only, a maximum Mould exists within the total Heat Damaged, Bin Burnt and Mouldy.

Table 2: Stones

Maximum Tolerance to Apply	Commodity & Grade
Max weight of 4.0g all stones per 2.5L retained above the applicable screen for that commodity.	All commodities and all grades. Note – material passing through screen is classified as Sand/Earth.

Discussion:

- Stone contamination of grain may arise through various unintended means including:
  - Harvesting a crop low to the ground.
  - Windrowing a crop and subsequent harvesting.
  - Unintended picking up of a stone from the floor of the storage.
  - Contamination of the grain during discharge into a receival pit via stones lodged in truck wheels or through other handling equipment.
- Current standards:
  - A stone is generally defined as hard material over 2mm in diameter. The definition for the size of a stone is not related to what material is retained on the screen.
  - Material smaller than 2mm is defined as sand.
  - Material larger than 2mm that is able to be crushed is generally defined as earth and a tolerance applies up to 5mm in diameter (e.g., in wheat the tolerance is 1 piece of earth per half litre up to 5mm in diameter).
  - Stones are currently included in Objectionable Material with a nil tolerance as they may damage milling equipment when grain is being processed. From a stockfeed perspective, they may become harmful to stock when consumed.
  - Measuring the size of a stone in a sample is impractical and generally not done (except in South Australia). In addition inclusion of definitions referring to different sizes may be confusing when applying standards. However this may be the most practicable application of the standard unless the tolerance as proposed is based solely on weight, with no size limitations applying.
- Under the proposal:
  - The size of a stone will be defined based on the applicable screen used for that commodity.
  - The assessment of stones retained above the applicable screen will occur during assessment for other contaminants.
  - If a stone is detected in the original half litre sample, a further four half litre samples are to be taken.

- The maximum weight limit of 4.0g in the 2.5L sample will prevent large stones being permitted in grain.
- The procedure for assessment of stones in a load tendered for delivery will be clarified to reflect that a large stone (i.e., over 4.0g) not collected during the probing operation, but appearing visually on the surface of the load, will result in rejection of that load. In that instance, the stone falls under the definition of Objectionable Material.

Table 3: Animal Excreta – Rodent Droppings

Maximum Tolerance to Apply	Commodity & Grade
1 dropping by count per 2.5L sample.	All commodities and all grades. Note – definition changed to Rodent (rat or mice) Droppings. Existing nil tolerance for Other Animal Excreta to apply.

Discussion:

- The most commonly detected Animal Excreta is rat or mice droppings.
- The incidence of Other Animal Excreta (e.g., sheep, possum, bird etc) is generally low.
- Market requirements vary for Other Animal Excreta and Rodent Droppings:
  - There is a desire for a nil tolerance in all grain, no matter the grade.
  - Droppings may contain other animal material such as hair, where a different tolerance may apply (i.e., nil).
  - A high level of droppings such as those arising through poor storage hygiene is likely to become a food safety issue. Some of the highly pathogenic Salmonella species (e.g. *S. typhimurium*), are known to be carried by rodents.
- Current Standards:
  - A nil tolerance applies in all standards for animal excreta, including rat and mice droppings, of any size.
  - Low levels may not be a food safety issue however 1 piece of excreta could lead to rejection of that grain when applying industry Standards.
  - Low tolerances for Rodent and Vermin Droppings are applied in export legislation. Current limits applying are outlined in table 4 below:

Table 4: Export Regulations applied by Department of Agriculture

Rodent and vermin droppings	(i)	In any single sample (2.25 L or equivalent) not more than seven droppings
	(ii)	In any two consecutive samples (each sample 2.25 L or equivalent) not more than four droppings in total
	(iii)	Nil in mungbeans

- Under the proposal:
  - The definition of Rodent Droppings will include rats and mice only.
  - The assessment of Rodent Droppings will occur during assessment for other contaminants in the entire half litre sample.
  - If one Rodent Dropping is detected in the original half litre sample, a further four half litre samples are to be taken.
  - The existing nil tolerance for Other Animal Droppings will be retained and the definition altered to refer to all animal droppings except rats and mice.

4. Issues Regarding a Change in Standards for Nil Tolerance

In making the above recommended changes, the Committee considered prior submissions industry had provided outlining a number of general reasons for seeking a review of the tolerance of nil. The submissions received are outlined below in no specific order of importance:

4.1. Market Requirements & Application of Standards:

- There is a desire for nil tolerance to be applied to the quality parameters where "nil" is currently listed in the Standards.
- Preference is for standards to be consistent across commodities, though different commodity end use may require different tolerances.
- Preference is for those standards to be applied at all stages of the supply chain, noting for some commodities industry applies different definitions and/or tolerances to "nil" at receival versus on outturn of grain i.e., receival versus export standards for pulses.
- Individual companies vary standards through Storage and Handling Agreements. This variation is not consistent across all companies.
- There is a desire for these "variation" clauses not to be required.
- Perceptions and prevailing market conditions of some nil tolerance parameters may dictate the tolerance to apply, rather than the real risk of a low level presence in a sample of grain. Different sectors of industry may have differing perceptions and a desire to accept or reject grain.
- Any change in tolerance must meet relevant Australian and overseas country Government regulations.
- Many exporting countries, notably USA and Canada, deal with these issues in their standards and provide low level tolerances. These levels are provided in this paper for comparison purposes.

4.2. Impacts of Nil Tolerance:

- The impracticality of a nil tolerance in bulk grain for some parameters at receival and /or following storage is recognised.
- Some nil tolerance parameters can be readily controlled or managed, others may not be so readily managed.
- For some nil tolerance parameters, there is a risk of grain failing to meet standards due to the presence of very low levels of these nil tolerance parameters, especially for the production and marketing sector.
- The detection of nil tolerance parameters may have different impacts:
    - No significant impact on the marketability or end-use of that grain; or
    - The impact may be significant, for example:
        - Lead to a price reduction
        - A low level of a nil tolerance parameter in a large bulk may lead to rejection of that consignment, resulting in a significant and unnecessary financial burden
- Different sampling and testing methods including sample size assessed may impact on the ability to determine the presence of nil tolerance parameters in a sample at receival and outturn.
- Low levels of a nil tolerance quality parameter may be detected upon "probing a truck". Upon re-probing, the quality parameter may not be detected given the low incidence in the truck. In other instances, low level contaminants may not be identified in any probe samples. Export bulk and container terminal sampling systems are far more likely to detect nil tolerance issues, particularly in rail or during loading.
- Requiring a further sub-sample to be taken and assessed where a nil tolerance parameter has been detected in the first sample may lead to excessive time taken for assessment.
- Including low level tolerances for some quality parameters will reduce the risk of cargo rejection where shipments are sold on GTA specifications.

- A change in the current nil tolerance in standards may result in significant and unacceptable changes to commercial contractual arrangements (e.g., liability, requirement for a common dispute mechanism).

5. Nil Tolerance to Continue to Apply

The following table 5 lists other quality parameters with a NIL tolerance listed in GTA Standards that are not proposed to be changed at this stage. The Committee considers further discussion is required on these parameters. Deliberations will occur during the review of the 2013/14 and subsequent year standards to determine if a tolerance other than nil can be introduced.

Note that a tolerance may exist for some of the quality parameters listed below in a particular commodity.

In the interim, when present in grain, these parameters will continue to be managed by industry through means such as contracts and agreements outside of GTA standards.

When present in a sample these quality parameters have varying impacts, including:

- Be illegal to be present, or sold for human consumption or stockfeed uses
- Create a significant food safety issue
- Have a significant negative impact on the marketability of that grain either domestically or overseas, affecting the excellent reputation of Australian grain
- Have a significant impact on the end-use of that grain
- Violate domestic or export market regulations or contracts

Table 5 – Quality Parameters where it is proposed that the Nil tolerance will remain (but may be reviewed in the future)

Parameter	Issue & Main Reasons for NIL Tolerance	
	At Receival	On Outturn/Domestic Trade
Various Smuts	Can be managed by producer. Sampling methods may not detect at initial receival.	Impact on the end-product.
Various Weed Seeds	Can be managed by producer. Sampling methods may not detect at initial receival.	May be toxic or contain allergens. May be under regulatory control. May taint the end-product. Note also the current review of weed seeds in all cereal standards.
Various Ergots	Can be managed by producer. Sampling methods may not detect at initial receival.	May be toxic.
Pickling Compounds	Can be managed by producer. Sampling methods may not detect at initial receival.	May be a chemical residue or visual contamination issue.
Chemicals not Approved on that commodity	Can be managed by producer / storage provider. Declaration by supplier.	Chemical mis-use is illegal. Industry does not condone illegal practices.

Parameter	Issue & Main Reasons for NIL Tolerance	
	At Receival	On Outturn/Domestic Trade
Chemicals (Phosphine) over the Threshold Limit Value of 0.3ppm	Can be managed by producer / storage provider.	Chemical mis-use is illegal. Industry does not condone illegal practices. May become an OH&S issue.
Stored Grain Insects - live	Can be managed by producer / storage provider. Sampling methods may not detect at initial receival.	Regulatory restrictions apply at export. Market contractual requirement for nil.
Objectionable Material – any animal product, animal feed, animal protein or animal contaminant (body, feathers etc). Except rodent & vermin excreta	Can be managed by producer / storage provider. Sampling methods may not detect at initial receival.	Regulatory restrictions apply at export. Potential food safety issue.
Objectionable Material – glass, concrete, metal, fertiliser	Can be managed by producer / storage provider. Sampling methods may not detect at initial receival.	Market restrictions apply. Potential food safety issue.
Objectionable Material – tainting agents, odour etc	Can be managed by producer. Sampling methods may not detect at initial receival.	Market restrictions may apply. Impact on the end-product. Potential food safety issue.
Objectionable Material – rat/mouse/snail bait	Can be managed by producer / storage provider. Sampling methods may not detect at initial receival.	Market restrictions apply. Potential food safety issue.

6. Comparison with International Standards

To assist industry in developing a position on the topics outlined in this paper, a comparison with some overseas standards is made in the following section.

A direct comparison with many standards applying in overseas countries that export grain in competition with Australia is difficult due to varying sampling and testing methods, and varying definitions. In addition, different tolerances and definitions etc apply for individual commodities and grades within those commodities.

However the following tables 6 and 7 are a useful guide for comparing GTA and overseas standards for wheat for the quality parameters outlined in this paper.

Table 6 USA Wheat:

Quality Parameter	Grade				
	No.1	No.2	No.3	No.4	No.5
Total Damaged (% Max by wt) , of which	2.0	4.0	7.0	10.0	15.0
- Heat Damaged (% Max by wt)	0.2	0.2	0.5	1.0	3.0
Foreign Material (% Max by wt)	0.4	0.7	1.3	3.0	5.0
Stones (% Max by wt)	0.1	0.1	0.1	0.1	0.1

Quality Parameter	Grade				
	No.1	No.2	No.3	No.4	No.5
Total Other Material (Max, count per kg), of which	4	4	4	4	4
- Animal Filth (Max, count per kg)	1	1	1	1	1
- Stones (Max, count per kg)	3	3	3	3	3
- Max Other Material (glass, other material etc)	Various individual tolerances apply				

Source: USDA Grain Inspection, Packers & Stockyards Administration

Note:

1. Damaged kernels - Kernels, pieces of wheat kernels, and other grains that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mould-damaged, sprout-damaged, or otherwise materially damaged.
2. Dockage - All matter other than wheat that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions.
3. Foreign material - All matter other than wheat that remains in the sample after the removal of dockage and shrunken and broken kernels.
4. Heat-damaged kernels - Kernels, pieces of wheat kernels, and other grains that are materially discoloured and damaged by heat which remain in the sample after the removal of dockage and shrunken and broken kernels. Portion for Analysis is approximately 50 grams.
5. Each determination of heat-damaged kernels, damaged kernels and foreign material is made on the basis of the grain when free from dockage and shrunken and broken kernels.
6. Stones – Are concreted earthy or mineral matter and other substances of similar hardness that do not disintegrate in water.
7. Mould – are kernels containing any amount of mould in the germ or an applicable amount in the crease. Portion for Analysis is approximately 15 grams.

Table 7 Canada Western Hard White Spring Wheat (noting that different tolerances may apply by grade and wheat type):

Quality Parameter	Grade				
	No.1	No.2	No.3	No.4	Feed
Total Foreign Material (Max %), of which	0.6	1.2	2.4	2.4	10
- Excreta (Max %)	0.010	0.010	0.015	0.015	0.030
- Matter other than cereal grains (Max %)	0.2	0.3	0.5	0.5	1
- Stones (Max %)	0.03	0.03	0.06	0.06	0.1
Total Heated (Max %), of which	0.05	0.4	1.0	1.0	2.5
- Bin burnt, severely mildewed, rotted, mouldy (Max %)	0.005	0.020	0.030	0.030	2.5

Source: Canadian Grain Commission

Note:

1. All grading is done on representative portions divided down from the cleaned sample, using a Boerner-type divider. For most of the above quality parameters, a 1kg sample is analysed.
2. Dockage includes
   - Material other than wheat removed by the No. 25 riddle
   - Material removed by No. 5 buckwheat sieve in the lower position
   - Material removed by aspiration
   - A maximum of 10% of soft earth pellets handpicked from the clean sample
   - Material removed by Cleaning for grade improvement
3. There is a single tolerance for the total of bin burnt, severely mildewed, mouldy and rotted kernels.
4. Bin burnt kernels are blackened as a result of severe heating in storage.

5. Foreign material is anything that is not wheat that remains in the sample after the removal of dockage.
6. Other cereal grains and other matter in the export grade determinant tables refers to cereal grains other than wheat and inseparable material excluding large seeds, wild oats, stones, mineral matter, ergot and *Sclerotinia sclerotiorum*.
7. Stones are hard shale, coal, hard earth pellets, and any other non-toxic materials of similar consistency. Stones may be removed and included in dockage if the material removed is 5% or less of the gross weight of the sample.