

Persistent organic pollutants

Persistent organic pollutants (POPs) are a type of contaminant that can enter the food chain from the environment. We outline common properties of POPs, presence of POPs in food and industry guidance.

POPs can have widely differing chemical structures and properties. Some POPs may be individual chemicals while others occur as groups of closely-related compounds, sometimes referred to as 'congeners'.

POPs share several common properties:

- persistence – POPs are very stable and can remain in the environment for many years - this includes air, water, soil and sediment
- toxicity – at certain levels, POPs can have harmful effects on organisms, including mammals, fish and/or invertebrates
- bioaccumulation – POPs have the capacity to build up in organisms, including mammals, birds and fish

When sufficient scientific evidence is available, POPs are listed in the Stockholm Convention, an international agreement to control or eliminate the occurrence, production and use of these chemicals. The first twelve chemicals listed were older pesticides, for example DDT, Dieldrin and Aldrin, although the list also included polychlorinated biphenyls (PCBs) and dioxins, which are formed through high temperature and uncontrolled combustion.

There are regular reviews of other chemicals or chemical groups for potential listing under the Stockholm Convention. In recent years, we have seen the addition of brominated flame retardants (BFRs), perfluorooctane sulphonate (PFOS), polychlorinated naphthalenes (PCNs) and short-chain chlorinated paraffins (SCCPs).

Food safety

Because of their properties, POPs are often present in food, especially food of animal origin such as meat or fish. This is normally at insignificant levels but there is the possibility that they may reach levels potentially harmful to consumers, particularly as the result of an incident such as contamination of animal feed. Two costly incidents involving dioxins occurred in the last twenty years.

Where there is a greater likelihood of contamination, regulatory limits may be established. These limits are based on what is considered the normal range for a particular commodity such as fish, lamb, poultry or eggs.

The limits have two main purposes:

- when a food sample has a test result above the limit - even if it is not a concern for health - this suggests that there may be an unusual source of contamination that requires investigation

- when there is an incident with a lot of contaminated food, having regulatory limits makes it simple for the enforcement authorities to have the contaminated food removed from the market

It is difficult for food businesses to control the levels of POPs in their products and the harmful effects from POPs normally only occur through high exposure over a long time. For POPs, there are maximum limits only for dioxins and PCBs. These are set out in:

- [assimilated Regulation \(EC\) 1881/2006](#) for England and Wales
- [Regulation \(EC\) 1881/2006](#), as amended, for Northern Ireland

These limits are kept under review in light of any new information on occurrence and toxicity.

Industry guidance

The Codex Alimentarius Commission published a document in 2006 setting out some principles for dioxins and PCBs.

[Code of practice for the prevention and reduction of dioxin and dioxin-like PCB contamination in foods and feeds](#)

It's important that any testing should be analytically robust. Food businesses undertaking testing of products for dioxins and PCBs should meet the analytical criteria set out in:

- [assimilated Regulation \(EU\) 2017/644](#) for England and Wales
- [Regulation \(EU\) 2017/644](#) for Northern Ireland