Feed Safety Management
OQUALIM
La Sécurité Sanitaire des Aliments pour Animaux

Newsletter on Monitoring Plans

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QUALITY DATA

There are three epidemiological monitoring platforms for animal health, plant health and food chain surveillance. Inter-platform themes have been developed. As a member of the Food Chain Surveillance platform, OQUALIM takes part in the “Data Quality” inter-platform monitoring group. The group has drafted the "Data Quality Guide", available to all food chain monitoring players. The guide covers data quality at each stage of the data life and identifies the main principles and applicable best practices with tangible examples. This work on data quality will be our main theme for this journal on pooled plans.

Let’s start by defining monitoring. Monitoring corresponds to all activities to continuously collect data, to analyse and interpret it to provide information about the situation, presence, change in organisms or substances that are harmful to health safety, with the aim of enabling decision-makers to act.

The objectives of the monitoring using OQUALIM’s pooled plans are to:

- monitor the levels of biological or chemical contamination, the prevalence and the incidence of these agents, in order to contribute to good management of the health situation and effectiveness of the prevention measures implemented by the professional sector, while allowing the participating companies to optimise their self-monitoring plans,
- trigger ad hoc alerts so that feed and premixture manufacturers can adapt their prevention measures,
- constitute a health safety and animal feed quality observatory, that are sources of useful data for building prevention measures.

To achieve these objectives, useful, high-quality data is required. Quality data is data suitable for the use to which we want to put it to. Different documents define the plan objectives and applied rules: the operating and participation rules, the technical sheets. The pooled plans meet the above objectives through the monitoring that they provide for the professional sector. The adapted management and control measures are the responsibility of the manufacturer that holds the raw materials or finished products, without interference from OQUALIM on the companies’ decisions and actions to be taken. ■

The positioning of the pooled plans

The positioning of the OQUALIM pooled plans with regard to the recommendations of the Data Quality Guide is illustrated by examples in this journal

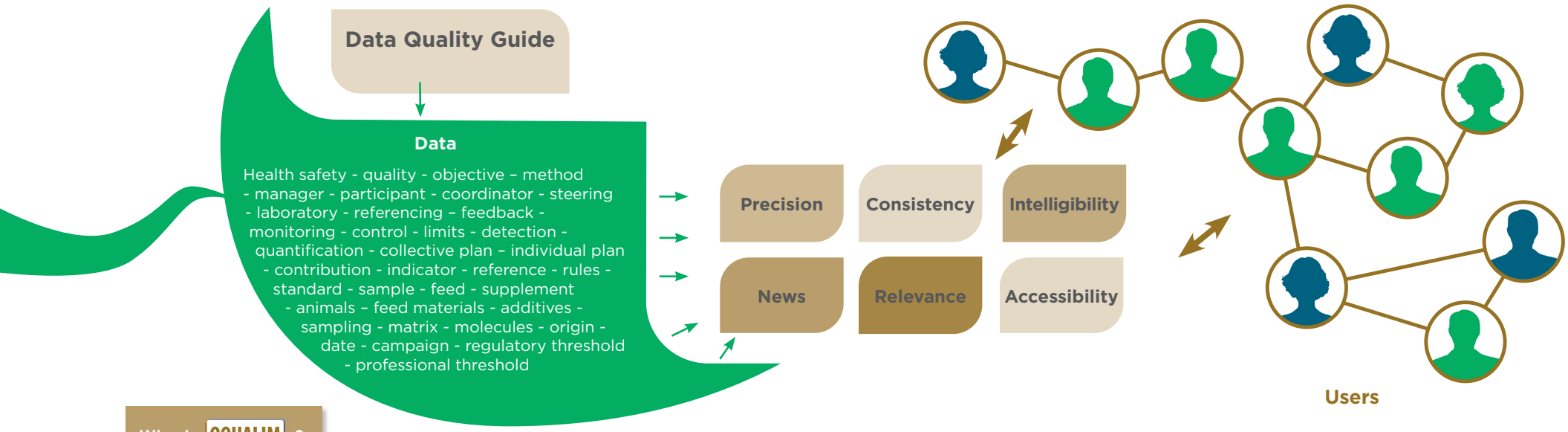
The pooled plans start with the definition of the monitoring objectives in order to identify the useful data. The article “Monitoring of bacteria: the objectives dictate the scope and modalities for the monitoring” illustrates this approach **on page 2.**

Another important stage consists of designing the data collection tool and the way in which it will be supplemented. Julie DOUDOUX and Héloïse LION, managers of the Feed and Supplement Plans respectively, explain how OQUALIM’s collection tools work **on page 3.**

Data quality is regularly assessed with the participants. The collection must be able to change according to the needs and the context, which differ depending on the activities, knowledge and regulations. Several articles illustrate how the data is put into perspective, for safety surveillance of the food chain:

- “The coordination of data quality, the mycotoxin example: what directions, what changes?“ **on page 3**,
- “Taking into account the risk related to undesirable substances; the usefulness of pooled data - the example of nickel” **on page 4**.
- “Pesticide analysis - Staying vigilant as to the analysis and interpretation parameters” **on page 4.**

Exchanges with other tools and databases are occasions for assessing the quality of the data available in the pooled plans. The reader can find a tangible example in the interview with Claire LAUNAY, a participant in the COPIL Feed Plans, and Hélène BERNARD, INRAé, members of the Cadmium working group of the Food Chain Surveillance platform **on page 4.**



Who is OQUALIM ?

OQUALIM is an association whose aim is to provide solutions to help meet **health security and animal feed quality challenges.**
The association coordinates the collective approach by the French animal nutrition sector in terms of quality and health security of animal feed. It has two main objectives: health security and compliance with both public and private specifications. To achieve these objectives, it has constructed two tools: pooled self-monitoring plans and the certification of animal feed plants with the RCNA (Animal Nutrition Certification Reference).

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MONITORING OF BACTERIA: THE OBJECTIVES DICTATE THE SCOPE AND MODALITIES FOR THE MONITORING

The dangers identified for the animal feed sector are physical, chemical and biological. In this respect, bacteria are monitored by the sector. The pooled "Feed" plan focuses on the monitoring of *Salmonella, Listeria* and *Campylobacter*. The specific milk replacer feed plan broadens the monitoring to *Escherichia coli, Clostridium perfringens* and *Staphylococcus*. The Supplement and Organic Feed plans supplement the monitoring on *Salmonella.*

The monitoring objectives and modalities for these contaminants are different.

To date, only certain *Salmonella* are regulated in animal feed. Within the framework of the pooled plans, the analysis pressure is strongest for this regulated bacterium. The first task is to monitor the bacteriological quality of the feed materials entering the plants. Over 1,400 searches for salmonella were pooled in 2021 in the Feed plan, with the feed materials considered to be the most at risk, such as cake, being targeted as a priority. The second task is to monitor the bacteriological quality of the feed for breeding farms. Almost 5,000 analyses to detect conventional complete compound feed were pooled in 2021 and searches for feed destined for the breeds most sensitive to this pathogen are prioritised.

To retain the relevance of the monitoring, OQUALIM's Plan working groups question each year the analysis pressure in view of new scientific data, regulatory changes and identified signalling. The monitoring pressure for feed for monogastric animals and ruminants for salmonella has been increased recently.

With regard to *Campylobacter* and *Listeria*, the defined objectives led professionals to define a different scope and monitoring modalities.

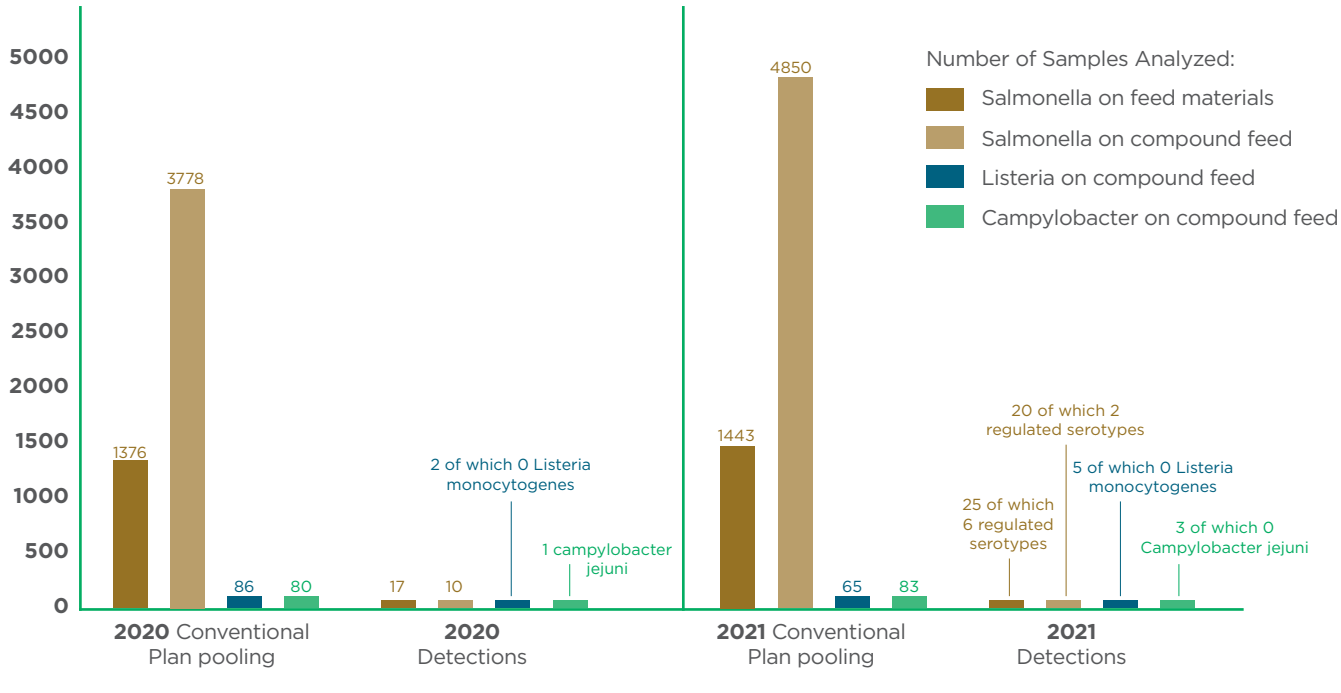
These contaminants that are not regulated in animal feed may be regulated at the level of animal products. Monitoring, therefore, focuses exclusively on finished products for exploratory purposes. *Listeria monocytogenes* has been subject to monitoring for over 5 years, and in 2022, the pressure on feed for dairy cows was increased.

Compared to current knowledge needs, the quantity of monitoring data on *Campylobacter* in broiler chickens was considered to be sufficient.

Underpinning these changes are the results of 6 years of monitoring by OQUALIM and the ANSES conclusions on the microbial dangers in animal feed. The ANSES identifies *Listeria monocytogenes* as one of the most significant microbial dangers in animal feed whereas "animal feed must not be considered as a reservoir for *Campylobacter sp.*" as the compound feed environment is too dry for these bacteria that are sensitive to desiccation.

Thus, the monitoring objectives allow the plan working groups to orientate the pooling strategy. Beyond this, the guidelines on the sampling modalities, laboratory referencing, the choice of analysis methods are fundamental parameters to guarantee the relevance of the sector's collective monitoring, for the exploitation and use of the collected data.

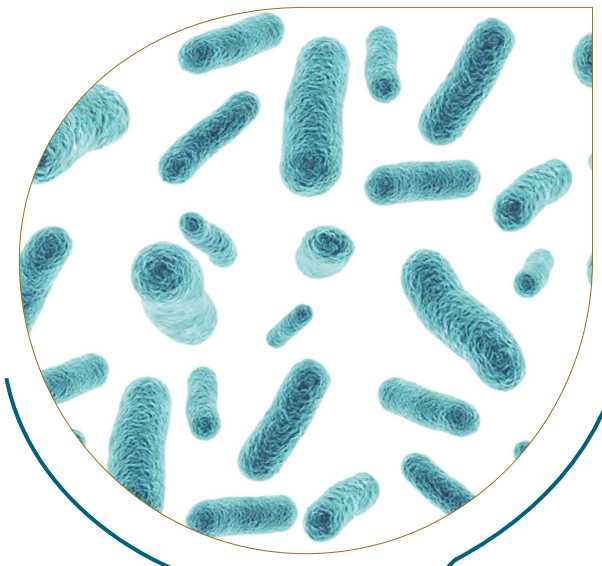
Results of the 2020 and 2021 Feed Plans



The milk replacer feed plan: specific monitoring!

Due to the specific nature of milk replacer feed both in terms of composition and recipient species, bacteriological monitoring is specific to this plan.

It concerns *Salmonella, Listeria* and also includes *E. Coli, Clostridium perfringens,* Staphylococcus to meet the health safety objective of animals and consumers.



Céline LORQUIN, Feed plan working group and steering group:

"The health challenges guide the discussions of OQUALIM's "Feed Plan" working group. The monitoring strategy is re-discussed each year. New scientific data, weak signals highlighted by monitoring or regulatory changes lead us to continuously adapt the collective monitoring that we implement in order to guarantee its relevance and robustness".

Nadine RABEAU, Milk Replacer Feed plan working group

"In the absence of a bacteriological regulatory threshold for animal milk replacer feed, at the professional level, we have decided to consolidate the monitoring of these germs on raw materials and finished products. We share our counting results on staphylococcus, Clostridium perfringens, *searches for* Salmonella, Listeria *and* E. coli. *We looked into pooling results on* Bacillus cereus *on cereal co-products but we did not finally select this pathogen for pooled monitoring. "*

THE MONITORING DATA COLLECTION TOOL AND DATABASE, FACTORS CONTRIBUTING TO QUALITY

A Data Management Plan with the stakeholders involved in the different data life stages is one of the key factors in designing a database. The FAIR principles (Easy to Find, Accessible, Interoperable and Reusable), saving and archiving of the database and the monitoring of all modifications are a true guarantee for the quality of data resulting from the system.

A prior important stage to data collection consists of designing the data collection tool and the way in which it will be supplemented (data collection method). A data collection tool is considered here to be any support that can collect the data required to meet the monitoring objectives defined upstream. OQUALIM builds on two different collection tools for the feed and supplement plans - cross interview with the* **two plan managers, Julie Doudoux for the Feed Plan (PA) and Héloïse Lion for the Supplement Plan (PC), to understand the origin and operation of these tools.**

What is the history of the design of the collection tool?

J.D.: The current tool, the Animal Feed Quality Portal, was implemented in 2019 after two years of design phase. It supersedes a previous database that had a proven track record but which needed to be rebuilt to take into account the needs of the managers and users. The new technologies enable us to have a scalable system, better characterise the information stored in the database for better use, facilitate the information flows between managers, data suppliers, users.
Data entry is secured. The portal, as a web application, is easily accessible. Predefined data entry fields enable ergonomic and efficient use.

H.L.: In 2002, supplement manufacturers implemented a pooled self-monitoring plan and designed an effective tool, which was integrated into OQUALIM in 2012. The tool is a spreadsheet that each company sends us every quarter filled in with their analysis results. The spreadsheet known to all is easy to use, scalable and agile, and does not require third party intervention.

What about confidentiality and data security?

H.L.: Data management is secured by exclusive mastery by the administrator and plan manager. The summaries sent to participants are anonymous. The raw data is stored on a secure server. The summaries and plan operating documents are available on the OQUALIM site, which is a secure space, reserved for participants.

J.D.: Each user has an individual access and personal code with “roles” and “privileges” that define their access rights. Each user has access to all of their data and part of the pooled data, depending on their rights.

How does data entry work? How do you ensure that the tool is correctly used?

J.D.: The information flow is unique, from the sample taker to the laboratory, with three data entry levels:
• On the **manager** side, configuration of data entry masks (product denomination,...), fixed attributes (unit, ...) and laboratory referencing, verification of data consistency (blockage of outlier data entry), user training along with method sheets and a hotline.
• On the **participant** side, entry of data related to their samples.
• On the **laboratory** side, entry of analysis results.
The correct use of the tool is ensured by user training along with method sheets and a hotline.

H.L.: Each company appoints a plan “manager” who undertakes to comply with the operating rules, and ensure the veracity of the entered and transmitted data. A training session is organised each year for the consolidation aspect.

How do you ensure that the data entered is valid?

J.D.: All results classified as “acceptable” compared to the predefined thresholds and standards are automatically published. “To be monitored” and “not acceptable” reports are blocked by the system and checked by the manager. If the manager intervenes to amend or validate a data entry, this is traced in the database and data exports. A final “macro” verification of data takes place during the preparation of the annual summary.

H.L.: We carry out a dual verification control. Reporting of all results that do not comply with the configured plan thresholds is mandatory. All data entered is checked to ensure that no information is omitted. If a non-compliance is identified, the analysis note is requested from the company to check the reading of the received data together. A procedure is set up to inform the participants if the reading is validated.

How do the consistency controls work?

J.D. & H.L.: An annual consistency check is carried out by survey on a sample pool defined by the COPIL by comparing the entered data and the analysis note.
A consistency check report is sent to the COPIL. At the supplement plan level, this notably enabled user training to be focused, making data entry more efficient, and also making the plan more effective by modifying certain pooled data parameters to better meet monitoring objectives.

*https://wiki.esa.inrae.fr/books/guide-pratique-sur-la-qualite-des-donnees-de-surveillance

THE COORDINATION OF DATA QUALITY, THE MYCOTOXIN EXAMPLE: WHAT DIRECTIONS, WHAT CHANGES?

Volunteer professionals are constructing monitoring plans in dedicated working groups. To guarantee the relevance and usefulness of the plans, **coordination of the plans is essential**, to modify the data to be pooled according to knowledge, regulatory changes, supply changes, history of results and the expertise of the working group members.

With regard to mycotoxins, the discussions concern notably **the type of mycotoxins** to integrate. Beyond those for which there is a maximum regulatory level or a European recommendation, the professionals decided to integrate ergot alkaloids on cereals (wheat, barley, rye, triticale) to the monitoring scope from 2022. This integration goes along with the referencing of laboratories that apply the EU 2012/154 recommendation on the monitoring of the presence of ergot alkaloids in animal feed, the search for twelve molecules and the alkaloid sum.

The relevance of this data will be assessed in comparison with the results of the public authorities’ monitoring and control plans and the orientation values proposed by the German authorities*.

The monitoring goes beyond the regulatory contaminants and testifies to manufacturers’ commitment to continuously work to improve feed health safety. The monitoring report published in the BuSCA is useful to identify the articles likely to direct professionals’ discussions.

Beyond the type of mycotoxins, the professionals define the analysis pressure for each one according to the concerned feed materials and finished products.

Certain parameters are important for fine monitoring, generating useful and exploitable data. The year of harvest and the origin of raw materials are of interest for mycotoxins as their presence may differ depending on these parameters. When weather conditions lead to a campaign that is more at risk than planned, OQUALIM informs the plan participants through information notes and requests additional results for the pooled database.

With the aim of setting the maximum levels of mycotoxins in the Directive 2002/32/EC, the European Commission plans to set up a mycotoxin database. The cumulative results within OQUALIM will enable their benchmarking. The involvement of partners and the quality network is vital for the coordination of monitoring data quality and to ensure that the data is interoperable.

* Reference: Technical instruction DGAL/SDEIGIR/201-988 of 27/12/2021

TAKING INTO ACCOUNT THE RISK RELATED TO UNDESIRABLE SUBSTANCES; THE USEFULNESS OF POOLED DATA - THE EXAMPLE OF NICKEL

The five metallic trace elements considered as undesirable substances in animal feed (lead, arsenic, cadmium, mercury and fluorine) are regulated by the Directive 2002/32/EC. Following an opinion by the EFSA in 2015 indicating that nickel could have worrying consequences on human health (carcinogen, risk of sensitivity...), the European Commission issued a recommendation in 2016 encouraging Member States to monitor the presence of nickel in animal feed. The animal nutrition profession in France mobilised on this issue by collecting, between 2015 and 2018, over 700 results of nickel analyses, carried out by the participants in OQUALIM's Supplement and Feed Plans across different matrices. This pooling showed that the levels of nickel observed in inputs and compound animal feed are found in the lower values of the variation ranges indicated in the above EFSA opinion.

The SCoPAFF (Standing Committee on Plants, Animals, Food and Feed), comprising representatives of Member States and responsible for issuing opinions on the implementation of regulations on feedstuffs and animal feed health safety, appears to share this conclusion. In 2020, the SCoPAFF considered that it was not necessary to envisage maximum levels of nickel for mineral and derivative products, as well as for certain additives (trace elements, binders and anti-caking agents). The Committee, however, considered it appropriate to set a maximum nickel level of 20 ppm for fatty acid and glycerine-based products.

Up to now absent from the regulated undesirable substances for animal feed, nickel should be added to the next version of the Directive 2002/32/EC as recommended by the SCoPAFF. Data pooling enables the participating companies to consolidate their analysis of the risk. The relevance of selecting these new contaminant/matrix couples for collective monitoring will be studied by the COPIL in the different pooled plans.

1/ EFSA Journal 2015;13(4):4074
2/ Commission recommendation of 28 June 2016 on the monitoring of the presence of nickel in animal feed, EUOJ C235 of 29/06/2016
3/ Summary report, Standing Committee on Plants, Animals, Food and Feed, Section Animal Nutrition, 14 - 16 September 2020

PESTICIDE ANALYSIS - STAYING VIGILANT AS TO THE ANALYSIS AND INTERPRETATION PARAMETERS

Monitoring of changes in contaminants and the correct exploitation of the pesticide analysis results require compliance with a standard framework at different levels.

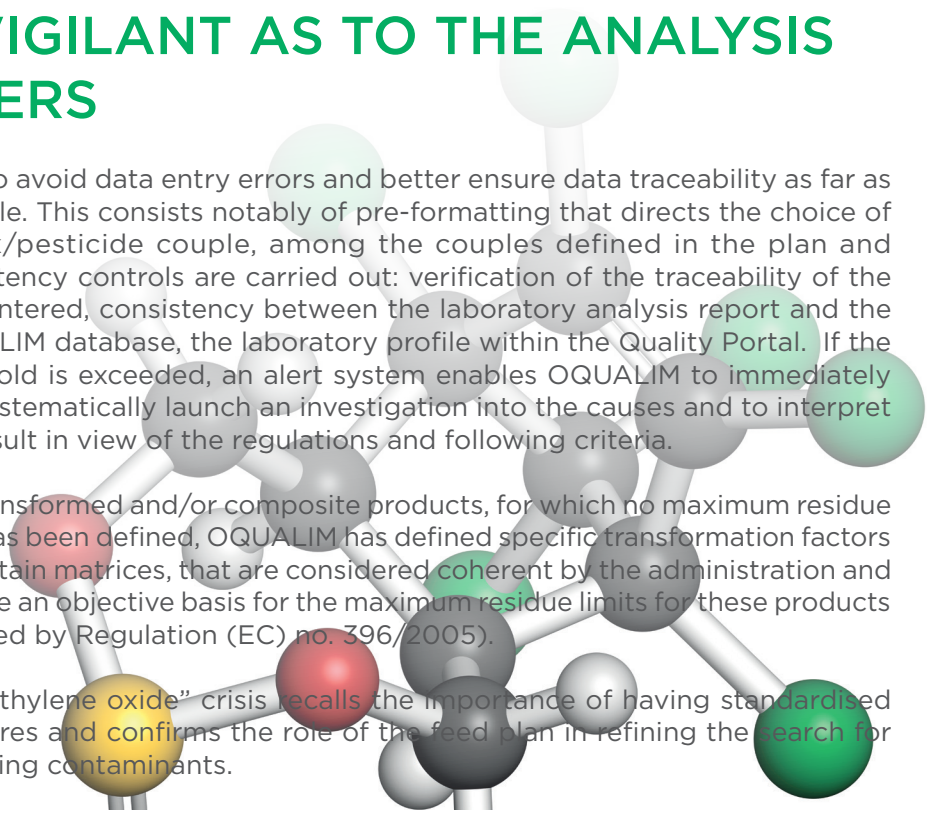
From the sampling stage, companies follow a protocol established for all plan participants, in terms of standards to be met and sampling methods specific to the analysed matrices.

The laboratories solicited by the companies must be referenced by OQUALIM and capable of analysing a compulsory single list of 99 molecules (positive list), integrated within larger packs (200 or 500 molecules), that are specific to each laboratory according to the framework set by the conventional or organic plans. For organochlorine pesticides (Directive 2002/32/EC), despite the maximum levels expressed in mg/kg of animal feed with a humidity level of 12%, the results are entered on raw feed, in the same way as for all other pesticides that come under Regulation (EC) no. 396/2005.

The laboratories enter the results directly onto the Quality Portal, designed for standardised, effective data processing. The recent change in the portal aims to avoid data entry errors and better ensure data traceability as far as possible. This consists notably of pre-formatting that directs the choice of matrix/pesticide couple, among the couples defined in the plan and consistency controls are carried out: verification of the traceability of the data entered, consistency between the laboratory analysis report and the OQUALIM database, the laboratory profile within the Quality Portal. If the threshold is exceeded, an alert system enables OQUALIM to immediately and systematically launch an investigation into the causes and to interpret the result in view of the regulations and following criteria.

For transformed and/or composite products, for which no maximum residue limit has been defined, OQUALIM has defined specific transformation factors for certain matrices, that are considered coherent by the administration and provide an objective basis for the maximum residue limits for these products (allowed by Regulation (EC) no. 396/2005).

The "ethylene oxide" crisis recalls the importance of having standardised measures and confirms the role of the feed plan in refining the search for emerging contaminants.



THE CADMIUM WORKING GROUP IN THE FOOD CHAIN MONITORING PLATFORM

Hélène Bernard, INRAE, you co-steer the Cadmium working group, could you present the working group's context and objectives?

H.B.: Cadmium is a ubiquitous contaminant to which part of the population is exposed at levels that exceed the benchmark toxicological values. The Cadmium working group aims to take stock of the monitoring in France then propose recommendations to improve monitoring and demonstrate the Platform's ability to exploit data from very diverse origins. As a proof of the concept, it must also feed the methodological discussions of the Platform's future "chemical working groups".

Claire Launay, member of the feed steering committee, at the scientific and regulatory management of a company; what did you expect by participating in the Cadmium working group?

C.L.: Thanks to the contributions from a group of people from all origins, I imagined a mapping of sources of Cadmium, the weighting of the sources of this ubiquitous contaminant on the permeation in the population. What has the most impact on the level of human exposure, is it the consumption of animal products, if so, which ones? Is it the consumption of plant products? Is the level of cadmium in plant products mainly due to the use of phosphate fertiliser? Do some plants have a higher capacity of absorbing and concentrating cadmium?

In your opinion, what can OQUALIM bring to working groups of this type?

C.L.: OQUALIM can provide data on this element for plant and mineral raw materials thus contributing to knowledge of the sources.

OQUALIM provided data to the working group. Will you provide feedback on the quality of this data?

H.B.: Of course, we plan to provide individual summaries to the participants on the quality of the data received with the aim of standardising the data available for collective processing. We will provide proposals on improvements depending on the objectives.

Hélène Bernard, what can you add about the working group deliverables?

H.B.: Two reports are expected this year: one to take stock of cadmium monitoring in France and the recommendations formulated by the working group to improve monitoring, and the other on the methodology to be implemented for the Platform's future "chemical" working groups.