



二噁英、呋喃和多氯联苯

多氯代二苯并二噁英、多氯代二苯并呋喃（PCDD/F，通常称为二噁英）和多氯联苯（PCB）是一组有毒且难降解的化学物质，其对人类健康和环境的负面影响已引起公众、科学界和监管部门多方面的关注。



二噁英由210种氯代三环芳烃类有机化合物组成，其含氯量和毒性不尽相同。其中，2位、3位、7位以及8位被氯取代的17种化合物尤为引人关注。多氯联苯是一组氯代芳烃类化合物，由209种异构体组成。就其毒性而言，可以分为两组，一组是类二噁英多氯联苯（dl-PCBs；世界卫生组织-多氯联苯），另一组是非类二噁英多氯联苯（ndl-PCB）。在类二噁英多氯联苯一组中，有12种化合物的毒性作用堪比二噁英。因此，世界卫生组织（WHO）规定，用毒性当量因子（TEF）评估类二噁英多氯联苯的全部毒性，从而便于风险评估。非类二噁英多氯联苯这一组显示出完全不同的毒性原理，无法与二噁英相提并论。

二噁英和多氯联苯具有非常好的脂溶性，其不仅在化学稳定性和热稳定性上表现出色，并且几乎无法被生物降解（持久性）。因此，其可通过食物链在人类的脂肪、肝脏和皮肤组织中积累。

法规

- 在方法和质量方面，我们根据欧盟法规要求检测食品与饲料中的二噁英（644/2017号欧盟法规，修订欧盟152/2009号欧盟法规的欧盟771/2017号欧盟法规）。
- 1881/2006号欧盟法规规定了二噁英/呋喃、类二噁英多氯联苯和非类二噁英多氯联苯在食品中的最大含量，2002/32/EC号指令规定了其在饲料中最大含量和行动值的，这些都是欧盟为了减少人类接触二噁英/呋喃和多氯联苯所采取的策略。此外，2013/711/EU号建议规定了食品的行动值。
- 美国加利福尼亚州根据“65号提案”规定，每人每天最多可容许的多氯联苯摄入量为0.09 µg。

专业知识

- 30多年的二噁英和多氯联苯分析领域的经验
- 独立的商业实验室，获得DIN EN ISO/IEC 17025:2005认可
- 依照欧盟官方指导准则和法规，以及国际规范或行业规范（如DIN EN 1948、国际食品法典委员会）进行分析
- 一直成功参与独立实验室间的对比实验（国内/国外）

设置标准

欧陆拥有全球为数不多的、能够在自己实验室分析加利福尼亚州65号提案要求的全部209种多氯联苯二噁英的能力中心，包括分析类二噁英多氯联苯/世界卫生组织-多氯联苯和非类二噁英多氯联苯/德国标准化学会-多氯联苯/指示性多氯联苯。



检测能力

- 所有常见食品和饲料中的多氯代二苯并二噁英和多氯代二苯并呋喃、类二噁英多氯联苯和非类二噁英多氯联苯（验证方法符合欧盟法规的要求）
- 多氯代二苯并二噁英和多氯代二苯并呋喃、类二噁英多氯联苯和非类二噁英多氯联苯，符合德国计划饲料质量监管





DIOXINS, FURANS AND PCBS

Polychlorinated dibenzodioxins and -furans (PCDD/Fs, commonly known as dioxins) and polychlorinated biphenyls (PCBs) are a group of toxic and persistent chemicals whose negative effects on human health and on the environment raised public, scientific and regulatory concern.



The group of dioxins consists of 210 tricyclic chlorine organic congeners, which differ widely in the chlorine content and their respective toxicity. Specially, 17 compounds with a chlorine substitution in the 2, 3, 7, 8-position are of particular concern. PCBs are a compound class of chlorinated aromatic hydrocarbons which consists of 209 individual congeners. With regard to their toxicity, they can be divided into two groups, dioxin-like PCBs (dl-PCBs; WHO-PCBs) and non-dioxin-like PCBs (ndl-PCBs). For dl-PCBs, 12 compounds show toxic effects comparable to dioxins. Hence the World Health Organization (WHO) allotted toxicity equivalent factors (TEFs) to dl-PCBs to assess their total toxicity and thus facilitate the risk assessment. For ndl-PCBs, they show a completely other toxicological mechanism which cannot be compared to dioxins.

Dioxins and PCBs not only have a very good liposolubility, but also are extremely stable in terms of their chemical and thermal qualities, as well as barely biological-degradable (persistent). So they are accumulated via food chain and settle in the fat, liver and skin tissue of humans.

Regulations

- The determination of dioxins in food and feed complies with the requirements of the EC Regulations (Regulation (EU) No. 644/2017 and Regulation (EU) No. 771/2017 amending Regulation (EC) No. 152/2009) in respect of methods and quality.
- Maximum levels for dioxins/furans, dioxin-like PCBs and ndl-PCBs in food (Regulation (EU) No. 1881/2006), as well as maximum and action levels in feed (Directive 2002/32/EC) are part of the EU strategy to reduce the exposure of humans with regard to dioxins/furans and PCBs. Besides, action values for food have been set, too (Recommendation 2013/711/EU).
- The US state of California has fixed a maximum tolerable intake of 0.09 µg total PCB/day for humans on the basis of a legal regulation ("Proposition 65").

Expertise

- More than 30 years of experience in the analytical field of Dioxins and PCBs
- Private, independent commercial laboratory, accredited acc. to DIN EN ISO/IEC 17025:2005
- Analyzes acc. to official EU guidelines and regulations, as well as international or industry norms (e.g. DIN EN 1948, Codex Alimentarius)
- Continual successful participation in independent inter-laboratory comparisons (national/ international)



Setting standards

Eurofins has one of the few worldwide competence centers for dioxins which are able to analyze all 209 PCBs including the dl-PCBs/ WHO-PCBs and the ndl-PCBs/ DIN-PCBs/ Indicator-PCBs required by the California Proposition 65 in its own laboratory.

Portfolio

- PCDD/Fs, dl-PCBs and ndl-PCBs in all common food products and feedstuff (confirmatory methods acc. to EU regulations)
- PCDD/Fs, dl-PCBs and ndl-PCBs acc. to QS feed monitoring, a German quality scheme

