BRIEFING DOCUMENT

# Dioxins

*Updated January 2023*

## Summary

Dioxins are environmental pollutants associated with incomplete combustion. They accumulate in the food chain and bioaccumulate in fatty tissue. Most people have low levels of dioxins in their body due to background exposure, but this is not thought to cause any health effects. Human dietary exposure to dioxins has fallen by approximately 85% since 1982.

The only potential cause for concern within the grain chain is during the drying process where the type and efficiency of burner must be carefully controlled to avoid a build-up of hazardous impurities. There are no legislative levels for dioxins in cereals - unlike meat, dairy products, fish and oils and fats.

## Background

Dioxins are environmental pollutants with a toxic potential that accumulate in the food chain. They are found worldwide with high levels found in soils, sediments, dairy products, meat, fish and shellfish and low levels found in plants, water and air.

Dioxin is 2,3,7,8-tetrachlorodibenzo para-dioxin (TCDD) but a number of structurally and chemically related compounds are also referred to as 'dioxins'. These include polychlorinated dibenzo para-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs, also known as furans) and polychlorinated biphenyls (PCBs). Some are referred to as 'dioxin-like PCBs'.

Dioxins are not produced intentionally but are by-products of many industrial and combustion processes. Wheat can be contaminated with dioxins during the drying process when oil powered dryers are used. Good controls and systems during primary production, processing, distribution and sale are all essential to the production of food with safe dioxin levels.

Both the Red Tractor Assurance scheme and the Agricultural Industries Confederation's (AIC) Trade Assurance Scheme for Combinable Crops (TASCC) state that to avoid possible concentration of hazardous impurities in grain, drying equipment must be regularly maintained in line with manufacturers' instructions by demonstrably competent staff to ensure that burners are operating efficiently and the dates of operation recorded. Fuel used in oil-fired driers must meet commercial fuel standards. Waste oil must not be used under any circumstances. Wherever possible direct oil-fired driers must be avoided.

The most recent known incident occurred in Germany in 2011 where contaminated animal feed was distributed to a large number of farms, resulting in widespread product recalls. The contamination is thought to have arisen after oils destined for use in biofuels were used by a feed fat manufacturer. An older incident occurred in the Republic of Ireland in 2008, where animal feed became contaminated. It is thought to have resulted from waste oil being burnt in a direct oil-fired burner.

The half-life of dioxins in the body, where they bioaccumulate in fat tissue, is estimated to be 7 to 11 years owing to their chemical stability. Approximately 80 - 90% of human exposure to dioxins is through the food chain. Most people have a low level of dioxins in their body due to background exposure, known as the body burden, but this is not likely to affect human health.

## Legislation

In 2001 the Joint FAO/WHO Expert Committee on Food Additives established a tolerable monthly dioxin intake of 70 picograms/kg bodyweight. The current tolerable daily intake (TDI) recommended by the UK's independent Committee on Toxicity, which took effect in November 2001, is 2 picograms WHO-TEQ/kg bodyweight per day. The estimated average dietary intake in 2001 by adults in the UK was 0.9 picograms WHO-TEQ/kg bodyweight per day (Food Standards Agency).

The principal piece of legislation regarding limits for dioxins in certain foods is retained Commission Regulation (EC) No. 1881/2006. This set out maximum limits for dioxins in meat, dairy products, shellfish and other food categories. There are no maximum limits that include cereals, although general food safety law applies which sets out that contaminants levels should be kept as low as can be reasonably achieved by following good practice.

In October 2022, EU dioxin limits were amended by Regulation (EU) 2022/2002, which adjusted some of the maximum limits affecting meat, dairy products and shellfish. As these changes occurred after the UK's exit from the EU, they apply to products sold in NI and EU member states, but not in GB. Limits affecting cereals and cereal products were not introduced.

An EFSA report published in 2012, collating monitoring data of dioxins in food and feed, found that there had been a decrease in dietary exposure. To support this, the Food Standards Agency reports that human dietary exposure to dioxins has fallen by 85% since 1982.

## Future actions

UK Flour Millers will continue to monitor and report on the EU and FSA's latest position on the legislative levels of dioxins in cereals and flour. UK Flour Millers is an active member of Red Tractor Assurance and pushes for continuous improvement of UK farm standards. If new dioxin research has implications for grain drying practice, UK Flour Millers will raise this with Red Tractor and other relevant grain chain stakeholders.

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