

Plant toxins

Plant toxins are found naturally in certain plant species and are produced by plants as a defence mechanism. Sometimes plants with these toxins appear as weeds in food crops which means the seeds or leaves can get mixed accidentally with the main crop at harvest. Because of this, low levels of these toxins can be detected in cereals, herbal products, teas, salad crops, cereals and animal products. Common examples are pyrrolizidine alkaloids and tropane alkaloids.

Some other toxins are natural constituents of plant products such as erucic acid in some oils, hydrocyanic acid in apricot kernels and opium alkaloids in poppy plants.

Legislation

To protect consumer safety, Maximum Levels (MLs) have been established for some of these toxins - erucic acid, tropane alkaloids and hydrocyanic acid in [Regulation 1881/2006](#).

Guidance

Guidance is provided to industry, including farmers, to advise on the agronomic practices to help reduce the contamination of food products with plant toxins. This is done to keep food safe. Codex produced [guidance on reducing contamination from pyrrolizidine alkaloids and opium alkaloids](#).

Cyanide in raw apricot kernels

Cyanide is a poisonous chemical that can cause nausea, fever, headaches, insomnia, thirst, lethargy, nervousness, joint and muscle aches and pains, falling blood pressure, and in extreme cases can be fatal.

Raw apricot kernels contain the naturally occurring substance amygdalin - a cyanogenic glycoside which results in the release of cyanide during digestion of the kernels in the human gut.

Raw, unprocessed apricot kernels, both bitter and sweet varieties, should not be sold for human consumption unless cyanide levels are compliant with the ML of 20 mg/kg that is set in legislation. The regulation also specifies that it is the Food Business Operator's (FBO's) responsibility to provide evidence that cyanide levels for apricot kernels placed on the market are compliant with the maximum level.

This includes apricot kernels which appear in the following formats:

- chopped
- unprocessed
- whole
- ground
- milled
- cracked

Processed apricot kernels used as flavourings or ingredients in some foods, for example, persipan will have undergone heat treatment which reduces cyanide levels.

If there are consignments of apricot kernel meant for further processing, for example, persipan manufacture, the importer/food business operator (FBO) should provide clear evidence of intended use either on the label on each individual bag, box or in the original accompanying documents.

[Update on advice to Food Business Operators \(FBO\) on the sale of apricot kernels and bitter almonds](#) (137.12 KB)

Opium alkaloids in poppy seeds

Poppy seeds are obtained from the opium poppy plant which contains narcotic alkaloids such as morphine and codeine.

Poppy seeds may contain very low levels of opium alkaloids, if at all, but they can become contaminated with alkaloids after insect damage or contamination during harvesting – when particles of dust from straw adhere to the seeds.

The application of good agricultural practices is known to reduce the levels of opium alkaloids in the poppy seeds. Further processing methods such as washing, soaking with water, grinding and heat treatment are known to substantially reduce the levels. The European Commission has provided guidance on [good practices to prevent and to reduce the presence of opium alkaloids in poppy seeds and poppy seed products](#).

A target level of 10 mg/kg for the presence of morphine in poppy seed placed on the market destined for the final consumer has also been agreed.

The target level is applicable to poppy seeds at all stages of the food chain and when placed on the market, unless their labelling suggests the following:

- the need for physical treatment to reduce opium alkaloid levels before consumed by humans
- the produce is used as an ingredient in foodstuffs

Further recommendations from the commission can be found within [2014/662](#).