CONTROLLING FOOD MICROBIOLOGICAL ISSUES

TNO innovation for life

The food industry faces various challenges affecting food safety and quality. Changing consumer demands, raw materials with fluctuating quality, new emerging food pathogens, and the changing scale of production, all can influence the microbiological status of the (end-) product. These challenges require adequate tools. TNO offers the industry and community tailor made solutions to address and prevent these complex micro-biological issues.

The safety of food and water is of eminent importance for the protection of human health. Microbiological safety is becoming an increasingly important issue since highly virulent antibiotic resistant strains often from veterinary origin are rapidly emerging.

Adequate information on the safety of food products is often missing due to the lack of available tools for real time sensitive and specific monitoring. Additionally, monitoring information does not always result into adequate preventive measures.

QUICK AND SENSITIVE METHODS

Many pathogens and spoilage organisms can cause food safety related problems. Quick and sensitive methods are needed to characterize and identify these issues and provide quantitative risk assessments. To obtain more accurate assessments, our scientists apply general approaches, such as DNA based technologies, combined with detailed knowledge of the specific situation or issue. These approaches result in tailor made solutions, where speed and sensitivity is key.

TNO'S EXPERTISE

The dynamics of microbial populations
Examples of application:

❭ Identification of microbiological effects of processing changes
❭ Early warning and prediction of changes with respect to quality and safety of products (food, feed, fermentation products)
❭ Identification of microbiological causes of quality deviations
❭ Identification of the role of microbes in biofilms within a production line
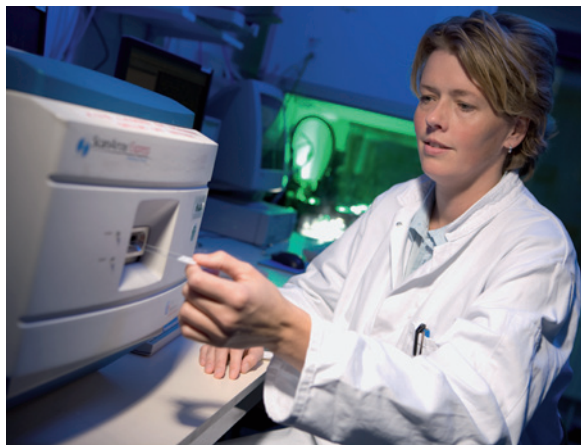
TNO develops new, quick and sensitive methods.

Characterization and identification of microorganisms

Examples of application:
❭ Rapid identification of microbial outbreaks (e.g. EHEC compared to non pathogenic strains)
❭ Detection of the source(s)
❭ Prediction of microbial behavior

Rapid sensitive detection systems for specific pathogens and spoilage organisms

Examples of application:
❭ New technologies for improvement in QC-lab and service efficacy
❭ Replacing culture dependent micro-biological analysis with improved analysis methodology (quicker, more specific, multiple organisms)
❭ Quantitative screening of shelf-life effects when changes in product formulation are applied

Monotoring systems for hygiene

Examples of application:
❭ Improving hygiene testing and hygiene prediction
❭ Assessing new technologies for cleaning and disinfection
❭ Knowledge based reduction of cleaning allowing prolonging production runs

Molecular sensors based on microorganisms

Example of application:
❭ Screening novel natural antimicrobial compounds
❭ Screeningstool for improvement of preservation strategies and technologies
❭ Screening disinfection activities
❭ Antibiotics assay
❭ Shelf life prediction
❭ Viability assays

Consultancy

❭ Microbiology food safety in relation to regulatory consequences
❭ Regulation of biocides and disinfectants
❭ Preparation of safety statements
❭ Determination of pathogenicity

❭

TNO.NL

TNO HEALTHY LIVING

TNO initiates technological and societal innovation for healthy living and a dynamic society.

TNO
Utrechtseweg 48
P.O. Box 360
3700 AJ Zeist
The Netherlands

Claudia van den Berg
P +31 (0)88 866 18 39
E claudia.vandenberg@tno.nl