



FOCUS ON  
CLEANLINESS

Testing laboratory for technical cleanliness,  
medical technology and environmental analysis



"Our vision is to offer our customers first-class support in their processes and challenges through innovative products and services."

Volker Burger  
CEO

CleanControlling stands for comprehensive services in the fields of technical, medical and environmental cleanliness for surfaces, materials and media. In addition to cleanliness testing and documentation, it offers consultation, training and a specialist product range for the definition, achievement and maintenance of technical cleanliness. It also focuses on the preservation of human health in connection with product cleanliness and the absence of pollutants in water, soil and waste.

Through our customer-oriented services, we embrace our commitment to supporting and assisting our customers as a helpful, competent and transparent partner. A trusting, cooperative relationship with employees and fair collaboration with suppliers and service providers lie at the very heart of this. For us, regulation- and law-compliant business is a matter of course.



Technical Cleanliness  
Chemical film-type cleanliness



Biological and chemical cleanliness  
Environmental Analysis



## Locations

CleanControlling GmbH,  
Emmingen-Liptingen

- Technical cleanliness testing
- Material determination of particles
- Testing of chemical film-type cleanliness
- Manufacture and sale of products for technical cleanliness
- Training and consultation on technical cleanliness
- DAkkS accreditation Reg.-Nr. D-PL-18040-01\*

CleanControlling GmbH,  
Dresden

- Technical cleanliness testing
- DAkkS accreditation Reg.-Nr. D-PL-18040-01\*

CleanControlling Medical  
GmbH & Co. KG,  
Emmingen-Liptingen

- Testing of the biological and microbiological hygienic cleanliness of medical products
- Testing to determine the bio-compatibility of medical products
- Testing for the validation of reprocessing instructions for medical products
- DAkkS accreditation Reg.-Nr. D-PL-19887-01\*

CleanControlling Medical  
GmbH & Co. KG,  
Leipferdingen

- Examination of organic and inorganic cleaning and manufacturing residues on medical devices
- Examination of water, wastewater, soil, waste or recycling materials for pollutants
- Special analyses for the determination of unknown compounds
- DAkkS accreditation Reg.-Nr. D-PL-19887-02\*

\*Companies accredited by DAkkS according to DIN EN ISO/IEC 17025:2018. The accreditation is valid for the scope of accreditation listed in the annex to the certificate. The scope of accreditation and the documents can be found at [www.cleancontrolling.com](http://www.cleancontrolling.com).



First trade fair appearance at "parts2clean" in Stuttgart



Construction of an air extraction test bench for air-conducting components in accordance with VDA 19.1 as the world's first laboratory service provider



First product catalog Technical Cleanliness



First conference on the topic Technical Cleanliness



Foundation of CleanControlling Medical GmbH & Co. KG

Relocation to new company building Total area of 1000 m<sup>2</sup>

Accreditation of CleanControlling Medical according to DIN EN ISO/IEC 17025

GLP recognition of CleanControlling Medical

Series production and market launch of the new particle suction extraction system C|PS<sup>®</sup>



Expansion of the biology laboratory Total area of 1500 m<sup>2</sup>

Inauguration of Dresden laboratory



Acquisition of Chemisches Labor Becker Total area of 2000 m<sup>2</sup>

Workforce

2006	5
2010	10
2015	40
2018	55
2020	80
2021	100

2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022



Establishment of the Consulting division

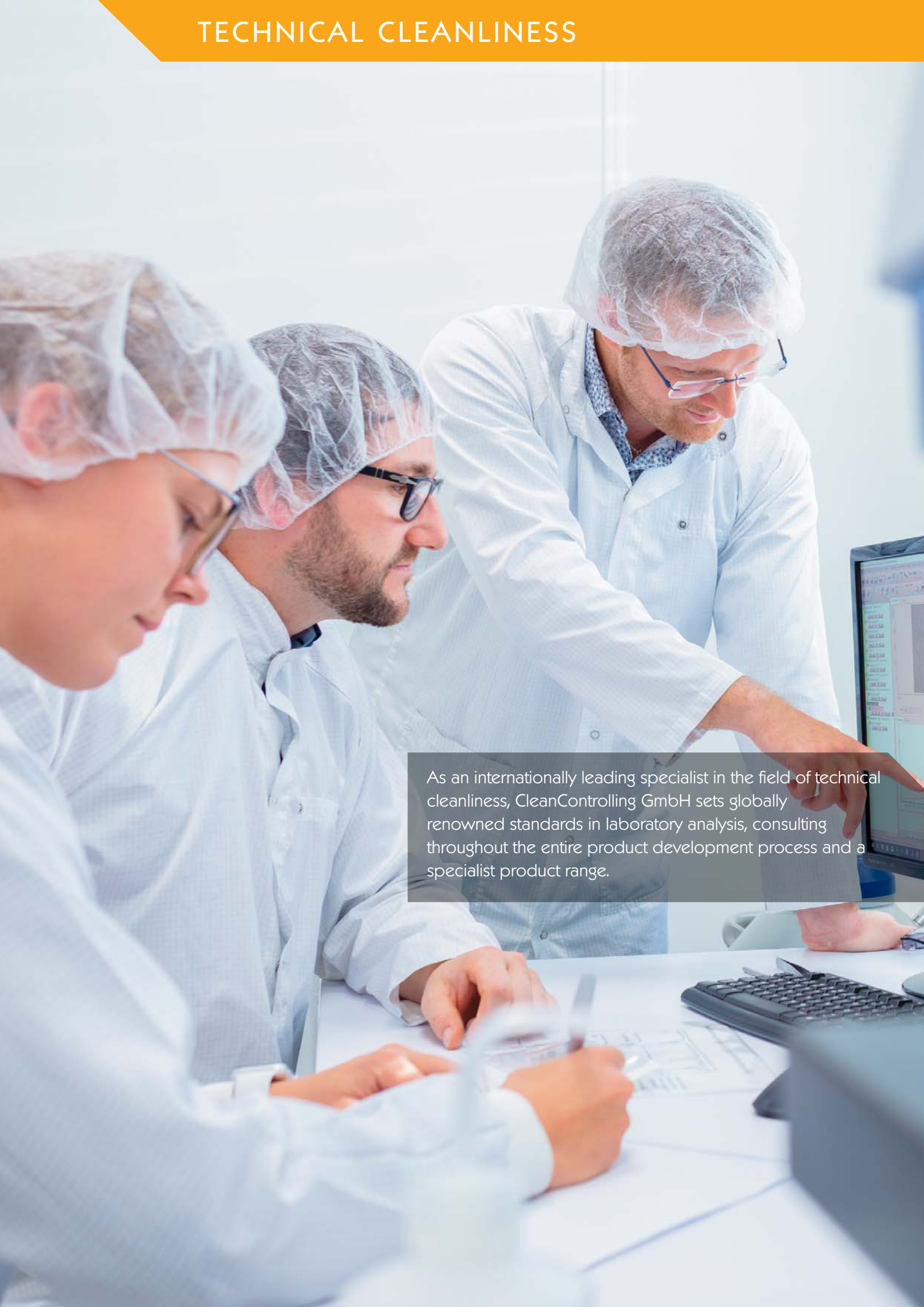
Accreditation in compliance with DIN EN ISO/IEC 17025



Development of first particle trap generation

Foundation of CleanControlling GmbH with premises measuring 30 m<sup>2</sup>

Laboratory extension in new premises Total area of 300 m<sup>2</sup>



As an internationally leading specialist in the field of technical cleanliness, CleanControlling GmbH sets globally renowned standards in laboratory analysis, consulting throughout the entire product development process and a specialist product range.

## Particulate analysis

In the field of particulate analysis, we evaluate the particulate component cleanliness of your products and help you to determine the particle source or assess the damage potential through particle material determination.

### Particulate cleanliness testing

Cleanliness tests in accordance with VDA 19.1 / ISO 16232:2018 as well as over 1,000 specific customer standards for all types of components (small parts, large parts, air-conducting components, battery components, etc.)

- Method
- Liquid extraction (spraying, rinsing, ultrasonic, shaking)
  - Air throughflow extraction
  - Manual air extraction (air jet)
  - Suction extraction – robot-guided
  - Light analysis – stereomicroscope, material microscope
  - Gravimetric determination of particle mass

### Further analyses

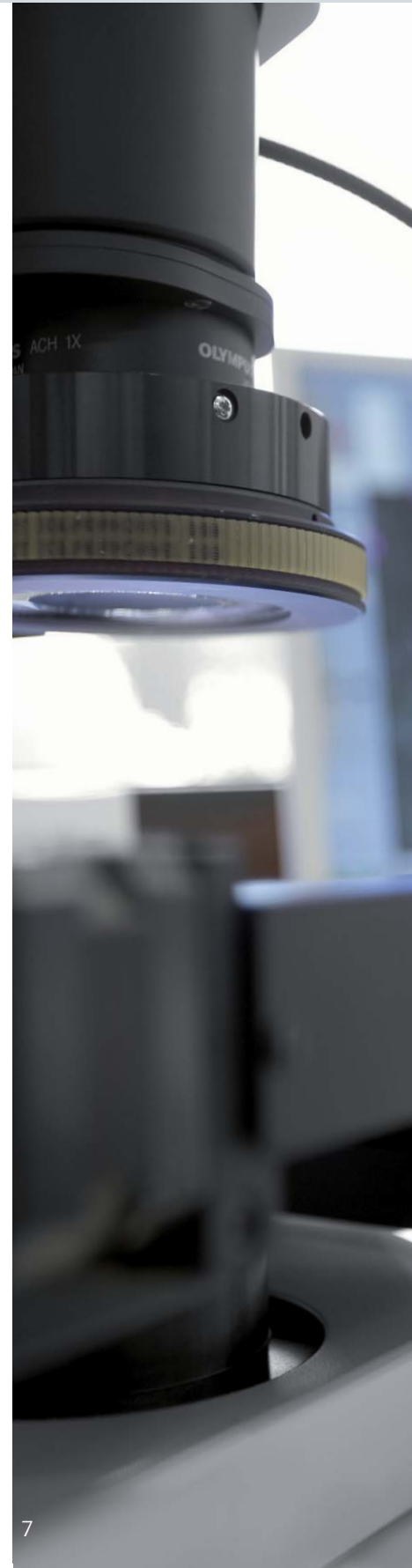
Material determination to localize particle origin and assess the damage potential

- Method
- SEM/EDX scan – particle measurement with element determination
  - Correlative SEM/EDX analysis in connection with stereomicroscopic evaluation
  - IR-FTR analysis of organic particles

### Particles in oils & lubricants

Determination of particulate contamination in oils and greases

- Method
- Microscopic analysis in accordance with ISO 4406 / ISO 4407
  - Quantitative determination in accordance with DIN 51813



## Chemical analysis

We determine chemical film-type and ionic component cleanliness with targeted procedures to evaluate the specified limit values. Statements can also be made on substance composition and possible sources of contamination.



### Organic contamination

The identification of organic production residues, such as oils, greases, corrosion protection, cooling lubricants or cleaning agents to evaluate film-type component cleanliness.

#### Method

- Gravimetric analysis
- Determination of surface tension
- Determination of organic compounds (IR)
- Determination of water-soluble total organic carbon (TOC)
- Identification of film-type contamination (GC-MS)

### Ionic contamination

Determination of ionic, salt-containing contaminants from soldering and galvanic process residues.

#### Method

- Determination of residue conductivity (ROSE)
- Qualitative and quantitative determination – ion-exchange chromatography (IC)
- Fluoride and residual contamination testing (e.g. cooling systems)

### Special analyses – unknown contamination

Characterization of unknown organic and inorganic substances and compounds in combination with various testing procedures.

#### Method

- SEM/EDX analysis
- IR spectroscopy
- Gas chromatography (GC-MS)
- Ion chromatography (IC)



## Consultation, training and vocational training

We advise you in all areas of technical cleanliness throughout the product creation process and offer staff training all the way up to specialized training workshops, seminars and expert conferences.



### Consultation

We accompany you all the way from the early concept phase, advising you through the entire product creation process and helping you to fulfill your cleanliness requirements in a targeted, optimized manner

- Production cleanliness assessment
- Environmental cleanliness analysis
- Process chain analysis
- Concept assessment of assembly systems
- Product design assessment
- Laboratory planning, laboratory assessment, laboratory audit

### Training

A comprehensive range of training, conferences and congresses on technical cleanliness supports you in qualifying your employees and raising awareness amongst them.

- Basic training courses on technical cleanliness
- Assembly cleanliness training
- Training and sensitization of production employees
- Cleanliness test execution training

### Vocational training

We offer vocational training to qualify your employees as

- Qualified employee of Technical cleanliness
- Technical cleanliness specialist
- Technical cleanliness auditor



## Mobile system for particle suction extraction

A new, non-destructive and mobile testing method using dry suction extraction for economical and application-focused particle extraction on large components or directly in the process environment – ideal for the execution of cleanliness tests on HV vehicle batteries and battery components.



### C|PS<sup>2</sup> Basic

- Fast, application-focused particle extraction
- Mobile and process-related extraction on-site



### C|PS<sup>2</sup> ESD

- Full ESD capability, electronic components can be returned to the production batch after extraction
- For mobile and process-related use on production lines in the ESD field, extraction on-site



### C|PS<sup>2</sup> robotics

- Robot-guided suction extraction with high repeat accuracy
- Collaborative concept – allows direct proximity to employees
- Rapid and simple induction, even of complex 3D geometries
- Can be integrated into production lines for inline testing



C|PS<sup>2</sup>



Videos

## Tried-and-tested equipment and accessories

The product range in our e-shop offers a comprehensive selection of accessories for technical cleanliness. All products have been examined for technical efficacy and tested in practice. You benefit from the knowledge and experience of our cleanliness experts.

### Particle monitoring

Monitoring accessories for assessing particle appearance in the production environment, including using particle traps or stamps.

- The particle trap collects particles sedimenting in the work environment
- The particle stamp collects particles from the surface to be analyzed

### Assembly cleanliness

Clean areas as room concepts are supported through special products and systems. e.g. with

- Glove cleaning system for the removal of micro-particles
- Clean mats for the reduction of particle entry by personnel
- Barrier/marking tape for the identification of clean zones


### Laboratory equipment

The right laboratory equipment and accessories are decisive for the results of the cleanliness test. CleanControlling offers laboratory technology matched to the needs of a cleanliness laboratory.

- Vacuum filtration unit for the separation of extracted particles on analysis filters
- Tweezers and clips for clean and safe filter and component handling
- Cleanroom coats and hoods to protect the clean room
- Filter membranes and microscopy accessories



e-Shop



As an accredited and ZLG- and GLD-recognized testing laboratory, CleanControlling Medical GmbH & Co. KG is your partner for the biological and microbiological hygienic testing of medical products. In the field of environmental analysis, we use accredited testing methods to examine water, soil and recyclable construction waste for pollutants.

P95-C 2  
415500

auto on/off

airliner  
200 ml  
125 ml  
100  
75  
50  
40  
30  
20

BEST BEFORE 2018/02  
LOT 6140308

## Medical products – clean and safe

As an accredited and recognized testing laboratory, CleanControlling Medical checks the biological, microbiological and hygienic cleanliness and safety of medical products.



## Testing within the scope of

- Biocompatibility – chemical characterization and toxicological evaluation
- Validation of the final cleaning of medical devices
- Validation of instructions for the reprocessing/sterilization of reusable medical products
- Sterilization container validation
- End-of-life tests: simulation of preparation and sterilization cycles and the implementation of associated tests for the preservation of biocompatibility

## Tests within the scope of routine monitoring of washer-disinfectors (WD)

The preparation and evaluation of validation sets with bio-indicators for the validation of washing and disinfection devices (WD)

## Hygienic environmental cleanliness testing

Microbiological hygienic testing of surfaces (contact plates) and air (sedimenting airborne germs on sedimentation plates)

## Medical technology analysis

CleanControlling Medical has a comprehensive portfolio of biological, chemical and particulate analysis methods for testing medical products.



## ANALYSIS METHODS

### Biological analysis methods

- In-vitro cytotoxicity tests
- Determination of bioburden
- Endotoxin test (LAL test)
- Sterility tests
- Incubation and evaluation of contact or sedimentation plates
- Manual and mechanical processing (cleaning and disinfection) for testing for reprocessing instruction validation
- Steam sterilization for testing for sterilization instruction validation
- Determination of residual protein concentration

### Particulate analysis method

- Direct count of particles in the extraction medium using optical particle counter (OPC)
- Microscopic analysis of the analysis filter, automatic count and measurement of particles

### Chemical analysis method

- Chemical analyses for organic/inorganic contaminants or discharges (TOC, THC, GC-MS, ICP-MS, LC-MS, Headspace)
- Surface testing SEM/EDX, XPS

## Environmental analysis / chemical special analysis

With its highly qualified chemical analysis laboratory in Leipferdingen, CleanControlling not only offers purity analyses for medical products, but also chemical analyses in the area of environmental analysis. Special analyses for the determination of unknown compounds is also one of our strengths.

### The environment and pollutants – chemical analysis

The range of services offered in the area of environmental analysis covers physical, physico-chemical and chemical laboratory analyses for testing of water (groundwater, demineralized water, wastewater), aqueous eluates, sludge and sediment as well as soil and waste or materials for recycling (e.g. recycled building materials) for the presence of pollutants (PAH/PCB, volatile halogenated hydrocarbons (CHC)/BTEX, mineral oil hydrocarbons, heavy metals, asbestos, etc).

### Special analysis – determination of unknown substances

We use a variety of chemical methods and analysis to carry out the targeted examination of complex questions with the determination of unknown substances and compounds in order to provide informative answers and results. Many years of specialist expertise are combined with cutting-edge, comprehensive methods and devices in the execution of the tests.

### Chemical/physico-chemical methods

- Gas chromatography (GC) for the separation of organic substances
- Liquid chromatography (LC or HPLC) for the separation of organic substances Detection via UV/VIS, FID, DAD, MS, MS/MS, etc.
- Ion chromatography (IC), for ion separation
- UV/VIS spectroscopy, for the determination of organic substances
- Atomic absorption spectrometry (ICP/OES + ICP/MS), for the determination of heavy metals





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[www.cleancontrolling.com](http://www.cleancontrolling.com)

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