



## Editorial

This 4th edition of LABERCA's Newsletter details some of the main happenings in our Laboratory during the end of 2005 and the year 2006.

This period has been particularly busy for all members of our team, in terms of research projects, paper submissions, organisation of trainings and events. ...

I leave you to discover the contents of our « Research News ». We will be in touch soon with a new one!

Pf. Bruno Le Bizec

## OAV and COFRAC audits

The LABERCA was audited during the OAV Mission, organised in France from 21 June to 1 July 2005, for the control of residues and contaminants in live animals and in food of animal origin. The OAV report on this mission showed no dysfunctioning of the LABERCA as National Reference Laboratory.

The LABERCA's accreditation audit pertaining to the laboratory's competence in terms of « design, development and validation » (flexible range) took place from 30 June to 1 July 2005. All activities were found compliant during this audit. The renewal and extension of type 3 flexible range accreditation for the LABERCA were granted for a period of **five years**, from 01/01/2006 to 31/12/2010.

## In Short

### • Change in GPU Management

As from 19 January 2006, Yoann DECEUNINCK has been appointed as Manager of the LABERCA's Growth Promoters Unit.

Emmanuelle BICHON, who held this position for the previous two years, has now joined LABERCA's Technical Support and Innovation team.

## PhD research: PhD defended and new PhDs

Three PhDs were successfully defended by the Laboratory's students between end 2005 and the beginning of 2006. Mrs Véronique Meunier-Solère presented her work on « the Study of natural steroid Androgens and Oestrogens in bovines: methodological contribution and metabolic inventory ».

Miss Corinne Buisson defended her PhD work on « Developing an analytical strategy based on isotopic ratio Mass Spectrometry applied to the control of the fraudulent use of steroid hormones in cattle ».

Finally Mr Ronan Cariou presented the results of his PhD on the « Evaluation of the foetus and newborn exposure to endocrine disrupters such as bromated flame retardants ».

All these studies enabled the Laboratory to reinforce its analytical experience in the field of residues and contaminants (ultra-trace measurement and use of innovative tools such as IRMS) and to broaden its scope of analysis to fields related to human health.

New PhD research work has now been initiated, in particular through « CIFRE » grants, a programme which enables a cooperation between private companies and public research institutions. Miss Blandine Destrez has started her work on the « Development of identification strategies of new active growth accelerating compounds in production animals » and Marie-Hélène Le Breton is working on a project related to the rbST growth hormone.

## Polycyclic Aromatic Hydrocarbons : A new reference Activity

Polycyclic Aromatic Hydrocarbons (PAH) are organic molecules made up of 2 to 7 aromatic cycles and belong to the Persistent Organic Pollutants family (POP). They are carcinogenic, genotoxic and mutagenic compounds which are inclined to bioaccumulation within the food chain. Food being the major source of exposure to these substances for Man, it is essential to be able to measure these molecules and their occurrence better, in order to get a better control of food contamination.

In this general context, the DGAI, French Food Directorate, appointed the LABERCA as National Reference Laboratory for the control of PAH in July 2005. In this respect, the laboratory's missions are numerous:

- Design and validate official measurement methods of PAH in food matrices (solid, liquid and oily).
- Participate to the Inter-Laboratory studies (EIL) organised by the European Commission in order to ensure the proper performance of the laboratory.
- Create a network of application laboratories and transfer the LABERCA's know-how to these structures in order to carry out the national control plans.
- Organise national Inter-Laboratory Studies to control the analytical capacity of the application laboratories and supply the results to the DGAI for them to deliver the agreements to the approved laboratories.

The objectives set by the DGAI have now been reached and a network of laboratories has been created to ensure the control of feedstuff in France as from 2006.



## Educational Engineering: A rapidly expanding activity

SARAF is a Continuous Education Programme of the National Veterinary School of Nantes (ENVN) aimed at training executives from developing countries in modern methods of analysis of residues and contaminants in food. This concept was developed in 2001 and is now extremely successful. Entirely conducted in English by the most renowned European experts of the day, the programme consists of theoretical and practical courses alike. It allows participants to acquire up-to-date knowledge about the very latest technologies used in the National Reference Laboratories.

The SARAF programme was held for the seventh time from 11th to 23rd June 2006, at the specific request of the European Commission – DG-Trade. Twenty participants from 17 countries were invited to participate in this training programme; the training courses covered the following topics: regulatory bases of control, methods of risk evaluation, strategy in terms of sample preparation, measurement of samples through physicochemical techniques (essentially mass spectrometry) and, finally, the validation of measurement methods according to analytical decision 2002/657/EC.

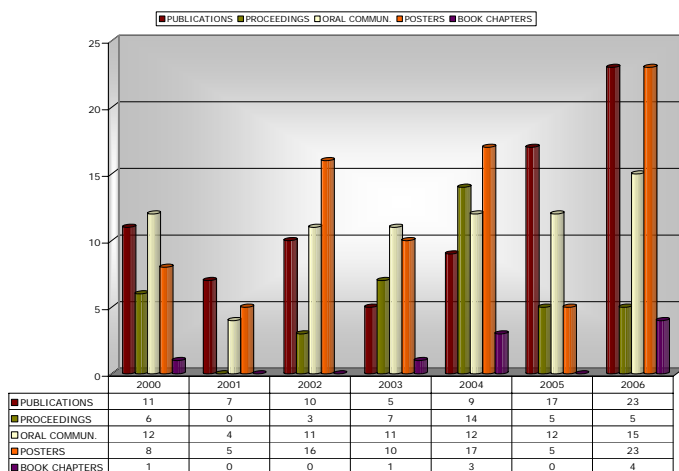
Two new SARAF training sessions will be organised in 2007, one in March (DG-Research) and the other in June (DG-Trade).

## POPINRA: A successful project

This research project, initiated in the laboratory in 2005, aimed at determining the occurrence of the main POPs in sea produce. Certain species, through their position in the trophic chain, become a choice target when it comes to evaluating the chemical risk in terms of contaminants. The study of the contamination profiles (relative proportions of the various substances and congeners under screening) gives relevant information as to the sources and types of pollution involved. For each sample, a dioxins, furanes, PCB and other PBDE profile was established. This study generated a lot of data (measurement of 35 parameters in 159 samples) which served as a basis for the evaluation of the risk in the targeted consumers, who were « large » seafood consumers and thus particularly exposed.

The results showed that the most contaminated samples came from the fattest fish and the crustaceans. An increasing POP contamination gradient in the sea produce was observed from the south to the north of France. Whereas a correlation was established between the concentrations in dioxins and PCB, the bromated flame retardants (7 PBDE indicators), did not appear to follow the same rules. The results of this study were presented notably during the world POPs Congress in Oslo (August 2006).

## Scientific valorisation: Evolution from 2000 to 2006



## JFSM 2006: A Mass Spectrometry Congress in Nantes

The Annual Congress of the Mass Spectrometry and Stable Isotopes French Societies was held from 11 to 14 September 2006 in Nantes Congress Centre. This Congress was organised by a joint Committee led by the LABERCA and including the Universities of Nantes and Angers as well as INRA and IFREMER.

270 participants, originating mainly from France, but also from Belgium, Algeria, Canada, Rumania, United Kingdom or Switzerland attended the Symposium, which dealt with scientific topics such as Identification / quantification of small molecules, Biology and -omic analyses, reactivity and theory, Innovation and new concepts and Isotopic analysis.

Conferences were given by some of the most renowned specialists of Mass Spectrometry and/or its applications. The Congress was greatly appreciated, both for the quality of its scientific conferences and the social interaction between participants.

## Latest Publications

- Le Bizec B, Van Hoof N, Courtheyn D, Gaudin I, Van De Wiele M, Bichon E, De Brabander H and André F. Metabolism study of a new anabolic steroid in bovine: preliminary data on 19-norchlorotestosterone acetate. *J Steroid Biochem Molec Biol* 2006;98(1):78-89.
- Antignac J-P., Marchand P., Gadé C., Matayron G., El Mostafa Gannari., Le Bizec B. and André F. Studying variations in the PCDD/PCDF profile across various food products using multivariate statistical analysis. *Anal Bioanal Chem*, 2006;384(1):271-279.
- Lutz S, Feidt C, Monteau F, Rychen G, Le Bizec B and Jurjanz S. Transfer of Polycyclic Aromatic Hydrocarbons and their major metabolites in milk after chronicle exposure to contaminated soil. *Journal of Agriculture and Food Chemistry*, 2006;54(1):263.
- Cariou R, Antignac JP, Marchand P, Berrebi A, Zalko D, André F and Le Bizec B. New multiresidue analytical method dedicated to trace level measurement of brominated flame retardants in human biological matrices. *J Chromatogr A*, 2005;1100(2):144-152.
- Buisson C, Heberstreit M, Preiss-Weigert A, Heinrich K, Fry H, Flenker U, Banneke S, Prevost S, André F, Schanzer W, Houghton E, and Le Bizec B. Application of stable carbon isotope analysis to the detection of administration of natural hormones to cattle: estrogen administration *J Chromatogr A*, 2005;1093(1-2):69-80.