Qualitative requirements for the development of the national control plan. Assessment and optimisation of the process control concept.

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Key words
National control plan, food safety, risk assessment, risk-based control

Aim of the study
To develop methods to assess the efficiency of the national control plan at the level of process control and to provide guidelines for its optimization. To develop a risk-based control system which reaches a maximum level of consumer protection with a minimum investment of resources. The project aimed to use hazards of processes related to dairy production along the food chain as an example.

Material and methods
This study performed a critical evaluation of the current risk assessment. A design of a network of dairy production and the development of a stochastic model to compare different strategies for risk-based controls were planed but not performed.

Results and significance
A description of the risk assessment was developed. Programs in other countries were consulted to see which similarities and differences are to be found compared to the Swiss approach. Also international guidelines were revised to see the agreement of the Swiss approach with this. A set of recommendations was made: 1) implementation of a more structured approach towards using data from surveillance systems and scientific literature (prevalence of hazards or pathogens, effect of different food processing steps on the reduction of hazards or contamination with hazards). 2) Focus on a global approach rather than on individual operations or plants taking into account that the connections between operations are important in determining the risk path. 3) Centralization of data collection allowing to analyze them dynamically and use those results to validate and further improve the risk assessment. 4) Improvement of incentives for operations complying well with national regulations (reduced baseline control frequencies as a reward, similar to the Danish system) that could help to increase the motivation of the operations for improved compliance.
Resources being scarce, the risk assessment's accuracy shouldn't be achieved at any cost but in relationship to the needs and the feasibility of the risk managers. Performing a quantitative and stochastic model could be considered which takes variability and uncertainty into account, and allows for sensitivity analysis to identify the most important factors influencing the outcome of the RA. For standardization purposes, collaboration and international trade; a coordination between different countries would be beneficial. Finally, more research is needed on methods for combining risks from different control areas, and on how to best translate different risk scores in risk-based control frequencies.
After the project started, the risk-based controls along the food chain didn't follow a unified approach (as expected). The network analysis and modelling lost significance for their implementation. The project was discontinued when the PhD student decided to stop her PhD.

Publications, posters and presentations
Lefevre, M.; Presi, P.; Michelini, F.; Schärrer, S.; Breidenbach, E.; Schuepbach, R. (2012) Risk-base process control for improved food safety: a Review of the concept of the risk-based controls along the food chain in Switzerland. Article submitted to Journal of Food Control in September 2012.

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