



The
**Co-operative
Difference**



Aflatoxin

Aflatoxin and other mycotoxins are heat-stable toxins produced by fungi. They are naturally occurring, found mostly in grain, but occasionally in hay and silage.

Aflatoxins are the most carcinogenic natural compounds known and can be detected in dairy products due to animal consumption of aflatoxin contaminated feed.

Aflatoxins are highly toxic and carcinogenic to animals and humans.

After entering the body, aflatoxins are metabolised by enzymes in the liver to aflatoxin M1. After aflatoxin M1 is formed, it is excreted in the urine and milk of the cow.





Why do we care about aflatoxin in milk?

Aflatoxin residues in milk pose a high risk to human health due to their carcinogenic properties. Raw milk containing a level of ≥ 0.05 ppb (“parts per billion”) (50 ppt (“parts per trillion”) aflatoxin residue is deemed to be unacceptable, so therefore that milk cannot be used for manufacturing.

Aflatoxin M1 is not destroyed by pasteurisation so will transfer into powdered milk, yoghurt and other milk-based products.

What feeds are likely to cause a problem in NZ?

Common feeds that cause concern are generally imported feed, such as copra, imported corn silage, molasses, almond husks etc.

What causes aflatoxin production?

While aflatoxin is a mycotoxin produced by strains of the moulds *Aspergillus flavus* and *Aspergillus parasiticus* which grow in warm dry conditions, it is important to remember that the presence of mould does not equal aflatoxins. Aflatoxins develop at high temperatures and humidity levels, when the mould becomes “stressed”. There is a particular risk from feed that originates from climates with high humidity and temperatures, which is why imported feeds are a key risk.

Aflatoxin production can occur at any stage in the process, but will often occur before harvest. The best approach to avoiding mycotoxin production is to prevent conditions that encourage fungal growth at each stage. There is no procedure for eliminating aflatoxin after it is produced.

- Pre-harvest fungal growth is promoted by insect damage, mechanical damage, drought stress and excessive rainfall
- Post harvest contamination can occur if crop drying is delayed
- Aflatoxin production is promoted during storage by warm, humid conditions. Ensure feed is stored in a cool dry environment. This is the only stage where farmers have control
- Ammoniating aflatoxin-contaminated feed can stabilise the level of aflatoxin concentration but this does not eliminate the problem

European Union maximum residue levels (MRLs) for milk and feed

- Maximum allowable level 0.05 ppb in bulk milk tank; for infant formula product this level is at 25 ppt
- Maximum allowable level 5 ppb in feed given to dairy cows

Milk and feed testing available

HortResearch and Hill Laboratories are able to test for Aflatoxins in feed and milk. MilkTestNZ is able to test the quantitative presence of aflatoxin residues in milk.

Conclusions and recommendations

- Ensure that feed is sourced from a reputable company and has been tested for aflatoxins to a level < 5 ppb
- Ensure feed is stored and fed as per instructions; do not use after expiry date
- Ensure storage conditions are unfavourable to aflatoxin production – keep cool and dry
- Avoid using mouldy feed
- Ensure that accurate records are maintained for all feeds and feeding regimes and animal health to ensure traceability