

# Dioxins and coplanars PCBs

***Food/Feed/Biota***

***Elements of Quality***

# Content

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# HRMS

## Centre of Excellence

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ALS Europe dedicates a very specialized HRMS laboratory for organic ultra-trace determinations using modern high resolution gas chromatography – high resolution mass spectrometry (HRGC – HRMS). As one of the few exceptions in the world, the HRMS laboratory at ALS is able to carry out routine trace and ultratrace analysis of polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) including total congener 2,3,7,8 substituted isomers, dioxin-like PCBs (coplanar PCBs), polybrominated diphenyl ethers (PBDE), polybrominated biphenyls (PBB) and polyaromatic hydrocarbons (PAH) by following US, EN, Japanese or ISO standards and methodologies.

The HRMS Centre of Excellence, with a laboratory area of 525 m<sup>2</sup>, and equipped with the latest in technology, is servicing clients in the environmental, food and chemical industry. Following several successful projects worldwide, the ALS Centre of Excellence laboratory cooperates with clients not only in Europe, but also in Asia and North America.

ALS laboratory is accredited according to international standard ISO/IEC 17025.

Our team of 20 highly dedicated and qualified staff is focused on delivering unparalleled service to clients supported by the latest in technology.

As a result of an increased number of samples and in order to accommodate future growth, ALS Europe has invested in a new instrument for ultra-trace analysis of dioxins, furans, PCBs and Brominated Flame Retardants (PBDE and PBB). Actually, the HRMS Centre of Excellence operates with 4 HRGC-HRMS instruments.

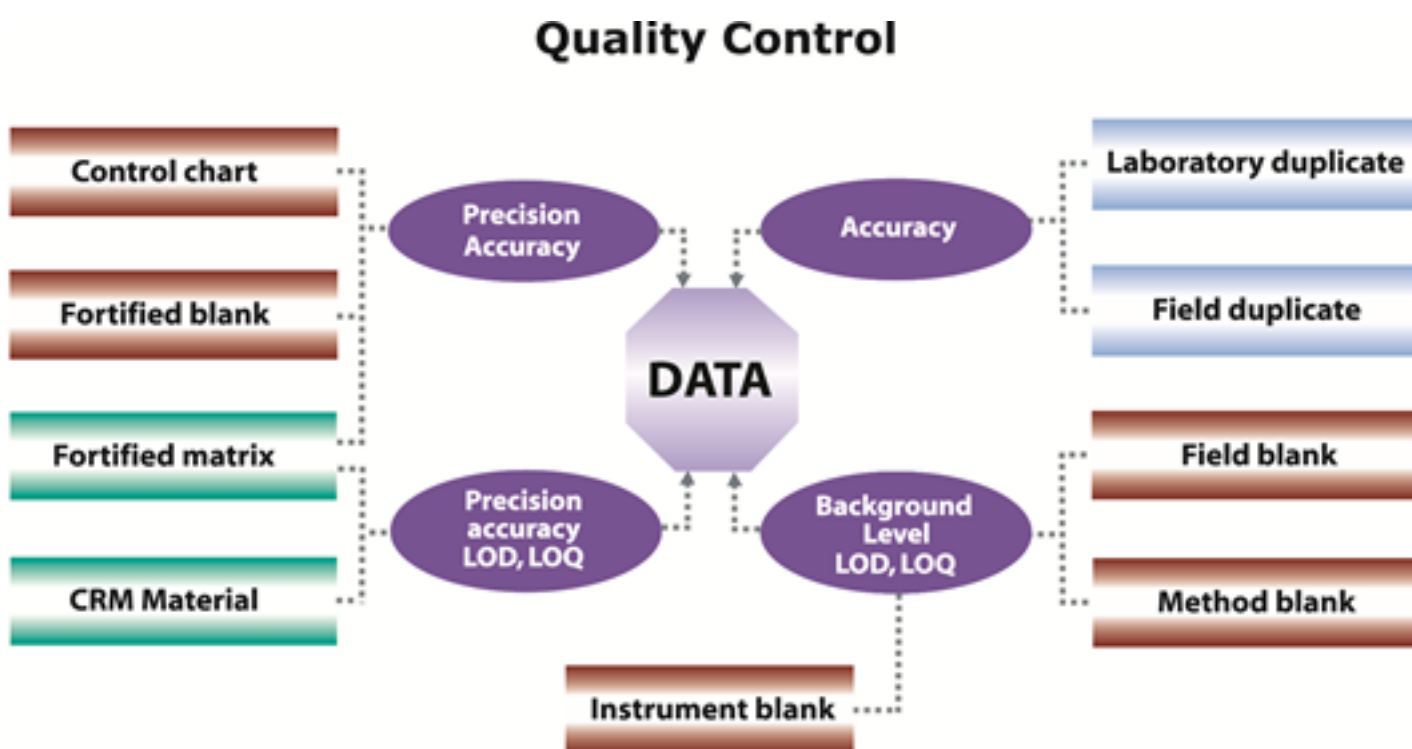


This modern equipment and software enables us to satisfy European regulation limits for dioxin and PCB monitoring in food and feed and also enables us to participate in many screening projects concerning bioaccumulation of these substances in biological tissues (blood, plasma, tissue or in indicator organisms). ALS laboratory routinely performs analyses in food samples, feed samples and biological materials.

# Quality

## at work for unique dioxins analyses

Apart from the common requirements on the identification of the different compounds described in the valid legislation, specific requirements on the PCDD/F, coplanar PCBs, PAH and PBDE are fulfilled to ensure reliable results on which to base critical decisions.



### Method blank

Prior to each project, glassware, chemicals, solvents, equipment used during the manipulation with the sample are proofed by analysing blank samples.

This control is realized:

- For series of 20 samples
- When changes occur in extraction or clean-up procedures
- After heavily contaminated samples

### Instrument blank

To check a contamination of the HRGC-HRMS system, an injection of clean/spiked solvent is processed. In general, this check is realized after the analysis of contaminated samples. In HRMS Centre of Excellence, this is realized after each sample analysis.

## Fortified blank matrix

A blank matrix is spiked by the standard and is processed as a real sample.

This control is provided:

- As a periodic control procedure to precise uncertainty against method requirements
- To check analysis using control charts from previous data
- For checking the extraction and clean-up processes for matrices where no reference material exists

## Certified reference material (CRM) and reference material (RM)

These materials are employed to check analysis using control charts from previous data, to validate new methods, to revalidate present methods, to precise uncertainty of measurement and to check the resolution of the chromatographic column.

## Laboratory duplicate

A laboratory duplicate sample gives an estimation of precision of the data obtained for the matrix analysed. It is processed through all steps of the analytical procedure.

These duplicates are employed to routinely check analysis using control charts from previous data.

## Control chart

By following trends, control charts are useful in analytical precision, accuracy and identifying problem occurrence. Control charts are established for QC samples, that is CRMs, fortified blank matrices and laboratory duplicates.

The interpretation of these control charts (out of control points) is realized according to the following principles:

- One value outside of Control limits (3SD)
- Two consecutive values outside of Warning limits (2SD) on the same side of the mean curve

If one of these two warnings is met, the HRMS Centre of Excellence realizes the following:

- Control the raw data and historical data
  - Control used laboratory containers, chemicals and standards
  - Control the functions of analytical instruments
  - Execute a minimum of one measurement check
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- Nine values on the same side of the mean
  - Eight consecutive values falling or rising
  - Fourteen consecutive values successively point per point rise and fall

In these three last cases, it is necessary to suspend the analysis of real samples and to solve the reasons of non-stability prior to start analysing new samples.

Corrective action is immediately taken and documented.

# International interlaboratory testing systems

A regular independent assessment of the technical performance of a laboratory is recognized as an important means of assuring the validity of analytical measurements, and as a part of an overall quality strategy.

Each year, at ALS Europe, the HRMS Centre of Excellence takes part in several interlaboratory testing systems/programs, which are managed by different organizations. Participation in appropriate international or European Union's interlaboratory testing system, covering the scope of our laboratories' accreditation, in a useful and cost-effective manner, constitutes a tangible proof for our clients that ALS Europe is producing valuable and reliable test results.

NAME OF STUDY	ORGANISER	MATRIXES
Food Analysis Performance Assessment Scheme (FAPAS)-2005, Series 6, Environmental Contaminants, Round 20	<a href="http://www.fapas.com">www.fapas.com</a>	Cod Liver Oil
Interlaboratory Comparison on Dioxins in Food 2005	<a href="http://www.fhi.no">www.fhi.no</a>	Herring
Interlaboratory Comparison on Dioxins in Food 2006	<a href="http://www.fhi.no">www.fhi.no</a>	Egg yolk
CIL/Cerilliant Corporation 2006 International Interlaboratory Study on Sediment, Soil, Tissue Reference Materials-Second Round	<a href="http://www.isotope.com">www.isotope.com</a>	Fish Tissue Contaminated Matrix
Interlaboratory Comparison on Dioxins in Food 2007	<a href="http://www.fhi.no">www.fhi.no</a>	Salmon Filet Butter
Proficiency Test on Determination of PCDD/Fs and PCBs in Fish Oil 2008	<a href="http://www.crl-dioxin-freiburg.eu">www.crl-dioxin-freiburg.eu</a>	Fish Oil
Interlaboratory Comparison on Dioxins in Food 2008	<a href="http://www.fhi.no">www.fhi.no</a>	Eel
Proficiency Test on Determination of PCDD/Fs and PCBs in Canned pork sausage 2009	<a href="http://www.crl-dioxin-freiburg.eu">www.crl-dioxin-freiburg.eu</a>	Canned Sausage (pork)
Interlaboratory Comparison on Dioxins in Food 2009	<a href="http://www.fhi.no">www.fhi.no</a>	Herring
CEN RING TRIAL on determination of PCDD/Fs and PCBs in animal feed, fat/oil 2010	<a href="http://www.crl-dioxin-freiburg.eu">www.crl-dioxin-freiburg.eu</a>	Mineral clay* Bovine compound feed* Fish oil*, Fish meal*
Interlaboratory Comparison on Dioxins in Food 2010	<a href="http://www.fhi.no">www.fhi.no</a>	Breast milk
Proficiency test on determination of PCDD/Fs and PCBs in dried grass meal 2011	<a href="http://www.eurl-dioxin-freiburg.eu">www.eurl-dioxin-freiburg.eu</a>	Grass meal
Interlaboratory Comparison on Dioxins in Food 2011	<a href="http://www.crl-dioxin-freiburg.eu">www.crl-dioxin-freiburg.eu</a>	Salmon
PT on Determination of PCDD/Fs and PCBs in fish 2011	<a href="http://www.eurl-dioxin-freiburg.eu">www.eurl-dioxin-freiburg.eu</a>	Salmon filet Fish oil
PT on Determination of PCDD/Fs and PCBs in Hen's eggs 2012	<a href="http://www.eurl-dioxin-freiburg.eu">www.eurl-dioxin-freiburg.eu</a>	Whole egg Egg yolk powder
Interlaboratory Comparison on Dioxins in Food 2012	<a href="http://www.fhi.no">www.fhi.no</a>	Cod liver oil
PT on Determination of PCDD/Fs and PCBs in Feed Fat 2013	<a href="http://www.eurl-dioxin-freiburg.eu">www.eurl-dioxin-freiburg.eu</a>	Feed fat
PT on Determination of PCDD/Fs and PCBs in Milk 2013	<a href="http://www.eurl-dioxin-freiburg.eu">www.eurl-dioxin-freiburg.eu</a>	Milk powder Milk fat
1° InterCIND QA/QC study 2013	<a href="http://www.intercind.eu">www.intercind.eu</a>	Fish

\* feedingstuffs

# References

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Worldwide, clients take advantage from the ALS primary objective to assist the clients to make informed decisions by consistently providing reliable, reproducible analytical data of the highest integrity through any laboratory within the Group.

Like many clients all over Europe, the Americas, Asia and Australia, feel free to contact us and let us provide you with the Right solutions.

COUNTRY	PROJECT	PARAMETERS
Arabia	ESCO project	Dioxins in food
Argentina	Laboratory control	Dioxins in food
Canada	Population health monitoring (blood)	PBDE in human tissue, serum
Croatia	Product control	Dioxins, PCB in feed
Czech Republic	Regularly control of dairy products	Dioxins, PAHs in food
Czech Republic	Project "Endokrinologický ústav"	PCB in human tissue, serum
Chile	Laboratory control	Dioxins in food
Israel	Regularly control of dairy products	Dioxins, PAHs in food
Korea	Food reference material check	Dioxins, coplanar PCBs in food
Malaysia	Laboratory control	Dioxins in food
Mauritius	Food project	Dioxins, coplanar PCBs in food
Poland	Laboratory control	Dioxins, PAHs in food
Portugal	Food and feed monitoring	Dioxins, coplanar PCBs in food
Singapore	Laboratory control	Dioxins in food
Sweden	Swedish Veterinary Institute	Dioxins in feed
Switzerland	Laboratory control	Dioxins in food
Thailand	Food and feed check	Dioxins in food
Turkey	Laboratory control	Dioxins, coplanar PCBs in food
Vietnam	Food - dioxin survey	Dioxins in food



# Benefits to work with us

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- Extensive experiences to ensure your project proceeds smoothly and is completed according to your specifications
- A comprehensive quality management program to ensure reliable results on which to base critical decisions
- Rapid turnaround times to keep projects schedule
- Project mobilization assistance to ensure providing information you require
- Approved analysis methods and accreditation to ensure regulatory agencies accept your data
- Assistance with data interpretation to help you draw informed conclusions
- Detailed formal reporting so you have all relevant information
- Direct electronic data transfer of analytical results to your database to eliminate transcription errors and data re-entry time
- Ease of communication with senior technical and management personnel for rapid issue resolution



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