

ACCREDITED ANALYSIS OF DIOXINS, FURANS AND PCBs

WHAT ARE DIOXINS, FURANS AND PCBs AND WHAT MAKES THEM DANGEROUS?

Dioxins (PCDD), furans (PCDF) and PCBs are among the twelve internationally recognised persistent organic pollutants, also known as POPs. They are difficult to break down in nature, which is why they accumulate and pollute the environment in the long term. The residues also enter the food chain. They accumulate primarily in fatty tissue, which is why they are found more frequently in food of animal origin than in plant products. Dioxins are suspected of being carcinogenic, which is why strict limits apply to the food industry in the EU.

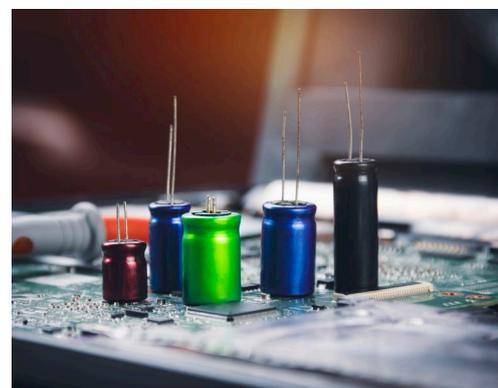
HOW ARE DIOXINS, FURANS AND PCBs FORMED?

Dioxins, furans and PCBs have similar chemical properties and characteristics. They are formed during combustion processes in the presence of halogenated compounds.

This can happen in the case of natural events, such as forest fires or volcanic eruptions, or in the case of anthropogenic emissions, such as from waste incineration or chemical processes.

PCBs (POLYCHLORINATED BIPHENYLS) ARE SYNTHETIC CHEMICALS

PCBs, on the other hand, are synthetically produced chemicals that were used, among other things, as insulating material in electrical appliances until they were banned in 1985 due to their toxicity and bioaccumulative effect. However, they continue to enter the environment through leakages from old electrical appliances, paints, sealants, or into the atmosphere during waste incineration and thus enter the global food chains.



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LIMIT VALUES FOR THE PROTECTION OF HUMAN HEALTH

The worldwide production bans and strict limit values serve to protect consumer health. Current limits for certain foods can be found in the European Contaminants Regulation (Regulation (EU) 2023/915).

Dioxins and PCBs are found only in trace amounts in many food and feed products, which poses a great challenge for their analytical determination. The detection and determination limits to be achieved are in the ppt and ppb range.

Toxic Equivalent (TEQ) is used to calculate their toxicity: the multiplication of each congener by a Toxic Equivalence Factor (TEF) defined by the WHO.

TCDD dioxin is the only dioxin classified as carcinogenic to humans, the others are probable carcinogens.

Sampling and analytical methods for monitoring the content of these compounds in certain food and feed are regulated by Regulations (EU) 2017/644 and (EU) 2017/771. Due to the complexity of the technology and the low concentrations of the congeners to be determined, the analytical methods for monitoring dioxins and PCBs are very demanding and, in addition to very expensive analytical equipment, require above all highly qualified laboratory analysts.

AGROLAB laboratories accredited by the national accreditation bodies according to EN ISO/IEC 17025:2017 standard for the analysis of dioxins, furans (PCDD/PCDF) and dioxin-like and non-dioxin-like PCBs in various matrices.

Within the AGROLAB GROUP, AGROLAB LUFA in Kiel, AGROLAB Ibérica in Burgos, AGROLAB Italia in Altavilla and AGROLAB Dr. Verwey in Barendrecht offer dioxin analysis in food and feed. Environmental samples are spatially separated for the AGROLAB environmental laboratories exclusively at the Centre for Dioxin Analysis. The strict separation of the sample streams ensures the highest level of safety. The distribution of dioxin analysis to various European laboratory locations means not only a high measurement capacity, even in an international crisis, but also short processing times (usually 24 - 72 h) and further attractive conditions.

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