Current and emerging challenges for Nordic nuclear/radiological emergency preparedness: cooperation through the NKS-B programme

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NKS-B programme: Historical background

- Nordic collaboration on environmental radioactivity dates back to Nordic detection of weapons test fallout in the early 1950's.
- Reindeer meat consumption pathway (Laplanders) of particular concern (increasing concern throughout the 1960's).
- By the 1970's fallout concentrations in the environment had declined greatly, and the concern shifted to consequences of various possible environmental releases.
- Radioecology studies included in 1st NKS activity program (1977).
- Chernobyl accident demonstrated the complexity of decision making in nuclear emergencies: operational emergency preparedness becomes an official NKS priority area in early 1990's.

NKS-B programme: Historical background (contd.)

- Considerable synergetic effects between NKS-B activities and European R&D projects (e.g., EURATOM, SECURITY)
- NKS-B has addressed emerging challenges rapidly: e.g., on possible consequences of malicious uses of radioactive sources 10+ years ago.
- Measurement methods and strategies have been developed in NKS-B activities to address new challenges from nuclear installations, and to create, harmonise and exercise field and laboratory procedures.
- Good measurement techniques are also required in relation to other NKS-B issues, incl. decommissioning waste, NORM management.
- NKS-B has in recent years run a series of gamma spectrometry workshops/courses, as well as exercises in complex gamma spectral interpretation, and hands-on radiochemistry tutorial sessions.

NKS-B programme and CfP 2016

The NKS-B programme currently comprises 4 activity areas:

- *Emergency preparedness*
- *Measurement strategies, technologies and quality assurance*
- *Radioecological assessments*
- *Waste and discharges*

NKS-B Call for Proposals for new R&D activities starting in January 2016 opens 1st September 2015, and has **deadline on 15th of October 2015**.

There is 3.5 MDKK in the pot for NKS-B: good chances to obtain support!

Only one activity from 2015 is scheduled to continue in 2016.

All instructions and application form:
www.nks.org/en/nksb/call_for_proposals

Do not hesitate to ask if you think I can help

NKS-B programme and products

NKS-B (like NKS-R) has produced hundreds of reports, available cost-free at www.nks.org, and papers in international journals. Also dissemination through seminars and workshops announced on the web page and in NKS NewsFlash emails.

Upcoming NKS-B seminars in 2015:

NKS-B FAUNA: Workshop on the use of meteorological uncertainty estimates for decision making during a nuclear emergency, 10 September 2015, Copenhagen, Denmark

NKS-B NUFORNOR: Seminar on analytical techniques for nuclear forensics in Nordic countries with focus on novel techniques, 5-6 October 2015, Oslo, Norway

NKS-B NORCOP-COAST: Workshop on nuclear icebreaker traffic and transport of radioactive materials, 13-14 October 2015, FRAM, Hjalmar Johansens gate 14, 9296 Tromsø, Norway

Examples of recent / ongoing NKS-B activities (2013-15)

- following up on discussions from the NKS Fukushima seminar in Stockholm in January 2013 on:

- needs for exercising joint field measurement campaigns
- how to deal with radioiodine exposure of large populations

NKS-B MOBELRAD

nks
Nordic nuclear safety research

•Activity leader: Mark Dowdall (NRPA); partners: DEMA, SSM, IRSA , University of Lund.

• Mobile measurement: field exercise in fallout mapping in the Belarussian exclusion zone in 2014

• Measurements made along a route from the borders of the zone to < 10 km of the Chernobyl NPP

• The exercise demonstrated the suitability of different available equipment for measurements in third party countries.

• Variable levels of contaminant penetration in soil complicated measurements.

• Good agreement was observed between the measurements of the different participating teams.

• New exercise in Belarus in 2015: field gamma spectrometry (GAMFAC).

NKS-B MOBELRAD

Activity leader:
Mark Dowdall (NRPA);
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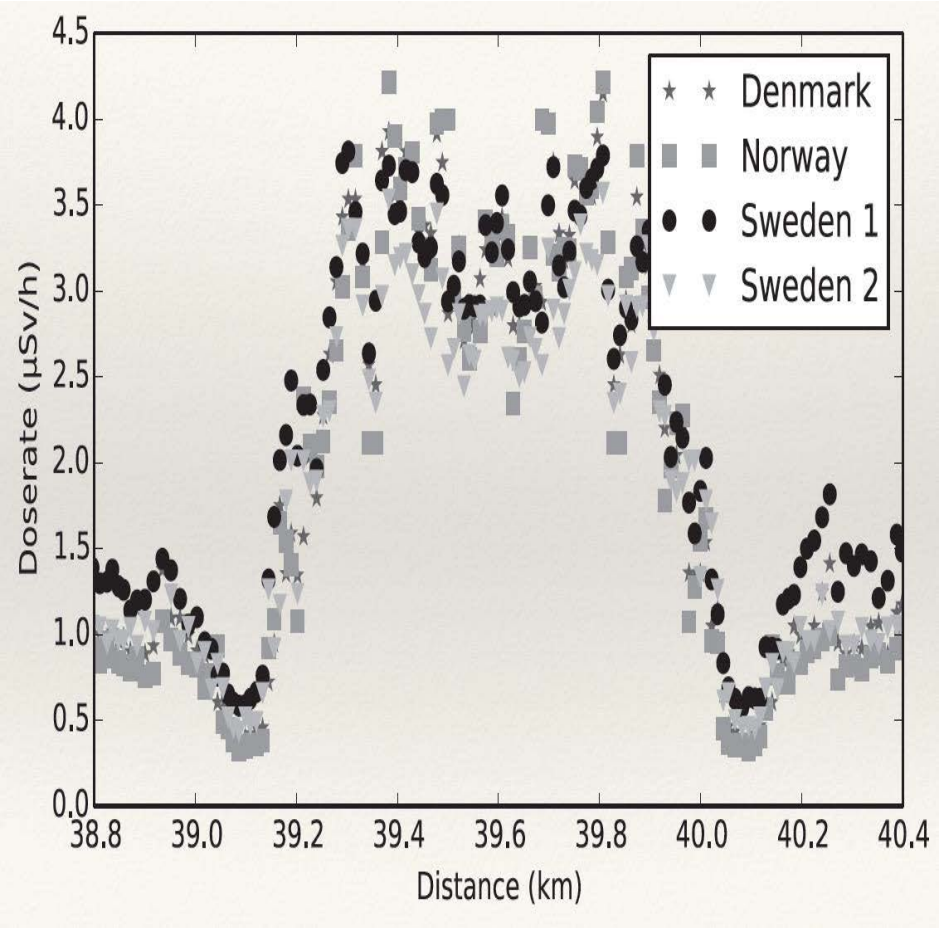

THYROID

Activity leader – Lilián del Risco Norrlid (SSM); partners: STUK, NRPA, IRSA, Gothenburg U., SIS

- Assessment of accidental uptake of radioiodine in emergency situations – proficiency test and evaluation of the regional capabilities
- Purpose: to evaluate and improve the status of thyroid measurement capabilities in the Nordic region.
- A similar NKS activity was previously conducted concerning whole-body counting facilities (PIANOLIB). This established a regional network and facilitated the arrangement of THYROID.
- A total of 38 sites were identified holding equipment applicable for this type of measurements.
- 93 instruments were calibrated, providing a Nordic traceability chain.

THYROID

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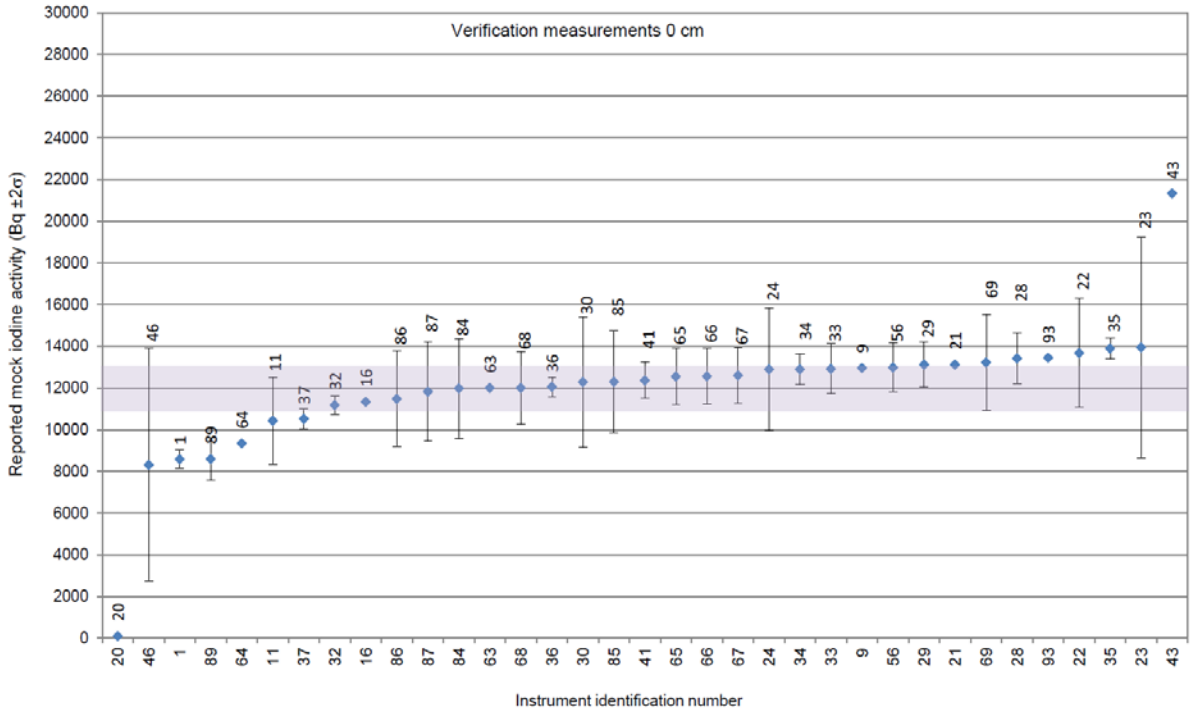

Figure 6: Mock activities reported for the verification measurement at close geometry (± 2σ). Shown activities are adjusted to certificate reference date. Acceptable values are in the range 11 000–13 000 Bq.

A follow-up seminar held in 2014 featured the results and shed new light through inspiring invited presentations.

Specifically to enhance ability to make correct internal dosimetry calculations a seminar/course was held in 2015 (IMBA)

NKS-B presentations this week:

Jens Havskov Sørensen (DMI): Uncertainties of atmospheric dispersion calculations for emergency preparedness

Xiaolin Hou (DTU): Radiochemical analysis of important radionuclides in Nordic nuclear industry

Jixin Qiao (DTU): Application of radpid and automated techniques in radiochemical analysis – inspirations from NKS-B Rapid-Tech project

Mikhail Iosjpe (NRPA): Effects of dynamic behaviour of Nordic marine environment to radioecological assessments (the EFMARE project)

Charlotte Nielsen (SIS/NIRP): NKS: Developing methods for reliable and efficient radiological characterization of NORM contaminated objects

REMEMBER:

Joint NKS-R and NKS-B seminar entitled ‘Nordic perspectives of Fukushima: Where are we now and where do we go?’ will be held in Stockholm on 12-13 January 2016.