

Guidance for Trade on the
**Prevention and
Reduction of Aflatoxin
Contamination in
Peanuts**



Peanut is an economically important produce globally. However, the quality and food safety of peanuts can be jeopardised by the invasion of aflatoxin-producing mould during production, storage and processing. This document is intended to provide guidance for food trade producing and handling peanuts in pursuit of preventing and reducing aflatoxin contamination.

What are Aflatoxins?

Aflatoxin is a group of natural toxins which include four major types, namely aflatoxins B₁, B₂, G₁ and G₂. They are produced by a number of moulds of the *Aspergillus* family, including *A. flavus*, *A. parasiticus* and *A. nomius*, etc. Aflatoxins are heat-resistant and can withstand normal cooking temperatures.

Where are Aflatoxins Found?



Aspergillus mould species are ubiquitous in nature and therefore it is not possible to completely eliminate aflatoxins. Aflatoxins exist mainly in the tropical regions. The hot and humid climate, combined with drought, infestation and substandard handling and storage of crops after harvest make crops like peanuts susceptible to the contamination of mould.

Besides, if cows or other ruminant animals consume feeds contaminated with aflatoxin B₁, aflatoxin M₁ will be formed as a result of the metabolic process inside the animals and be excreted in animal milk. Aflatoxin M₁ may thus exist in milk and milk products produced for human consumption.

Health Effect of Aflatoxins

Aflatoxins B₁, B₂, G₁, G₂ and M₁ are classified as '**carcinogenic to humans**' (**Group 1**) by the International Agency for Research on Cancer. They are also genotoxic. Ingesting a large amount of food contaminated with aflatoxins could result in acute poisoning and cause liver damage. Long-term ingestion of aflatoxins could result in liver cancer. The carcinogenic potency of aflatoxins in hepatitis B virus infected individuals is substantially higher than non-infected ones.

Amongst the various regions of the World Health Organization, hepatitis B prevalence is the highest in the Western Pacific Region (where Hong Kong belongs), and an average of over 6% of the adult population is infected in this Region. In addition, local epidemiological studies gauged a prevalence of 7.2% for hepatitis B virus infection in the Hong Kong population, a level higher than the average rates of the Region and many neighbouring places (e.g. 4.4% in Korea, 3.6% in Singapore, etc.). In fact, liver cancer is among the three leading causes of cancer deaths in Hong Kong.

Reduction of Aflatoxins in Peanuts

Control of aflatoxins levels in peanuts is achievable through best practice such as Good Manufacturing Practice (GMP). Codex has issued a set of Code of Practice*, with recommendations to prevent and reduce aflatoxins contamination in peanuts. Some specific measures are highlighted as below:

Receiving

- Source peanuts from reliable suppliers that follow good production practices
- Inspect peanuts on arrival. Examine all loose-shelled, damaged 'blows' (in-shell nuts which are unusually light in weight) and under-sized kernels for possible presence of mould. If no external mould is visible, split the kernels to disclose possible hidden mould growth

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Inspect peanuts for any presence of mould upon receiving

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Sorting

- Sorting of (mouldy, discoloured, rancid, decayed, shrivelled, insect or otherwise damaged) kernels should be performed before and after blanching and roasting

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Blanching

- Colour sorting, combined with blanching have been shown to reduce aflatoxin contamination by as much as 90%

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Packaging and storage of end product

- Peanuts should be packed in clean jute bags, cartons or polypropylene bags which should be stacked on floor supporting materials with damp proof or on pallets without direct contact to the floor
- All bags or cartons should be lot identified to facilitate traceability of the product before being moved to controlled storage facilities or transported
- Peanuts that have been processed should be stored and transported under such conditions as will maintain the integrity of the container and the product within it
- Carriers should be clean, dry, weatherproof, free from infestation, and sealed to prevent water, rodents or insects from reaching the peanuts. Peanuts should be loaded, held and unloaded in a manner that protects from damage or water
- Extreme care should be taken to prevent condensation when unloading peanuts from cold storage or from a refrigerated vehicle. In warm, humid weather, the peanuts should be allowed to reach ambient temperature before exposure to external conditions. This tempering may require 1-2 days
- Maintain good storage conditions in a dry and cool environment with stock rotation on a first-in first out basis. *A. flavus* and *A. parasiticus* cannot grow or produce aflatoxins at water activities less than 0.7; relative humidity should be kept below 70% and temperatures between 0 and 10°C are optimal for minimising deterioration and fungal growth during long time storage
- Peanuts that have been spilled are vulnerable to contamination and should not be used for edible products



Peanuts should be stored in a dry and cool environment