

**Imported food risk statement
Peanuts/pistachios and aflatoxins**

Commodity: Nuts – peanuts and pistachios only (whether in shell or not; whether raw, blanched, roasted or processed by physical means i.e. crushed or ground). This includes peanut products, pistachio products and food containing as an ingredient greater than 30%:

- Peanuts;
- Pistachios;
- Peanut and pistachio mix;
- Peanut products;
- Pistachio products.

Examples include foods such as nut spreads/butters/pastes, nut flour, nut mixes, satay/cooking sauces, some bakery goods and confectionery items.

Oils derived from these nut types are not covered by this risk statement.

Analyte: Aflatoxins – collective term for a group of chemically similar fungal toxins from *Aspergillus* moulds.

Recommendation and rationale
<p>Is aflatoxin contamination of peanuts and pistachios and products containing more than 30% peanuts or pistachios a medium or high risk to public health:</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p><input type="checkbox"/> <i>Uncertain, further scientific assessment required</i></p> <p>Rationale:</p> <ul style="list-style-type: none"> • Aflatoxins are poisonous and liver cancer-causing chemicals that are produced by certain moulds (<i>Aspergillus</i> spp.) which grow in soil, decaying vegetation, hay, grains, oilseeds and tree nuts. Their presence in these commodities is considered to be unavoidable but manageable. • Human dietary exposure to aflatoxins, especially from potentially rich sources such as oilseeds (e.g. peanuts) and tree nuts (e.g. pistachio), should be kept <u>as low as reasonably achievable</u> (the ALARA principle). • There have been two food recalls in Australia of imported peanuts and pistachios due to the presence of aflatoxins, between January 2007 and February 2016. Aflatoxins are frequently notified through the EU rapid alert system.

General description
<p>Nature of the analyte:</p> <p>Aflatoxins are a family of related toxins produced primarily by two related species of <i>Aspergillus</i> mould (a type of fungus). Aflatoxin B1 is the most prevalent in food, however aflatoxins B2, G1 and G2 occur in lower proportions. Aflatoxins are both acutely and chronically toxic to animals, including humans, and are considered to cause liver cancer.</p>

Adverse health effects:

The symptoms of aflatoxicosis are dose-related with large doses leading to acute illness and death, usually through liver cirrhosis. Long-term sublethal doses have nutritional and immunologic consequences while all doses have a cumulative effect on the risk of liver cancer. Although the incidence of aflatoxin-contaminated foods is higher in developing countries, it has been estimated that aflatoxin may be a causative factor in up to 28% of all global cases of liver cancer (hepatocellular carcinoma) (Liu and Wu 2010).

Chronic aflatoxin exposure poses a particularly high liver cancer risk in people with chronic hepatitis B virus (HBV) infections, and a somewhat lower risk in those carrying the hepatitis C virus. The risk of liver cancer in individuals exposed to both dietary aflatoxins and chronic HBV infection is reported to be up to 30 times greater than the risk in non-HBV infected individuals (Liu and Wu 2010).

Exposure to aflatoxins through breast milk is associated with growth impairment in young children and infants; however this is mainly reported in populations where the nutritional quality of weaning foods is sub-optimal (Khlanguiset et al 2011). This is not likely to be an issue of major relevance in Australia, given the generally varied diet of new mothers and the ready availability of infant welfare support services.

Consumption patterns:

Dietary modelling using the 2011 National Nutrition Survey of Australia (NNS) revealed that the mean consumption of peanut and peanut products, such as satay sauces, is 0.45 g/kg bw/day for children aged between 2 and 6 years, and 0.16 g/kg bw/day for all consumers 2 years or older. For pistachio nuts, according to the 2011 NNS survey the mean consumption among children aged between 2 and 6 years was 0.19 g/kg bw/day, while that of all consumers 2 years and older was 0.04 g/kg bw/day.

Key risk factors:

The source of the commodity: compliance data show that aflatoxin contaminated peanut and pistachio products are more likely to be imported into Australia from countries across Asia, particularly India and China. Over the past 10 years, these two countries together have been the source of almost half (192/423) of the peanut and pistachio products containing aflatoxins at levels that do not meet the Australian standard. Testing of imports into Europe shows that Turkey and countries in the Middle East are also sources of aflatoxin-contaminated nut products.

High consumers of peanuts and pistachio products are at greater risk of intermittent exposure to aflatoxin. High consumers could include vegetarians and those who frequently consume Asian-style foods. Previous dietary modelling has indicated that satay/peanut sauces containing about 40% peanuts were potentially one of the higher contributors to aflatoxin intakes. While consumption of peanuts compared with pistachios is likely to be higher, recent surveillance data show the levels of aflatoxin in contaminated pistachio products can be many times over the maximum permitted level.

Longer term exposure to dietary aflatoxins in combination with chronic infection with hepatitis viruses, particularly HBV, significantly increases the risk of liver cancer.

The public health risk is greatest in HBV carriers who frequently consume peanuts, peanut sauces or pistachio products imported from developing countries where fungal contamination remains an ongoing issue due to sub-optimal food handling and storage practices.

Risk mitigation:

In Australia [Schedule S19—5 of the Australia New Zealand Food Standards Code](#) (the Code) specifies the maximum level (ML) for aflatoxin in peanuts and tree nuts (e.g. pistachios) at 0.015 mg/kg. This level applies to both imported and domestically produced commodities. Because aflatoxins are heat-stable, there is no post-importation processing available that could reduce the levels of aflatoxin if present in peanuts and pistachios.

Despite a range of risk management measures, aflatoxin contamination remains a global food safety concern that cannot be completely avoided. It is frequently notified through the EU rapid alert system. Appropriate handling and storage practices in the country or region of origin are necessary, together with monitoring by

enforcement authorities.

Compliance history:

The imported food compliance data sourced from the Imported Food Inspection Scheme of the Australian Department of Agriculture and Water Resources for the period October 2005 to December 2015, showed that of 9801 peanut and pistachio samples and satay cooking sauces tested for aflatoxin over this period, there were 423 products that exceeded the maximum level permitted in the Code. This represents an overall failure rate of 4.3%. Pistachios accounted for approximately 25% of the failed products. Approximately 8% of the failed products were satay or cooking sauces or salad dressings containing peanuts or pistachios.

According to the most recent (2014) Annual Report of the European Commission's Rapid Alert System for Food and Feed (RASFF), notifications concerning aflatoxin detections in the RASFF category: nuts, nut products and seeds numbered 49 from Iran, and 38 each from China and Turkey. Numerically, these notifications were in the top 10 list of notifications by hazard/product category/country. In the first month of 2016, 40 notifications regarding nuts, nut products and seeds containing aflatoxins have been published on the RASFF portal website and all products were rejected at the border. The sources of most rejected nut products were countries in the Middle East, Brazil and China.

There have been two food recalls in Australia of imported nuts: peanuts and pistachios due to the presence of aflatoxins, between January 2007 and February 2016. The level in pistachios (Iran) was 0.99 mg/kg, and in peanuts (India) it was 0.045 mg/kg -three times higher than the maximum permitted level of 0.015 mg/kg. There have been no food recalls of domestically produced peanuts and pistachios due to aflatoxin contamination over the same period.

Surveillance information:

Due to the high exposure levels required to cause aflatoxicosis, it is extremely rare. Cases documented in the literature have generally occurred in clusters that could be traced to a specific food with high levels of aflatoxins. Severe cases and deaths were reported in India in 1974, Malaysia in 1988 and Kenya in 1982, 2004 and 2005 (FDA, 2012). There are no reported instances of the illness in Australia and it is not a notifiable disease. While the prevalence of liver cancer in Australia is formally monitored, it is not possible to determine whether chronic low-level exposure to aflatoxins through the diet is a contributing factor in the development of any individual case of the disease.

FSANZ has not monitored the levels of aflatoxins in peanuts, pistachios and their products in surveillance activities, such as the Australian Total Diet Study.

Other relevant standards or guidelines

- Codex Alimentarius Commission (CAC): maximum level for total aflatoxins (B1+B2+G1+G2) in ready-to-eat almonds, hazelnuts and pistachios is 0.01 mg/kg.
- CAC: maximum level for total aflatoxins in peanuts and pistachios intended for further processing is 0.015 mg/kg.
- Related Codes of Practice: Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Peanuts (CAC/RCP 55-2004); Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Tree Nuts (CAC/RCP 59-2005)

Approach by overseas countries

- EU Maximum levels of aflatoxins (aflatoxins B1, B2, G1, G2 and M1) are laid down in Commission Regulation (EC) No 1881/2006 (European Commission 2006a)
- EU Provisions for methods of sampling and analysis for the official control of mycotoxins including aflatoxins are laid down in Commission Regulation (EC) No 401/2006 (European Commission 2006b)

Other considerations

Biosecurity requirements apply to products under this commodity classification. Refer to the [BICON database](#).

This risk statement was compiled by FSANZ in: June 2016

References

Codex Alimentarius Commission: Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Peanuts, CAC/RCP 55-2004.

Codex Alimentarius Commission: Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Tree Nuts, CAC/RCP 59-2005.

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