SUMMARY OF NFA'S RESEARCH PROGRAMMES

Chemical and Microbiological Work Environment

NFA's research in the chemical and microbiological work environment contributes to the national goal outlined in the National Strategy for Occupational Health and Safety Research (BM2020): Safe and healthy work involving chemicals – fewer people should be exposed to hazardous chemicals in the workplace.

National Research Centre for the Working Environment

Overall Objectives

NFA has four overarching objectives for its research in the chemical and microbiological work environment:

1 Identify both new and known hazardous exposures and processes in the work environment, and the mechanisms behind their health effects by:

- Continue investigating the potential risks associated with increased recycling of materials and waste resulting from the green transition.
- Enhancing our understanding of the link between external and internal human exposure, and the specific effects this has on workers' health.
- Documenting exposures for politically prioritised hazardous substances and materials, as well as new exposures and processes for which adequate knowledge about exposure levels is currently lacking.

2 Identify mechanisms for the development of adverse health effects caused by exposure to harmful substances in the work environment by:

- Prioritising research that examines causal relationships and Adverse Outcome Pathways.
- Conducting research into causal links between occupational exposures and health effects.
- Applying advanced methods such as -omics and artificial intelligence (AI) for data processing and analysis.

3 Develop new methods for characterising and measuring exposures by:

- Contributing to the development of well-documented and standardised methods (CEN), as well as developing OECD technical guidelines (TG) and guidance documents (GD) to support regulation and measurement of exposure to chemical and microbiological agents in the work environment.
- Contributing to new and efficient methods (e.g. by using AI) for measuring chemical and microbiological exposure at the workplace.
- Further developing and expanding NFA's web-based digital tools for risk assessment, risk management, and sustainability analysis.

4 Research solutions that can be used both by companies involved in the research projects and implemented more broadly by:

- Carrying out additional intervention projects.
- Communicating examples of the use of solutions to inspire companies and other stakeholders.

Priority Themes

NFA will prioritise the following themes in its research from 2025–2028:

Theme 1
Microbiological exposure

As a consequence of societal developments and the green transition, workers in e.g. the waste sector are exposed to a complex mix of microorganisms at work.

We will conduct workplace measurements and interventions across the country.

We will investigate the consequences of lifelong exposure to high concentrations and identify solutions.

Theme 2
Chemical and particulate exposures

We will identify hazardous exposures, assess their consequences, and through intervention projects, find effective solutions to reduce exposure, adverse health outcomes, and sickness absence.

We will also assess the potential economic benefits of improving the work environment and disseminate the solutions that provide value.

Theme 3
Health effects and biological mechanisms of action

We will contribute to national and international hazard classification and risk assessment by evaluating and conducting research into the harmful effects of chemical and microbiological influences in the workplace – e.g. cancer, chronic obstructive pulmonary disease (COPD), and harm to fertility and foetal development.

Theme 4
Methods and tools

We will contribute to the development of new well-documented methods for the collection, measurement, and analysis of substances and materials.

We will also be involved in developing tools for risk assessment, risk handling, and risk management, as well as sustainable and safety-by-design (SSbD) approaches.

Theme 5
Work environment and reproduction

We will generate knowledge about conditions in the work environment that may affect reproductive health – i.e., both male and female fertility, the course of pregnancy, and the child's development over time.

The research will be based on both registry studies, job-exposure matrices, and practice-oriented studies.