

How Can the GBA Laboratory Group Assist You?

Aside from these very specialized analytical processes, we offer you a comprehensive spectrum of analyses, including routine and special tests. This includes priority substances listed in the European Water Framework Directive (WFD) as well as biocides and their metabolites, medicinal products and their metabolites, perfluorinated tensides (PFC), and polychlorinated dibenzo-p-dioxins and dibenzofuranes (PCDD/F). In addition to groundwater, drinking water, surface water, and wastewater, we also conduct testing on soil, waste, air, sewage sludge, and many other matrices.

Safety and Quality

The GBA Laboratory Group is an internationally operating service laboratory. In addition to our comprehensive accreditation – DIN EN ISO/IEC 17025:2005 – our various laboratories are in possession of a wide range of authorizations in accordance with German federal regulations regarding issues such as soil protection, waste management, and sewage sludge.

GBA-GROUP.DE

The **GBA Laboratory Group** is one of the leading laboratory and consulting service providers in Europe. The internationally operating company is currently represented at 11 locations throughout Germany and Austria, with over 460 employees and 16,000 m² of laboratory space.

Our services in environmental analysis

- Groundwater, drinking water, surface water, wastewater, seepage water, process water, and untreated water
- Contaminated sites, landfill monitoring, and waste disposal management
- Soil, sediment, and excavated material
- Waste, residues, and recycled material
- Biota
- Gas and air



Deutsche
Akkreditierungsstelle
D-PL-14170-01-00

Contact

GBA Laboratory Group – Environmental Division:

GBA Gesellschaft für Bioanalytik mbH (Headquarters)
Goldtschmidtstr. 5 · 21073 Hamburg · Germany
Tel. +49 40 797172-0 · service@gba-group.de

Pinneberg

Flensburger Strasse 15 · 25421 Pinneberg · Germany
Tel. +49 4101 7946-0 · pinneberg@gba-group.de

Gelsenkirchen

Bruchstrasse 5c · 45883 Gelsenkirchen · Germany
Tel. +49 209 97619-0 · gelsenkirchen@gba-group.de

Hildesheim

Daimlerring 37 · 31135 Hildesheim · Germany
Tel. +49 5121 75096-50 · hildesheim@gba-group.de

Freiberg

Meissner Ring 3 · 09599 Freiberg · Germany
Tel. +49 3731 163083-0 · freiberg@gba-group.de

Know what's inside.



GBA Laboratory Group Polybrominated Flame Retardants – HBCDs in Insulating Materials

LABORATORY ANALYSIS AND CONSULTING SERVICES –
PRECISE, CONCLUSIVE, AND ON TIME RESULTS!



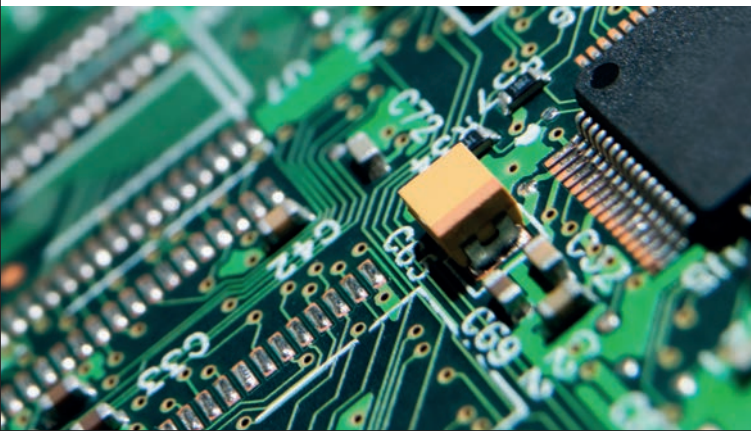
25 Years
1989–2014

Polybrominated Flame Retardants Analysis in Different Matrices

The term "flame retardants" is used to describe a variety of organic and inorganic chemicals that – when utilized in specific products – have the property of reducing the flammability of those objects or delaying the spread of a fire. These are often used in cases of electronic devices, circuit boards, and cables, as well as for coating the bottomside of carpets, for special textiles, insulating material, and expanding foams. Organic flame retardants not only include brominated compounds, but also organophosphorus compounds (with or without halogen), as well as chloroparaffins.

Classes of Flame Retardants

The most widely produced brominated flame retardants worldwide are decabromodiphenyl ether (DecaBDE), tetrabromobisphenol A (TBBPA), and hexabromocyclododecane (HBCD). DecaBDE primarily serves as a flame retardant in the plastic cases of electrical and electronic devices, as well as in textiles. TBBPA is mainly utilized in circuit boards, but also in plastic casing in small amounts.



Insulating materials (expanded and extruded polystyrene) and textiles are the main applications for HBCD, but it is also less frequently used in plastic casing. In 2006, HBCD usage in Europe was estimated at 12,000 tons per year.

The Dangers of Flame Retardants

Organic brominated flame retardants are persistent in the environment and remain in the food chain, even to the point where they can be detected in breast milk. In addition to their high degree of mobility, bioaccumulation also poses a major problem. Researchers have not been able to disprove hypotheses about neurological or endocrinological effects, even in low dosages. If there is a fire, or in case of improperly disposal, dioxins and furans can be formed.

HBCD in particular has similarly negative properties. In animal testing, it has been proven that embryonic and infant development can be impaired due to the influence of HBCD. Furthermore, it is suspected to impede reproduction. It has also been found in fish, marine mammals, and birds of prey from arctic regions, which further highlights its high degree of mobility and persistence. That's why the international Stockholm Convention identified it as a Persistent Organic Pollutant (POP) in the environment in the year 2013.

HBCD Ban and Classification as Dangerous Waste

Since being identified as a POP, the HBCD ban has been implemented incrementally in all of the state parties to the Stockholm Convention. In the European Union, the ban has been implemented via Annex I of the POP Regulation (EC) No. 850/2004. Since March 22nd, 2016 products (substances, composites, and final products)

with an HBCD content of more than 100 mg/kg can no longer be produced or placed on the market in the EU. However, remaining inventories were allowed to be sold and utilized during a transitional period lasting until June 22nd, 2016. Annex IV of the Commission Regulation (EU) 2016/460 of March 30th, 2016 was implemented with the goal of removing POPs from the economic cycle. As of September 30th, 2016, materials containing HBCD in quantities over 1,000 mg/kg are not allowed to be recycled (according to the destruction mandate: Article 7 (2) of the POP regulation). With an amendment to the German waste directory regulation (AVV) on March 11th, 2016, HBCD was classified as a dangerous substance in terms of the AVV. From now on, the disposal code 17 06 03* should be used: "other insulating material composed of or containing dangerous substances."

Analysis

For years, the GBA Laboratory Group has been analyzing flame retardants in all kinds of matrices as part of its portfolio, including a diverse range of isomers from various polybrominated diphenyl ethers, chloroparaffins, and organophosphorus compounds. In addition to analyzing traces in environmental matrices such as soil, water, sediment, and biota, we also can detect this substance group in electrical and electronic products as well as in insulating materials. Additionally, we always follow the latest market developments in order to stand by your side providing you with expert advice and assistance.