NKS-B Status Report

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Summary

Overall the work in NKS-B is progressing well

- Since last NKS-B status report
  - *4 final reports published on website*
- Delayed activities (from before 2014)
  - *None*
- Activities commencing in 2014
  - *10 (of 12) completed, 2 nearing completion (FAUNA, NORMIN)*
- Activites commencing in 2015
  - *All 10 contracts signed, work on schedule*

Final reports published on NKS website (since last Board Meeting):

- CONCORE
- RAPID-TECH
- SEMUNARS
- STANDMETHOD

FAUNA

Activity leader – Jens Havskov Sørensen (DMI)

- Coordinator has had to take leave for some time for personal reasons.
- A fully acceptable draft report has been circulated in mid-May for final commenting.
- Budget 260 kDKK

NORMIN

Activity leader – Dina Solatie (STUK)

- Final report was according to contract due by 31/1-2015.
- Mail received 25/2-2015: 'I am very sorry but we need some more time for the NKS-NORMIN final report. My new job is taking almost all my time now. So is there any change to finish the report for example in the end of April?'
- The requested extra time was granted, and the final report was expected by the end of April. However, more time was again requested. A new final deadline of 10th of June was agreed on.
- Comprehensive literature study reports have been circulated (40+ pages)
- Budget 450 kDKK

NKS-B Seminars 2015

IDEA: Internal Dosimetry Workshop, successfully held at SSM, Solna, 18-19 May, 2015. Announced on NKS website and in NKS NewsFlash, 20 participants. There is a wish for standardisation of dose estimation. IMBA favorised – used by many of the participants.

NORCOP-COAST: Two day workshop on response to nuclear icebreaker accidents. To be held 13-14 October 2015 in Tromsø. Announced on NKS website and in NKS NewsFlash.

NUFORNOR: Seminar on analytical techniques for nuclear forensics, to be held in Norway (probably Ås). Date not yet decided (probably autumn). Coordinator has been prompted for information to be used in announcements in NewsFlash and on NKS website.

FAUNA: Workshop on uncertainty of atmospheric dispersion modelling, to be held late in the project. Date and place not yet decided. Will be announced when the coordinator is back from leave.

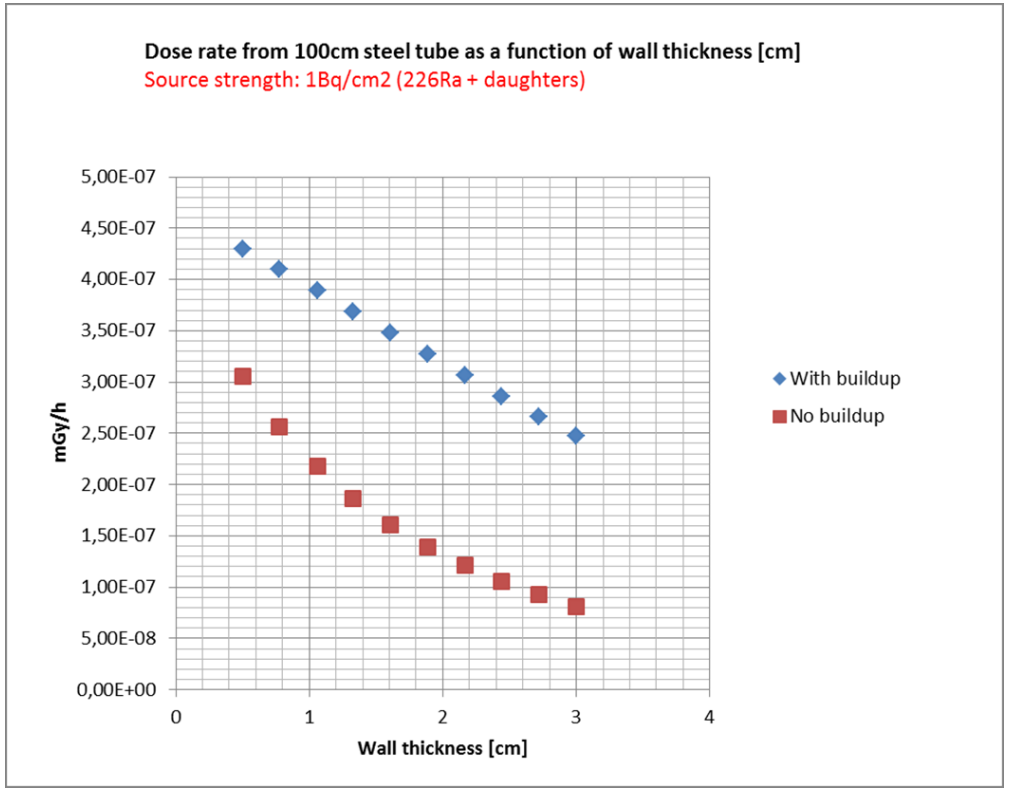
CONCORE

Activity leader: Charlotte Nielsen (NIRP); partners: DTU, NRPA, SSM

- Characterisation of NORM contaminated objects: reliable and efficient
- The report contains a review of existing methods to perform initial characterization of NORM contaminated equipment.
- It also contains an experimental section dealing with the basic investigations required to evaluate factors affecting external dose rate measurements.
- Measurements on pipes show that the decontamination currently performed by companies leaves non-detectable residues (satisfactory).
- Analysis of scale-containing pipes: radioactivity distribution spatially homogeneous with variations <10% on decimetre scale.
- Equilibrium between radon and radium is a key factor in calculating and measuring external dose from tubes.

CONCORE

Activity leader: Charlotte Nielsen (NIRP); partners: DTU, NRPA, SSM



Dose rate as a function of steel wall thickness of a 100cm long tube.

RAPID-TECH

Activity leader: Jixin Qiao (DTU); partners: STUK, FOI, IFE

- Application of rapid and automated techniques in radiochemical analysis
- Nordic experts were gathered to examine needs in developing rapid and effective radiochemical methods.
- Based on a screening of current methods in each country, challenges and needs were described by each participating institute.
- Experiments in applying distinct novel techniques in each institute were performed.
- Results and learning points obtained were scrutinised and summarised in the report, providing method recommendations.
- The report contains detailed methodological descriptions, which may be applied as standard SOPs by other institutes.

RAPID-TECH

Activity leader: Jixin Qiao (DTU); partners: STUK, FOI, IFE

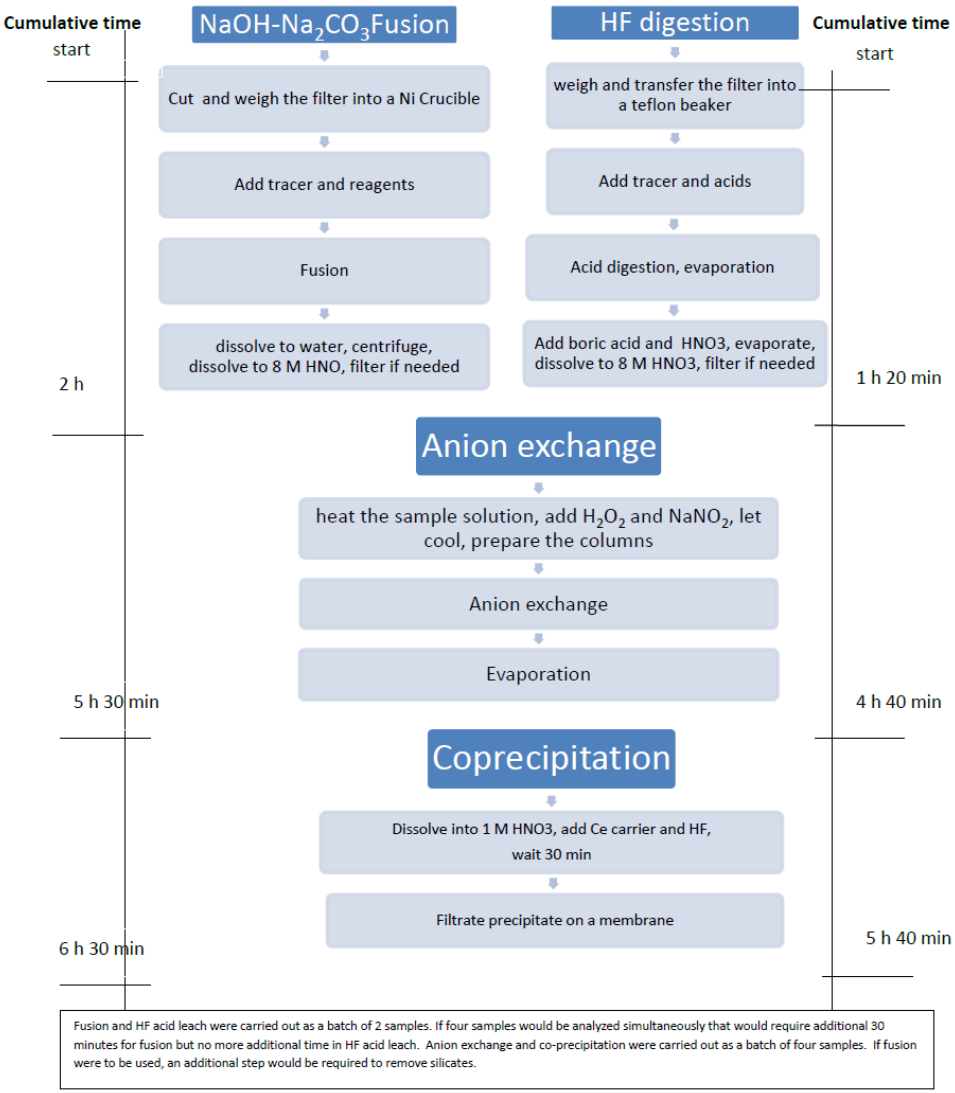


Figure. 22. Time scheme for analysis of Pu from glass fiber filters in emergency conditions

SEMUNARS

•Activity leader: Magnus Gårdestig (Linköping U.); partners: STUK, NRPA

- Seminar on Unmanned Radiometric Systems
- The purpose of the SemUnaRS activity (2-day seminar held in October 2014) was to stimulate the planning process for the Nordic countries' development of unmanned aircraft radiometric systems, UARS.
- The report contains recommendations from the work group on a number of related issues, including development of surveillance equipment for unmanned aerial vehicles.
- Discussions and conclusions from the seminar are summarised.
- A list with 14 key questions was drawn up will to assist Nordic Radiation Protection Authorities in their long-term strategy planning.

SEMUNARS

- Activity leader: Magnus Gårdestig (Linköping U.); partners: STUK, NRPA

Petri Smolander (STUK) presenting

A fixed wing aerial system is demonstrated

STANDMETHOD

•Activity leader: Xiaolin Hou (DTU); partners: STUK, IFE, Studsvik, Forsmark, OKG, Ringhals

• Standardization of radioanalytical methods for determination of important radionuclides for environmental assessment and waste management in Nordic nuclear industry

• Intercomparison exercise conducted (focusing on Ni-63) for determination in spiked water, reactor coolant water, and an acid digested reactor filter (7 labs participated).

• Different analysis techniques applied in different countries – results and methods discussed in report.

• Relatively good agreement for spiked water, but not for coolant water and filter. Indicates that methods used in some labs do not sufficiently remove interferring nuclides, and method improvement and follow-up exercise are needed.

STANDMETHOD

- Activity leader: Xiaolin Hou (DTU); partners: STUK, IFE, Studsvik, Forsmark, OKG, Ringhals

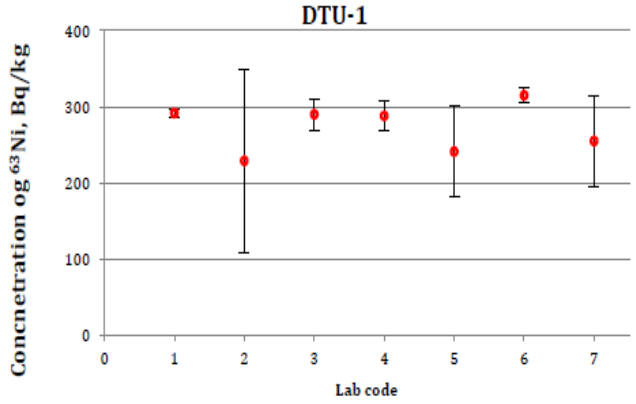


Fig.3 Intercomparison results of ^{63}Ni in DTU-1 sample (Spiked water)

Table 1. Major Nordic laboratories involved in radiochemical analysis of radionuclides difficult to measure

Country	Organization	Purpose of analysis	Main radionuclides
Denmark	Technical University of Denmark	Environmental radioactivity, radioecology, environmental trace, characterization of decommissioning waste, emergency preparedness	^{3}H, ^{14}C, ^{36}Cl, ^{41}Ca, ^{55}Fe, ^{63}Ni, ^{89,90}Sr, ^{99}Tc, ^{129}I, ^{210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, Isotopes of U, Th and Pu, ^{237}Np, ^{241}Am, ^{244}Cm, gross alpha, gross beta
Finland	Radiation and Nuclear Safety Authority (STUK)	Environmental radioactivity, bioassay of radioactivity, emergency preparedness	^{3}H, ^{14}C, ^{89,90}Sr, ^{99}Tc, ^{210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, ^{234}U, ^{235}U, ^{238}U, ^{232,230,228}Th, ^{239,240}Pu, ^{241}Am, gross alpha, gross beta
	University of Helsinki	Environmental radioactivity and radioecology, analysis of nuclear waste	^{3}H, ^{14}C, ^{41}Ca, ^{89,90}Sr, ^{210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, Isotopes of U, Th and Pu, ^{237}Np, ^{241}Am, gross alpha, gross beta
	Loviisa NPP	Monitoring of radioactivity in the power plant, discharges and surrounding environment	^{3}H, ^{14}C, ^{63}Ni, ^{55}Fe, gross alpha, gross beta
	Olkiluoto NPP	Monitoring of radioactivity in the power plant, discharges and surrounding environment	^{3}H, ^{14}C, gross alpha, gross beta
Norway	Institute for Energy Technology (IFE)	Environmental radioactivity, waste management.	^{3}H, ^{89,90}Sr, ^{210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, Isotopes of U, Th and Pu, ^{237}Np, ^{241}Am, gross alpha, gross beta
	Norwegian Norwegian University of Life Sciences	Environmental radioactivity, radioecology, environmental trace,	^{89,90}Sr, ^{99}Tc ^{210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, isotopes of U, Th and Pu, ^{237}Np, ^{241}Am
	Norwegian Radiation Protection Authority (NRPA)	Environmental radioactivity and radioecology, environmental trace, emergency preparedness	^{89,90}Sr, ^{99}Tc, ^{1210}Po, ^{210}Pb, ^{222}Rn, ^{226,228}Ra, Isotopes of U, Th and Pu, ^{237}Np, ^{241}Am, gross alpha, gross beta
Sweden	Studsvik Nuclear AB	Waste management, characterization of decommissioning waste, emergency preparedness	^{3}H, ^{14}C, ^{36}Cl, ^{55}Fe, ^{63}Ni, ^{89,90}Sr, ^{99}Tc, ^{129}I, ^{210}Po, ^{226,228}Ra, Isotopes of U, Th and Pu, ^{237}Np, ^{241}Am, ^{242}Cm, ^{244}Cm
	Forsmark NPP	Monitoring of radioactivity in the power plant, discharges and surrounding environment	^{3}H, ^{14}C, ^{63}Ni, ^{90}Sr, ^{235}U, ^{238}Pu, $^{239+240}$Pu, $^{242, 243+244}$Cm, gross alpha, gross beta
	Oskarshamn NPP (OKG AB)	Monitoring of radioactivity in the power plant, discharges and surrounding environment	^{3}H, ^{14}C, ^{55}Fe, ^{63}Ni, ^{89,90}Sr, ^{238}Pu, ^{239,240}Pu, ^{241}Am, ^{244}Cm, ^{243,244}Cm, gross alpha
	Ringhals NPP	Monitoring of radioactivity in the power plant, discharges and surrounding environment	^{3}H, ^{14}C, ^{63}Ni, ^{89,90}Sr, ^{238}Pu, ^{239,240}Pu, ^{241}Am, ^{244}Cm, ^{243,244}Cm, gross alpha, gross beta
	Lund University	Radioecology, environmental trace, emergency preparedness	^{14}C, ^{55}Fe, ^{63}Ni, ^{89,90}Sr, ^{99}Tc, ^{238}Pu, ^{239,240}Pu, ^{241}Am, ^{244}Cm, ^{243,244}Cm, gross alpha, gross beta

Kasper G. Andersson
NKS-B Programme Manager

NKS-B CfP 2016

Only one current NKS-B activity will apply for money in 2016: problem and 'sales argument'.

42 selected potential activity leaders contacted (mostly by mail) last week, urging them to send in proposals. A number of positive responses came promptly.

Will follow up on this systematically when the CfP is announced.

We also have excellent opportunities to 'sell' at the NSFS conference.

May be useful to also ask for Board members' assistance this year.