Food safety, an essential link in the dairy chain

Interview with Choreh Farrokh, head of CNIEL's food safety department

Why is food safety an issue?

It's a major issue quite simply because milk is a live product that contains micro-organisms (bacteria, yeast, mould, etc.). Managing the microbiology of milk is one of the main concerns of the dairy industry, and there are two reasons for this. The first is that milk and dairy products intended for human consumption must be healthy and free of harmful or pathogenic germs. The second reason is technological: milk intended for processing cannot be used effectively if it does not present optimal physical, organoleptic and bacteriological qualities!

For example, the presence of butyric acid – non-pathogenic bacteria that are naturally present in soil – can contaminate milk during milking and compromise an entire cheese production run! We should also remember that the French dairy industry is renowned worldwide for its raw-milk cheeses. Managing live bacteria is essential for this kind of product!

CNIEL plays an important role in the safety of milk and dairy products. How does this work?

The slightest safety problem with a dairy product would have a negative impact on the entire industry, so it's everyone's business. Numerous controls are carried out at every stage, from the farm to the factory. CNIEL's role is to provide scientific and technical support to all dairy professionals. CNIEL experts carry out ongoing, highly specialized scientific monitoring to better understand and anticipate the risks of contamination. All this expertise is of course shared with professionals. And if information is lacking, CNIEL can commission research. To take a recent example, CNIEL has commissioned two research programmes on STEC (pathogenic *Escherichia coli*) in order to identify sources of contamination, understand their growth in cheese and better understand the mechanisms of pathogenicity.

In the past, the dairy industry has faced several food safety crises. What key actions have been introduced?

CNIEL has defined four focus areas for experts' work.

The first challenge is managing biological risks. We have just mentioned this: it means preventing micro-organisms that could contaminate milk from altering its physical, chemical and bacteriological features. This risk management requires expert knowledge of all these micro-organisms. CNIEL works with public

research institutes (INRA, CNRS and veterinarian schools), as well as technical centres (IDELE and Actalia Produits Laitiers) to set up research programmes.

Another challenge is chemical contaminants. These are undesirable substances that can come from environmental pollution or poorly managed processing. For example, incomplete rinsing of a machine can leave traces of biocides in the equipment. Here too, CNIEL carries out proactive monitoring and shares information with companies so they can implement preventative action.

Animal health is another key topic for the dairy industry. Certain bovine diseases can impact the quality of milk and its collection. CNIEL plays an important role in sharing knowledge and recommendations with processors and farmers: What to do in the event of an alert on the farm? How to act if a product is contaminated?

Finally, our work also focuses on a very powerful tool for assessing risk. This tool carries the rather unwieldy name "QRA", which is short for quality risk assessment. This methodology is used in different sectors (hospitals, insurance, etc.) and recognized by national, European and global authorities as a tool for assessing microbiological risks. QRA offers a solution for all food safety questions that may be posed by companies: What is the level of contamination from pathogenic micro-organisms in my products? Will this level drop if I change my recipe (temperature, acidity, etc.)? What best-before date should I use to guarantee the safety of my product? Is my sampling plan effective? And so on. The dairy industry is the most advanced on this topic. The CNIEL and Actalia Produits Laitiers teams have been working on this since 2003.

In the event of alerts, what measures are taken by CNIEL to manage crises?

Every time an event could impact the safety of milk and dairy products or harm their image, a CNIEL crisis team can be mobilized to best defend the industry and respond to accusations, which are often unfounded. This involves media monitoring, reports and research developed during normal periods that enable us to identify and also anticipate sensitive issues, to better analyse the situation during alerts or crises, and to manage them in the most effective way.