

# Journal

## on Monitoring plans

EDITION  
2019

May 2019

The hygiene package defined by the European regulations requires manufacturers to implement a "sufficient self-monitoring plan". This may be difficult at a company level in the absence of a reference framework.

The French feed manufacturers, within OQUALIM, have decided to pool information to reinforce safety of their production. Pooled self-monitoring plans were built on the basis of the analysis of risks generic to the profession. The overall plans proposed to participants can guide them in building their own self-monitoring plan.

Pooling optimises the detection capacities as shown by Canon and Roe's statistical laws. Feed materials have been identified as the main source of contaminants. The profession has chosen to monitor feed mainly through the feed materials that constitute it. Self-monitoring carried out by manufacturers on feed materials remain second level controls. They do not substitute for the supplier's primary duty to place only products fit for purpose on the market.

The network enables the performance of monitoring at an individual level to be improved in real time. The alerts transmitted allow participants to maintain their level of vigilance and readjust their own plans.

Since the creation of the plans, the analyses change according to knowledge, current news and manufacturer needs. The main contaminants sought are regulated contaminants, undesirable substances and microbiological agents. The plans' focus allows for optimised monitoring of current risks at the profession level, for the benefit of increased safety for the animal production sectors.

The spread of analyses between participants with a national consolidation of results enables exploratory research and anticipation of emerging risks. This system is essential for reinforcing health security within the profession.

■ *Cécile Bouveret*

### Number of samples analysed within OQUALIM in 2018

Conventional feed, organic "feed", milk replacer and "supplement feed" self-monitoring plans.



### The interest of pooling

Through its alerts, the pooled self-monitoring plan enables real time steering on site. The construction of the plan and the processing of the pooled data provide monitoring and exploration tools for the profession.

	2018
Coccidiostats	85
Dioxins DL and non DL PCBs & PAHs	430
Heavy metals*, Fluorine	1 185**
Microbiology	5 817
Mycotoxins	2 744
Pesticides	611
Others***	204
<b>TOTAL</b>	<b>11 076</b>

\* Pb, As, Cd, Hg, Ni

\*\* Number of samples estimated based on the number of analyses carried out

\*\*\* Hydrocyanic acid, ragweed, datura, ergot, volatile mustard oil, inhibiting substances, theobromine



# THE BIOLOGICAL HAZARDS

Monitoring beyond regulatory hazards, action beyond plans.

OQUALIM's pooled self-monitoring plans include the search for *Campylobacter*, *Clostridium*, *Escherichia coli*, *Listeria*, *Salmonella* and *Staphylococcus*

Salmonella are pathogens likely to provoke human salmonellosis. For this reason, they are specifically monitored throughout the food chain and constituted a regulatory biological hazard in animal feed. The monitoring of biological hazards carried out by OQUALIM's plans is based above all, therefore, on salmonella. All OQUALIM plans (with the exception of the GMO plan) include specific analysis for this pathogen. In 2018, 1,366 Salmonella analyses were conducted within the "feed" plan on feed materials and 3,471 on finished products. Whilst the incidence of salmonella increased this year, the results remain very satisfactory as no regulated salmonella was detected and the detection percentage remains lower than 0.2% on finished products.

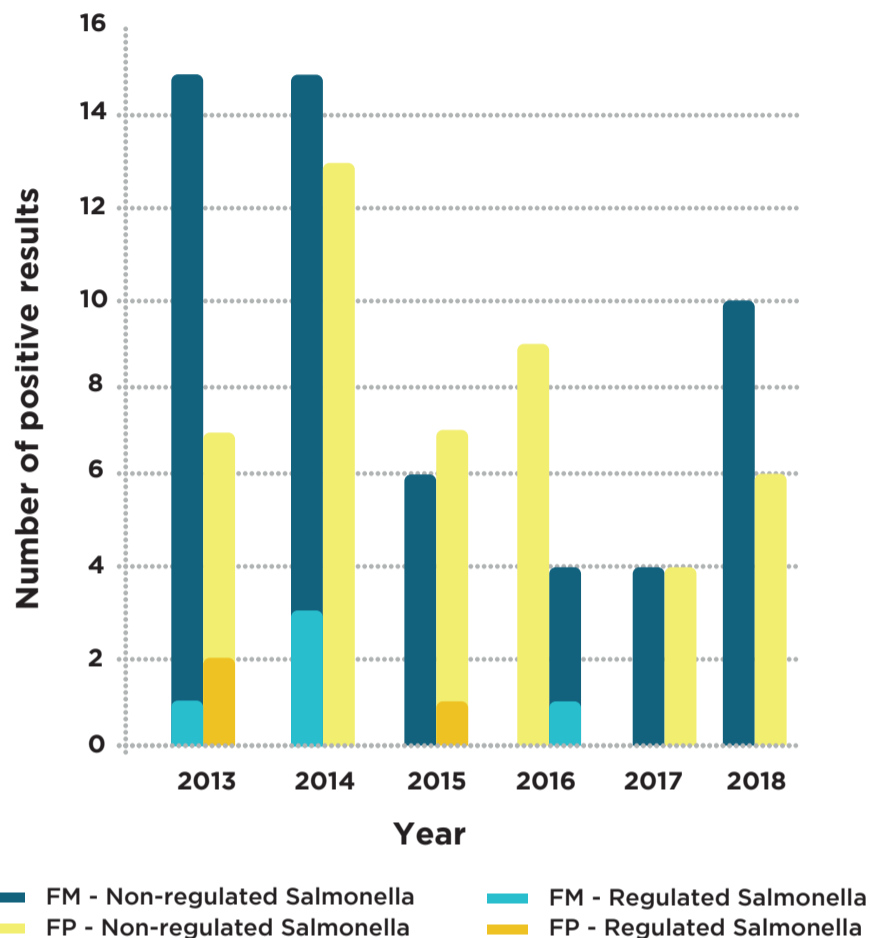
OQUALIM also adds to its monitoring of biological hazards by conducting exploratory studies on *Campylobacter* (mainly on meat poultry feed) and *Listeria* (on dairy cattle feed) for health safety reasons or potential regulatory changes. In both cases, the results were very satisfactory as no *Campylobacter jejuni* or *Listeria monocytogenes* were detected in 2018. Two tutored projects were conducted in 2018, one in partnership with ESIX for *Campylobacter jejuni*, the other with Oniris for *Listeria monocytogenes*. Students based their work on bibliographic studies and interviews of Itavi for the poultry sector and Savoicime for the dairy sector (raw milk cheese). These studies did not provide elements which would redirect the pooled self-monitoring plans. However, they provided interesting elements on the modalities for analysing these contaminants. Beyond coordinating the plans, OQUALIM's mission is to discuss with the professional environment and scientific and research bodies. OQUALIM provided Salmonella data to ANSES, which enabled the Agency to build its opinion on Salmonella hazards in animal feed based on a significant volume of quality data. Furthermore, given its involvement in health monitoring, the association was naturally invited to take part in the national Platform of surveillance of the Food Chain created in 2018 alongside 13 other members, including



the Ministries of Health, Agriculture and the Economy. Within this framework, OQUALIM also takes part in the ONDES working group to optimise national epidemic monitoring of salmonella. Based on the description of the current system, the ONDES working group will work for 18 months on the implementation of health indicators and on sharing monitoring data.

■ *Blandine Markwitz et Valérie Bris*

## Salmonella results for feed materials (FM) and finished products (FP) (since 2013)



# NICKEL

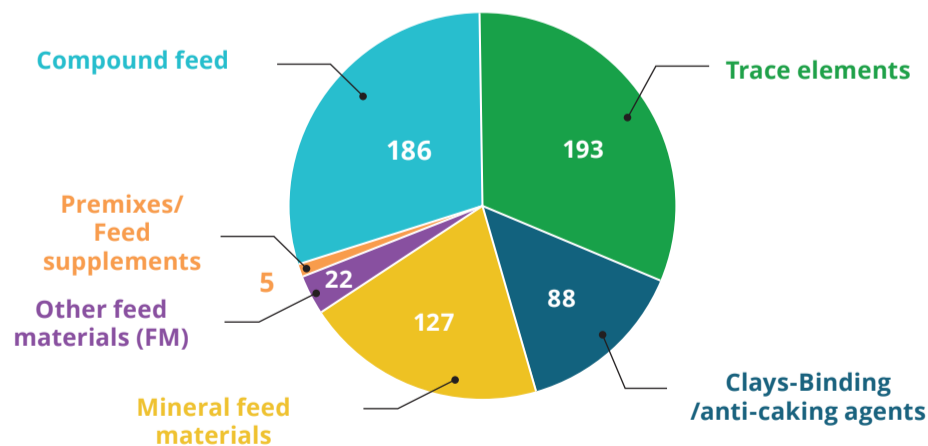
EXPLORATORY ANALYSES TO ANTICIPATE REGULATORY CHANGES.

Nickel is a metal element but not an essential micronutrient for animals. Currently, it is not regulated as an undesirable substance.

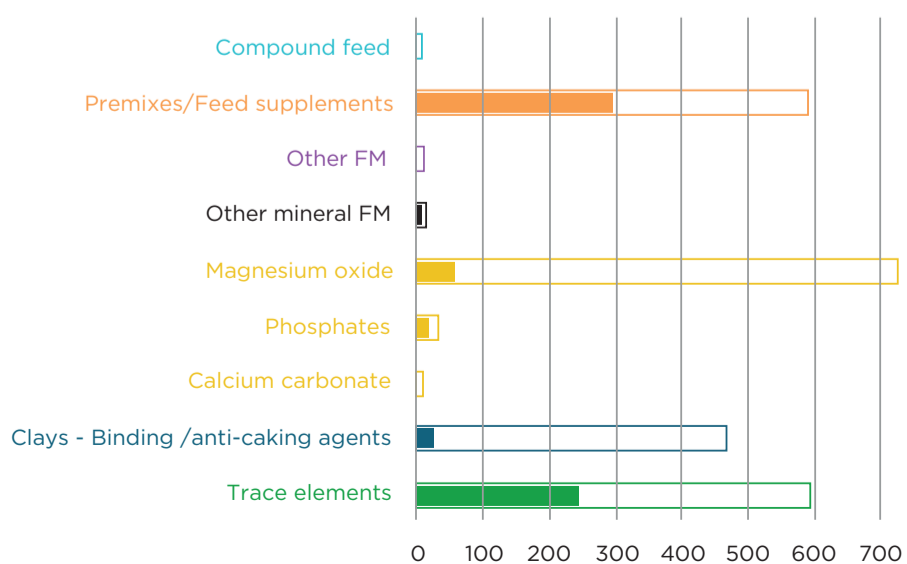
The European Commission has asked EFSA to assess the risks for animal and human health of the presence of nickel in animal feed. The EFSA delivered an opinion (1) in 2015, indicating that a negative impact on breeding animals due to the presence of nickel in animal feed appeared to be unlikely. However, the contribution of animal origin food products to food exposure in humans to nickel should not be underestimated due to the worrying consequences on health (carcinogenic substance, risk of sensitivity...). In addition, the risks related to contact or inhalation exposure are also taken into account as it is planned in the regulations that operators adopt measures to

reduce exposure (ventilation, individual protection equipment...), during manipulation of certain additives that may contain nickel.

## Total number of nickel analyses (2015-2018)



## Average levels of nickel observed (2015-2018)



In the recommendation of 28 June 2016, the European Commission encouraged Member States with the active participation of animal feed sector operators, to monitor the presence of nickel in animal feed. Under the OQUALIM framework, a first series of exploratory analyses on nickel was conducted in 2015 and 2016 with 445 pooled analyses as part of the "feed supplements" plan, followed by a second series of 186 analyses as part of the "Feed" plan in 2017 and 2018. These enabled data on usual nickel levels in mineral and plant origin materials to be collected, should there be future regulations on this contaminant.

■ *Claire Laurent*

(1) EFSA Journal 2015;13(4):4074

□ Maxi (mg/kg) ■ Average (mg/kg)



## CEREAL ERGOT

The fungus *Claviceps purpurea*, commonly known as "ergot", is capable of contaminating all grasses, both wild and cultivated. Rye and triticale are the most sensitive crops to the disease, but all other straw cereals can be affected. The contamination is characterised by the presence of black or brown areas called "sclerotia" or "ergots" that replace the kernels on the ears and which contain toxic alkaloids.

The development of ergot is mainly related to pedoclimatic conditions, and also inoculum management. The difference in sensitivity between crops must be taken into account, but above all the seeds must be cleaned as effectively as possible to avoid disseminating sclerotia to the seedlings. Amongst field management tools, we can note:

- Management of grassy weeds in and around the plots, whether or not the crop in place is a cereal or non-host crop. These weeds, and in particular, blackgrass, which is very sensitive to the disease, play the role of relays and multipliers for the disease.
- diversification of rotations: rotation of straw cereals / other non-host crops. Deep soil ploughing to reduce the infectious potential of the plot. A second ploughing which could bring viable sclerotia to the superficial soil layers must be avoided.

Sclerotia contain alkaloids that are responsible for diseases observed in people and animals. In the Middle Ages, ergotism, also called "Saint Anthony's fire" caused real carnage in Europe. We currently note 6 main alkaloids, each being present in two structurally analogical forms, known as isomers. We take into account the sum of the 12 levels of alkaloids dosed individually to characterise the "alkaloid level" of a sample.

The latest scientific opinion by the EFSA (July 2017) on ergot alkaloids in human and animal food concluded that a risk of chronic intoxication was possible for people and animals in view of the current prevalence. In Humans, the highest chronic exposure has been noted for children. In animals, feed exposure varies depending on the species, and no precise conclusions have been made.

For animals, cereals and cereal sub-products which are derived from them are the main exposure route. Ergotism may be convulsive (staggering, spasms...) in the event of either acute or gangrenous intoxication (necrosis of the extremities of the feet, ears, tail..) and can lead to a reduction in milk production or even stopped milk production, digestive problems, respiratory difficulties...

According to the Directive 2002/32/EC, batches of cereals for cattle feed must not exceed 1 g/kg (0.1%) of ergot. In human food, the current threshold is 0.5 g/kg. As it is impossible to identify ergot in transformed products, the Commission's recommendation of 15 March 2012 (2012/154/EU) is to monitor the presence of alkaloids in animal feed and food products. In the longer term, the regulations could change towards a definition of maximum alkaloid thresholds, which would enable these contaminants to be monitored in the transformed products on the market.

As part of the OQUALIM self-monitoring plan, the search for ergot was integrated in 2012 for rye following on-site feedback. Monitoring was then extended to the other straw cereals (wheat, barley, triticale). As the analyses take place on the seeds, the selected method to search for ergot is by microscopy. This allows for results that can be compared with current regulations. Out of over 300 results available, 11% showed the presence of ergot but at levels below the maximum regulatory limits. Only 2 results were qualified "orange", i.e. over 2/3 of the MRL in 2013 and 2014.

■ Anne Paul et Béatrice Orlando



## CHANGE IN THE ANALYSIS OF PESTICIDE RESIDUES IN FEED SELF-MONITORING PLANS

Pesticides comprise one or several active substances designed to manage or destroy harmful and undesirable elements on animals and plants. They mainly represent insecticides, fungicides, herbicides, acaricides, growth regulators and repellents.

OQUALIM's "Feed" plan steering committee and the related working groups initiated a work in 2016 on the analysis of pesticide residues as part of pooled self-monitoring plans. This study showed the heterogeneity of the lists of molecules proposed by the referenced laboratories and the absence of certain historically detected compound

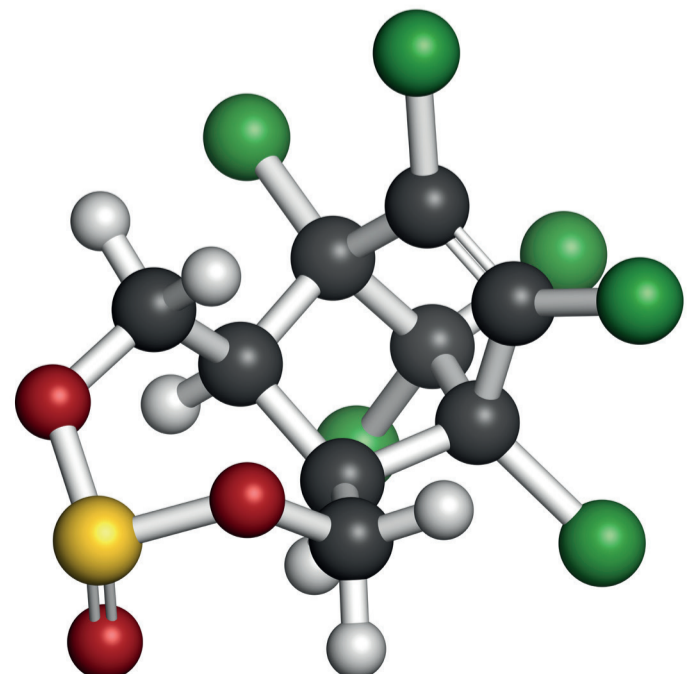
Wishing to retain an inter-laboratory diversity to promote the identification of emerging risks, the Feed plan steering committee decided to define a minimum common list or positive list that the laboratories will add to with their specific lists.

This positive list of 99 validated, mandatory molecules as part of the pooled self-monitoring plans was established on the basis of current regulations, the plan history, OQUALIM monitoring and laboratory feedback.

In 2018, laboratory referencing was updated. The minimum list is included in an overall analytical research strategy of 200 or 500 molecules depending on the related monitoring plan.

Since the start of 2019, the new portal for the pooled self-monitoring plans includes the specificities of each referenced laboratory (molecules, quantification limits, MRL).

■ Olivier Magat



# POOLED SELF-MONITORING PLANS

## THE FEED PLAN

A collective tool that has proven its usefulness

The feed is monitored through the feed materials from which it is made for pesticides, dioxins and PAHs, heavy metals, hydrocyanic acid, atropine and scopolamine, datura and ragweed, ergot, volatile mustard oil, inhibiting substances and theobromine. Mycotoxins and salmonellas are monitored in feed materials and compound feed. Searches for *Campylobacter*, *Listeria*, *coccidiostats* and nickel are conducted for compound feed.

**In 2018, this plan recorded seven events exceeding the "red" threshold.**

81 participating companies      4,573 feed materials analysis results  
17,5 million tonnes of feed      4,183 feed results

## THE SUPPLEMENT PLAN

Continuation of the "undesirable substances" observatory

Manufacturers of feed supplements (premixes, mineral feed and other supplementary feed), which are important users of mineral origin products have set up a pooled self-monitoring plan targeting these feed materials.

The main contaminant/matrix couples are: heavy metals / mineral feed materials (phosphates, carbonates...) and trace elements, dioxin-PCBs / clays and trace elements.

**In 2018, this plan relayed two alerts for lead and two alerts for mercury.**

33 participating companies      3 845 analysis results  
985 000 tonnes equivalent mineral feed

## THE MILK REPLACER PLAN

A recent plan for specific feed materials

Beyond the search for chemical contaminants, the pooled milk replacer self-monitoring plan strongly focuses on bacteriological contaminants: *anaerobic sulfate-reducing bacteria*, *Clostridium perfringens*, *Escherichia coli* and *Salmonella*.

The targeted feed materials are dairy products and also plant and animal fats, minerals and plant products.

**No result has exceeded the limit thresholds since the plan was launched in 2015.**

5 participating companies      14 contaminants sought  
35 feed materials monitored

## THE ORGANIC PLAN

A collective tool developed to support the organic sectors

The specificity of the "organic" pooled self-monitoring plan is the establishment of thresholds which, in addition to health risks, take into account the risks of declassification of organic animal feed. The search for pesticide residues adopts a different view in this plan from that of the other pooled self-monitoring plans. GMO monitoring is an integral part of the plan in line with the requirements for organic products. The agenda for this annual plan is based on the cereal harvest period from July to June.

**For the 2017-2018 campaign, the threshold values were updated to take into account the end of use of Piperonyl Butoxide in organic agriculture.**

19 participating companies      13 plant feed materials  
350,000 tonnes of feed      367 analysis results

## THE STNO PLAN

A reinforced self-monitoring plan

For its 4th year of existence, this plan has seen the arrival of numerous participants. The latest plan aims to monitor the level of GMOs in the feed materials used in animal feed. As a monitoring tool for factories committed to a "GMO-Free Feed" approach, this plan focuses on the feed materials for which there exist GMO varieties authorised for sale in Europe. Corn, soya and colza are varieties monitored in the plan. For each of these, all genetic events authorised in Europe are sought. In 2019, a new species will added with beet.

**In 2018, no non-compliant results were recorded; one corn sample and 8 soya samples were subject to a detection of GMOs, but in quantities lower than the regulatory threshold of 0.9%.**

78 participating companies      3 plant feed materials  
153 production sites      341 analysis results

## HOW DOES IT OPERATE ?



Manufacturers volunteer to pool their self-monitoring results. Each one declares the volumes produced for animal feed.



The results substantiate the analysis of group and individual company risk. The data history contributes to monitoring at the level of the profession.



In dedicated working groups, professionals build a pooled self-monitoring plan based on risk analysis - volumes concerned.



At any time, each company may consult the analyses for each plan and compare them to what is done at their own level.



OQUALIM spreads the analyses to be done between participants according to the matrix/ contaminant couples and each participant's profile.



A laboratory working group references the laboratories by analysis profiles. These laboratories analyse the samples provided by the participants.



The participants are alerted in the event that a threshold value of an analysis entered into the plan is exceeded. Each participant can then take the necessary, adapted measures.



The results feed a specific plan database. Each participant may consult the sample results provided by the participant community.



Pooling of results = sufficient accumulation of results to carry out exploratory studies with a variety of sources by sharing the load.

What 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).

OQUALIM  
41 bis boulevard La Tour-Maubourg  
75007 PARIS - FRANCE  
www.oqualim.com - contact@oqualim.fr  
+33 (0) 1 44 18 63 55