

## Chapter 20

# Risk–Off Method: Improving Data Quality Generated by Chemical Risk Analysis of Milk

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### ABSTRACT

*Here the Risk-Off Method is presented as a contribution to improve the quality of data and information using milk chemical safety as a model, as overseen by the National Plan for Control of Residues and Contaminants (PNCRC) of the Brazilian Ministry of Agriculture, Livestock and Supply (MAPA). In particular, Small and Medium Enterprises (SMEs), which notably lack internal expertise, could benefit from the Risk-Off method, given that SMEs worldwide contribute significant amounts of food to meet global needs. This study develops an innovative tool to help countries provide robust and transparent chemical safety guarantees for their food products. Creating a flexible base platform to appropriately pre-classify results generated by laboratory testing of food samples, the method pre-processes data undergoing the process of Knowledge Discovery in Databases – KDD, producing systemic intelligence deriving from effective, proactive assessment and management of chemical safety risks in foods, a complex issue of increasingly global concern.*

### ORGANIZATION BACKGROUND

This section provides a background about the Brazilian Ministry of Agriculture, Livestock and Supply – MAPA, and about the National Plan for Control of Residues and Contaminants – PNCRC, as a major service in the area of food

safety monitored by this Ministry. The section addresses the type of business, the products or services provided, the management structure, the strategic planning and presents some ideas about the organizational culture. Thus, authors hope to provide here information that helps understand the past history, and the main reasons and strategies for the existence of PNCRC in the global food safety scenario.

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## The State: Enforcing Food Safety

Since ancient times, the State plays an important role for society as a provider of goods and services that cannot be supplied by other agents, because there is no incentive to do so, or because the nature of the agents do not give them enough credibility to supply certain goods for the society. Authors (Jaffe & Henson, 2005) claim that the ensuring of food security, a basic premise for the development of a nation, always permeates the actions and intentions of government and civil society organizations. For a country with Brazil's agricultural potential, this condition is necessarily permeated by large-scale food production operations. Importantly, the State must guarantee that their responsibilities are effectively implemented and promoted through broad, nondiscriminatory, and science-based public policies. Furthermore, as an exporter, countries must have the ability to comply with, or show sanitary equivalency to importing countries' requirements.

## Open Innovation Process: SMEs as Critical Stakeholders

In line with this rationale, the Ministry of Agriculture, Livestock and Supply - MAPA seeks to continuously optimize the chemical safety of food, and thus positively impacting public health standards. This case study is one of the results of a new model of participatory management as currently applied in Brazil, adopting open innovation strategies that enable and encourage the participation of numerous institutions, universities, aiding especially small and medium enterprises in their ever challenging food safety agenda, so that tools used for quality management and control processes are shared among all relevant process stakeholders regardless of size *per se*. This paradigm shift encourages the direct participation of all relevant stakeholders in strategic PNCRC planning, along with unique venues for stakeholder *bona fide* involvement and feedback. This allows for the introduction of new ideas and

technologies in the innovation process, which is arguably of key importance to SMEs, which often lack the level of internal expertise when compared to large companies. In addition, SMEs account for large shares of food production worldwide, which makes their case, and awareness of this approach, even more relevant. Encouraging results of this process of open innovation have been officially evaluated during the annual meetings of national managers of PNCRC, together with key stakeholders concerning chemical food safety.

## Food Safety

For the European Union (EU, 2000), to ensure food safety, the State should consider that production and consumption of food, essential in any society, also entail economic, social and environmental consequences. Although public health protection is always a priority, these wider issues should also be taken into consideration in food policy. Moreover, the quality of the environment, including ecosystems, may affect different stages of the food chain, and thus the quality and safety of the ensuing foods. Environmental policy therefore, plays an important, yet often neglected role when it comes to ensuring food safety. The economic importance and omnipresence of food in the lives of people imply that food safety should be one of the main interests of society in general and, in particular, public authorities and producers. In fact, the right of access to safe food for the population is a determining factor in the sustainability of their society. As a result, the food production chain becomes increasingly complex.

## Food Safety Policy

Reflecting widely accepted concepts, the European Union (EU, 2000) recommends that effective food safety policies must recognize the interconnections that characterize food production. Policymaking thus involves the evaluation and control of risks posed to the health of consumers, including raw

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