



Nordisk kernesikkerhedsforskning
Norrcænar kjarnöryggisrannsóknir
Pohjoismainen ydinturvallisuustutkimus
Nordisk kjernesikkerhetsforskning
Nordisk kärnsäkerhetsforskning
Nordic nuclear safety research

NKS-B Status Report

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Status summary

Overall the work in NKS-B is progressing well. Since the last NKS-B status report was made to the NKS-Board in January 2017, 4 new final reports from completed NKS-B activities have been published on the NKS website. All NKS-B activities that commenced prior to 2018 are completed. Of the 9 NKS-B activities that started in 2018, contracts have been agreed and signed with all. Activities that started in 2018 are all currently on schedule.

NKS-B reports

The following NKS-B reports have been published on the NKS website since the last NKS-Board meeting.

[AVESOME](#)

J. Havskov Sørensen et al.

Added Value of uncertainty Estimates of SOURCE term and Meteorology (AVESOME)

[NORDIC-ICP 2016](#)

J. Qiao et al.

An inter-comparison exercise on the application of ICP-MS techniques for measurement of long-lived radionuclides

[NORDIC-ICP 2017](#)

J. Qiao et al.

NKS ICP User 2017 Seminar Proceedings

[NEXUS](#)

M. Gårdestig et al.

Nordic Exercise for Unmanned Systems

NKS-B activities from 2018 (January)

AUTOMORC

Improvement of automatic methods for identification of radioactive material out of regulatory control (MORC) by mobile gamma spectrometric search

Activity leader: Christopher Rääf (Lund U.)

NKS-B funding: **454 kDKK**

Milestones defined in contract:

1. June 30, 2018: Description of the field experiment to be conducted in a detached area in southern Sweden during three days in the period June – August 2018. Mandatory participation of all collaborating organisations.
2. September 30, 2018: Preliminary results from the field experiment with comparison between model calculations of maximum detection distances and experimentally determined distances, and comparison between real values and calculated source distances and activities using the Bayesian statistical method, where calculations are made on a stand-alone computer. Collaborating organizations provide with the requested data.
3. December 30, 2018: Final report - results from the outcome of the 2018 field experiment. Description of the Bayesian statistical method to determine distance and activity to single

point sources in mobile detection. A stand-alone prototype computer program for the Bayesian statistical method.

Status

Contract signed. Progress report with details on planning of the field experiment received. Progress is on schedule.

OPTIMETHOD

Optimization of analytical methods for simultaneous determination of important alpha emitting radionuclides in nuclear and environmental samples

Activity leader: Xiaolin Hou (DTU)

NKS-B funding: **450 kDKK**

Milestones defined in contract:

1. Project meeting, Feb 2018
2. Sampling. Sample preparation and shipment for intercomparison, Feb-Mar. 2018
3. Analysis of intercomparison samples by partner labs, April-Oct. 2018
4. Validation and optimization of analytical methods, July-Oct. 2018
5. Data analysis and evaluation of intercomparison results, Oct.-Nov. 2018
6. Final report, 31st Dec. 2018

Status

Contract signed. Milestones 1 and 2 are done. Analysis is ongoing. Progress is overall on schedule.

RADWORKSHOP

Workshop on radioanalytical chemistry for nuclear decommissioning and waste management

Activity leader: Jixin Qiao (DTU)

NKS-B funding: **370 kDKK**

Milestones defined in contract:

1. Preparation of the workshop
2. Organisation of the workshop
3. Summary and evaluation of the workshop
4. Final report

Status

Contract signed. Workshop flyer made. Draft program announced. Seminar announced on NKS webpage, in NewsFlash and through individual invitations. Progress on schedule.

GAMMARAY

Seminar/workshop for users of gamma-ray spectrometry

Activity leader: Henrik Ramebäck (FOI)

NKS-B funding: **362 kDKK**

Milestones defined in contract:

1. Planning meeting (Spring 2018)
2. Announcement of seminar and intercomparison (Spring 2018)
3. Seminar/workshop (Autumn 2018)
4. Final report (15 December 2018)

Status

Contract signed. Preliminary announcement of seminar/workshop made on NKS website and in NewsFlash. Progress on schedule.

NORCO II

Nordic Cosms - part II

Activity leader: Tanya Helena Hevrøy (NRPA)

NKS-B funding: **460 kDKK**

Milestones defined in contract:

Meeting with all partners 10/2-2018

NRPA & SU evaluate restrictions and regulations at institutes for experimental cosms 5/2-18

Report from survey UEF 31/9-18

Microcosm study 30/8-18

Data analyses 30/10-18

Draft scientific papers 31/12-18

Final report 16/12-18

Status

Contract signed. Planning meeting held, restrictions and regulations evaluated. Progress on schedule.

AVESOME

Added value of uncertainty estimates of source term and meteorology

Activity leader: Jens Havskov Sørensen (DMI)

NKS-B funding: **436 kDKK**

Milestones defined in contract:

1. Severe accident scenarios will be selected and corresponding realistic source-term ensembles prepared for atmospheric dispersion model calculation. If available, probabilities (weighting factors) associated with the source term will be assigned.
2. A protocol for automatic communication between the DSS and the high-performance computing (HPC) facility will be developed.
3. Efficient parallelized calculation at the HPC facility will be established.
4. The graphical user interface of the DSS employed in AVESOME will be improved in order to adhere to recommendations of the “NKS Workshop on the Use of Meteorological Uncertainty Estimates for Decision Making during a Nuclear Emergency”, 2015.
5. The methodology will be applied to selected meteorological situations and corresponding source-term ensembles by employing the DERMA atmospheric dispersion model and using numerical weather prediction model data of the DMI ensemble prediction system.
6. A seminar will be organized at DMI in Copenhagen on the future use of source-term ensembles describing the inherent uncertainty. The Nordic radiation protection authorities as well as members of CONFIDENCE and FASTNET will be invited.
7. The final numerical results will be made available in a format facilitating import into the

ARGOS DSS, which will thereby host a demonstration of the AVESOME results.

8. The methodology developed and the results obtained will be reported in an NKS report.

Status

Contract signed. First 3 points done. Seminar entitled “Uncertainties in Decision Support – on the use of meteorological and source-term data in nuclear emergency management” planned for September. Progress on schedule.

RADSHIELD 2

Activity estimation of shielded or hidden radionuclides in emergency conditions

Activity leader: Henrik Ramebäck (NRPA)

NKS-B funding: **427 kDKK**

Milestones defined in contract:

1. Planning meeting (March 2018)
2. Field trial (August 2018)
3. Draft report (October 2018)
4. Final report (December 2018)

Status

Contract signed. Planning meeting done. Progress on schedule.

NANOD

Natural radioactivity in the Nordic diet

Activity leader: Mari Komperød (NRPA)

NKS-B funding: **291 kDKK**

Milestones defined in contract:

1. Finalise sampling plan
2. Sampling completed and all analyses completed
3. Final report summarising Nordic seafood consumption, existing data, sample overview and results of samples analysed.

Status

Contract signed. Sampling plan done. Progress on schedule.