



**nks**  
Nordic nuclear safety research

DENMARK

FINLAND

ICELAND

NORWAY

SWEDEN

# A COMMON NORDIC VIEW

**Nordic problems need Nordic solutions.** NKS aims to facilitate a common Nordic view on nuclear safety and radiation protection including emergency preparedness. This requires common understanding of rules, practice and measures, which may vary between countries, as well as with time. The work builds on a foundation of over sixty years of Nordic collaboration on related issues.

## ADDRESSING CURRENT SOCIETAL QUESTIONS

NKS keeps an open eye to societal changes and events that might influence requirements and perception of nuclear safety, radiation protection and emergency preparedness in the Nordic countries. For instance the Fukushima accident prompted the arrangement of NKS joint reactor safety and emergency preparedness seminars on lessons learned and future implications for Nordic society.

## STRENGTHENING RESPONSE CAPACITIES

By maintaining vital informal networks between Nordic authorities, nuclear power companies, scientists and other stakeholders, the region's potential for a fast, coordinated and targeted response to urgent issues is strengthened. Thereby, problems can be tackled quicker, more efficiently and consistently and at lower cost than if they needed to be addressed on a national scale.

## SECURING NORDIC COMPETENCE AND KNOWLEDGE BUILDING

Through collaborative NKS activities, Nordic competence and capabilities are maintained and strengthened, and solutions to Nordic problems are disseminated through a sustained informal network. NKS publications are available cost-free on the internet. A special effort is made to engage young scientists and students, to ensure knowledge and expertise for the future.

## FINANCING OF NKS ACTIVITIES

NKS is mainly financed by Nordic authorities, with additional contributions from Nordic organizations that have an interest in nuclear safety. The budget for NKS in 2021: about 8.5 million Danish kroner (€ 1.15 million). In addition to the funding sought from NKS, participating organizations are asked to provide a similar amount of in-kind contributions. This may take the form of working hours, travel expenses or laboratory resources. Without these in-kind contributions it would not be possible to carry out NKS activities.

## MAIN FINANCIERS:



## CO-FINANCIERS:



## NKS ACTIVITIES

NKS activities can take the form of research activities, test exercises or information collation/review exercises. Alternatively they can aim to harmonize approaches to common problems or spread and distribute knowledge and results through seminars, workshops and educational/training courses. Common to all NKS activities is that the results should be beneficial and made available to concerned end users in all Nordic countries. Aspects of nuclear safety, radiation protection and emergency preparedness may be combined in one activity.

## RESEARCH AREAS

Areas of interest covered by NKS activities fall under two main programmes, NKS-R and NKS-B, which cover the following specified research areas.

### NKS-R programme:

- Reactor physics
- Thermal hydraulics
- Severe accidents
- Risk analysis and probabilistic methods
- Organisational issues and safety culture
- Decommissioning and management of reactor waste and spent fuel
- Plant life management and extension.

### NKS-B programme:

- Radiological and nuclear emergency preparedness
- Measurement strategy, technology and quality assurance
- Radioecology and environmental assessments.



## DO YOU

have suggestions for a nuclear safety or radiation protection related activity?

Contact us via [www.nks.org](http://www.nks.org)

# SOME RECENT EXAMPLES OF NKS ACTIVITIES:

### NKS-R

#### Safety Culture in the Nuclear Industry

Good safety culture is essential for ensuring safety in the nuclear industry. The predominant approaches for safety culture are based on the assumption of stable and relatively homogeneous organizations, which often does not apply to contemporary project-oriented and turbulent environments. The work performed within the NKS-R activity SC\_AIM has resulted in the development of twelve principles of safety culture change that summarize the essential good practices for leading safety culture change. Guidelines for the implementation of safety culture ambassadors have been developed as a novel method for safety culture improvement (NKS-R activity SC\_AIM).

### NKS-R

#### Extraction and Analysis of Reactor Pressure Vessel Material

Irradiation induced ageing of the weld material of the reactor pressure vessel (RPV) is a limiting factor from a long term operation perspective. The closed Barsebäck 2 reactor gives an opportunity to harvest samples from the RPV, which was manufactured and welded with the same technique and high amounts of nickel and manganese as most Nordic RPVs. A test program to analyze the as-aged material properties by mechanical testing and high resolution microscopy is ongoing within the NKS-R activity BREDA-RPV.

### NKS-B

#### Combined analysis of primary and scattered components in mobile gamma spectrometric data for detection of materials out of regulatory control

The activity aims to investigate whether the combined analysis can be used to: (i) increase detection distances of shielded sources compared to using primary photon assessments only, (ii) determine the distance to the source and the thickness of shielding when composed of common building material, (iii) determine the real activity of the shielded source (NKS-B COMBMORC).

### NKS-B

#### Adaptation of FDMT to the Nordic Conditions

This activity addresses deficiencies in the state-of-the-art food ingestion dose model, FDMT (integrated in the European standard decision support systems ARGOS and RODOS), e.g., by adding foodchains of interest that are missing and improving the modelling of the radionuclide transfer in Nordic terrestrial food chains. The final product of the activity is a terrestrial food chain model, EcoFood, adapted to the Nordic conditions. The model is implemented in the Ecolego software (NKS-B ECOFOOD).



## HOW TO APPLY

Nordic companies, authorities, organizations and researchers can submit proposals for NKS activities under the NKS-R and NKS-B programmes. Usually at least three of the five Nordic countries should participate in an activity. Activities submitted under annual calls for proposals are assessed according to criteria important to the objectives of NKS, with final funding decisions made by the NKS board. NKS funding of Non-Nordic organisations is not possible, but their participation is allowed under certain circumstances. Contact the NKS secretariat for details.



## THE NKS WEBSITE

On the NKS website ([www.nks.org](http://www.nks.org)) information is available on funding opportunities, travel support for young scientists, current activities and upcoming seminars. Presentations from seminars held are available for download as are reports from all completed NKS activities. It is also possible to discover more information on NKS and the history of Nordic co-operation in nuclear safety.

For funding: [www.nks.org/handbook](http://www.nks.org/handbook)

For reports: [www.nks.org/reports](http://www.nks.org/reports)

## NKS EMAIL LIST

NKS sends out newsflashes and newsletters throughout the year providing information on call for proposals, upcoming seminars and published reports. If you wish to join the NKS email list please sign up via the NKS website.



SCAN THE CODE TO VISIT WEBSITE

Photo: Gamma Sample

Source: University of Helsinki, Finland



## NKS ON LINKEDIN

Follow NKS on LinkedIn at

<https://www.linkedin.com/company/nks---nordic-nuclear-safety-research/>

## CONTACT

If you wish to learn more about NKS and NKS activities visit our website or contact the NKS secretariat.

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