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. Non-Nordic participation may be allowed under certain circumstances.

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.

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.

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.

NKS activities

These 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 safety
- Nuclear power plant life management and extension
- Decommissioning and handling of generated waste
- Organizational issues

NKS-B programme:

- Emergency preparedness
- Measurement strategy, technology and quality assurance
- Radioecological assessments
- Wastes and discharges

Some recent examples of NKS activities

Safety Culture in the Nuclear Industry

A good safety culture is an essential ingredient 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 theoretical and empirical work performed within the NKS-R activity SC_AIM resulted in the development of a preliminary framework for evaluating the applicability of safety culture assurance and improvement methods (NKS-381).

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 has been prepared within the NKS-R activity BREDA-RPV (NKS-385).

Unmanned Aerial Monitoring Platforms

With the forthcoming of small and inexpensive drone platforms, new possibilities for radiological surveys have arisen. Drones can be used as a supplement to existing measurement capabilities, enabling fast measurements in potential hazardous areas without danger to humans. The NKS-B activity NORDUM made a first approach to cover and compare different systems and approaches for use of drones in the Nordic countries, and the scope is expanded in the NKS-B activity NEXUS, including exercises for, e.g., urban environments (NKS-383).

Meteorological Uncertainty in Predicting Airborne Contaminant Dispersion

A series of NKS-B activities have looked into the influences of meteorological uncertainties on long-range atmospheric dispersion calculations. These have been found to be large depending on the weather situation, with significant implications for nuclear emergency preparedness and decision making. In the NKS-B MESO activity, the focus was on short-range dispersion models used up to about a hundred km distance. Results also here show large influences. A new activity, NKS-B AVESOME, combines uncertainties from meteorology and source term (NKS-380).

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.

Do you have suggestions for a nuclear safety or radiation protection related activity? Contact us via www.nks.org

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 2017: about 9 million Danish kroner (€ 1.2 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

- Danish Emergency Management Agency
- Ministry of Economic Affairs and Employment, Finland
- Icelandic Radiation Safety Authority
- Norwegian Radiation Protection Authority
- Swedish Radiation Safety Authority

Co-financiers

- Fennovoima Oy, Finland
- Fortum Power and Heat Ltd, Finland
- TVO, Finland
- Institute for Energy Technology (IFE), Norway
- Forsmark Kraftgrupp AB, Sweden
- OKG AB, Sweden
- Ringhals AB, Sweden
- Svensk Kärnbränslehantering AB, Sweden

The NKS website

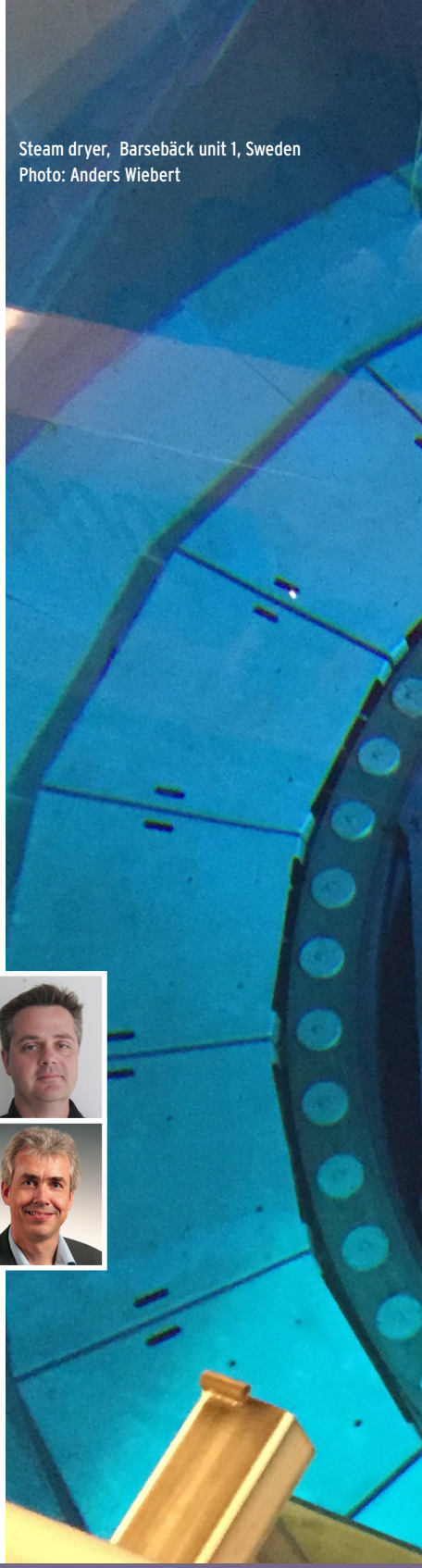
On the NKS website (www.nks.org) information is available on funding opportunities, travel support for young scientists, current activities and upcoming seminars. Presentations from seminars held are available for download as are reports from all completed NKS activities. It is also possible to discover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

NKS on LinkedIn

Follow NKS on LinkedIn at
https://www.linkedin.com/company-beta/16196099/



Steam dryer, Barsebäck unit 1, Sweden
Photo: Anders Wiebert

Contact

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

nks@nks.org

Telephone +45 4677 4041

NKS Secretariat

P.O. Box 49

DK-4000 Roskilde, Denmark

Christian Linde, NKS-R programme manager

Kasper Grann Andersson, NKS-B programme manager

Sigurður M Magnússon, NKS chairman

Finn Physant, NKS secretariat

nks
Nordic nuclear safety research