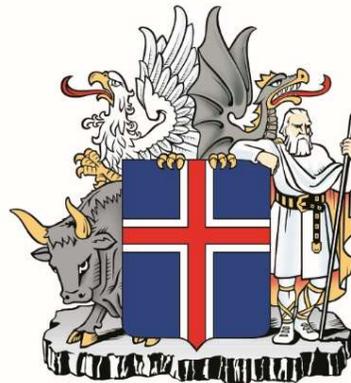


**Colloquium to celebrate 90 years Anniversary
of ICRP and ICRU, Stockholm 17-19 October
2018.**

**The role of the Nordic countries in the development of
Radiological Protection.**

Sigurður M Magnússon

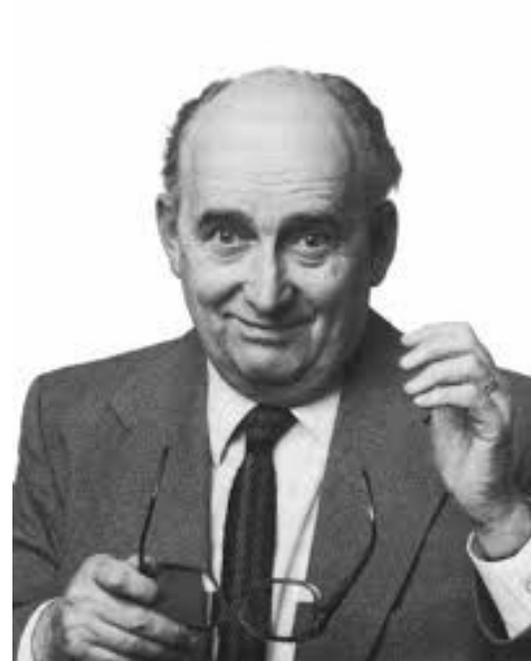


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ICELANDIC RADIATION SAFETY AUTHORITY

Two giants of radiological protection



Rolf Sievert
1896-1966



Bo Lindell
1922-2016



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The Argentinian Connection



Bo Lindell and Dan Beninson
best friends and colleagues



The role of the Nordics ... - Rolf Sievert



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UNSCEAR

- UN founded committee, a closed club, with Sweden as the only Nordic member at the time.
- Rolf Sievert took an active part in the establishment and organization of UNSCEAR, chaired UNSCEAR from 1958 to 1960.
- Sweden was in a unique position during the cold war, as a neutral country enjoying wide global respect, being able to talk with all as needed. This provided an extra vehicle of influence on the work of UNSCEAR.



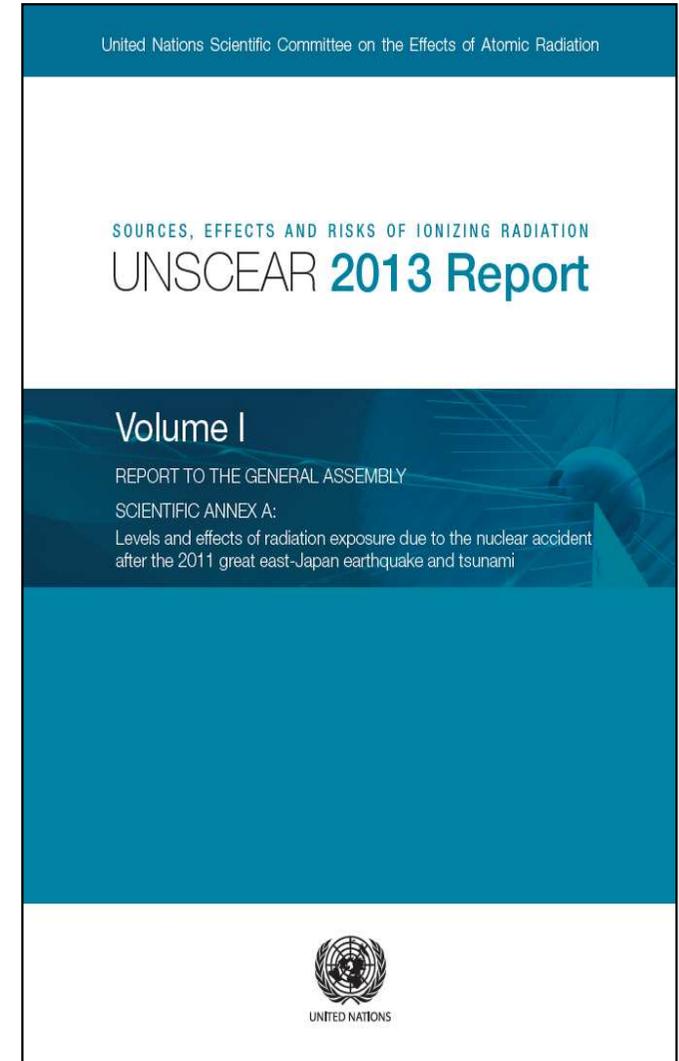
UNSCEAR and Bo Lindell

- Bo Lindell was a scientific secretary at UNSCEAR in 1957 and worked on the first UNSCEAR report.
- Being concerned with future generations he developed during that time one of his major ideas, ***the dose commitment***, to assess the long term effects of atmospheric nuclear weapons testing.
- Later ***the dose commitment*** was used to take account of long-term, long-distance accumulation when regulating radioactive emissions and the need to regulate on the basis of the equilibrium level, not just the level due to 1 year release



UNSCEAR and Environmental Impact

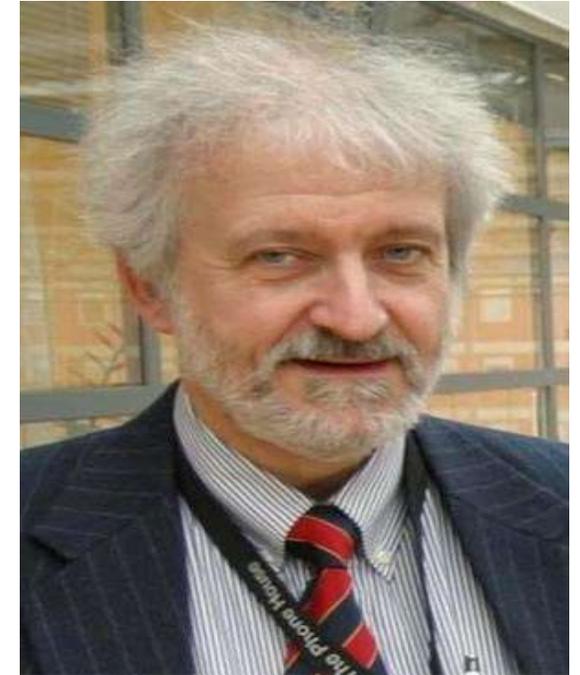
- UNSCEAR 2013 report
 - Environmental impacts featured as prominent topic UNSCEAR's evaluation of the consequences of the Fukushima nuclear accident
- The work on environmental impacts was led by Norwegian partners



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ICRP

- Sweden has provided:
 - two scientific secretaries of ICRP,
 - Bo Lindell (1957-1962)
 - Jack Valentin (1997-2008)and
 - three chairs,
 - Rolf Sievert (1956 – 1962),
 - Bo Lindell (1977-1985)
 - Lars Erik Holm (2005-2009)



ICRP and Bo Lindell



- Bo Lindell played a central role in Development of the current ICRP system of radiological protection, based on justification, optimisation and dose limitation as presented in ICRP 26 and drafted much of ICRP 26 assisted by the Scientific Secretary.
- Bo Lindell's deep concern for future generations and the collective good was expressed by his work on dose commitment, collective dose and use of cost-benefit methods laying the foundation for the ethical basis of the ICRP system.
- Bo Lindell wrote the important Annex C of ICRP 60 on judging the significance of radiation effects and was instrumental in clarifying the concepts of acceptability of practices and tolerability of risk.



ICRP and radiation protection of the environment.

- The Nordics have played an important role in developing radiation protection of the environment i.e. through the work of Carl Magnus Larsson, Per Strand and others in developing ICRP 91,114 and 136.



Carl Magnus Larsson



Per Strand



Some other Nordics in ICRP



Sisko Salomaa
Committee 1



Sören Mattsson
Committee 3



Per Hedeman-Jensen
Committee 4



Kaare Ulbak
Committee 4



IAEA and the Nordics

- Sweden has provided two Director General 's of the IAEA, Sigvard Eklund and Hans Blix. On their watch some of the most important work of the IAEA in radiological protection was carried out.
- There is always at least one Nordic country on the Board of Governors which is important in order to influence the work of the Agency.
- It is mainly through very active contributions to development of safety standards and guides that the Nordics have had an impact on the radiation protection activities of the Agency over the years. Several Nordics have had a leading role in developing several important documents of the IAEA such as the Safety Fundamentals and the Basic Safety Standards.



IAEA – Bo and Dan again

- Bo Lindell and Dan Beninson wrote an influential critical paper on methods for evaluating accident probabilities and consequences laid out the basic ideas for a common policy for radiation and nuclear safety and potential exposures. The paper was presented at an IAEA conference on Current Nuclear Power Plant Safety Issues in Stockholm in 1980.
- Bo and Dan were instrumental in the development of the important Safety Series 77, 1986: Principles for Limiting Releases of Radioactive Effluents into the Environment as well as in the important 1995 INSAG report on Potential Exposure in Nuclear Safety.



A few of the many Nordics in IAEA



Anneli Salo



Ole Harbitz



Petteri Tippi

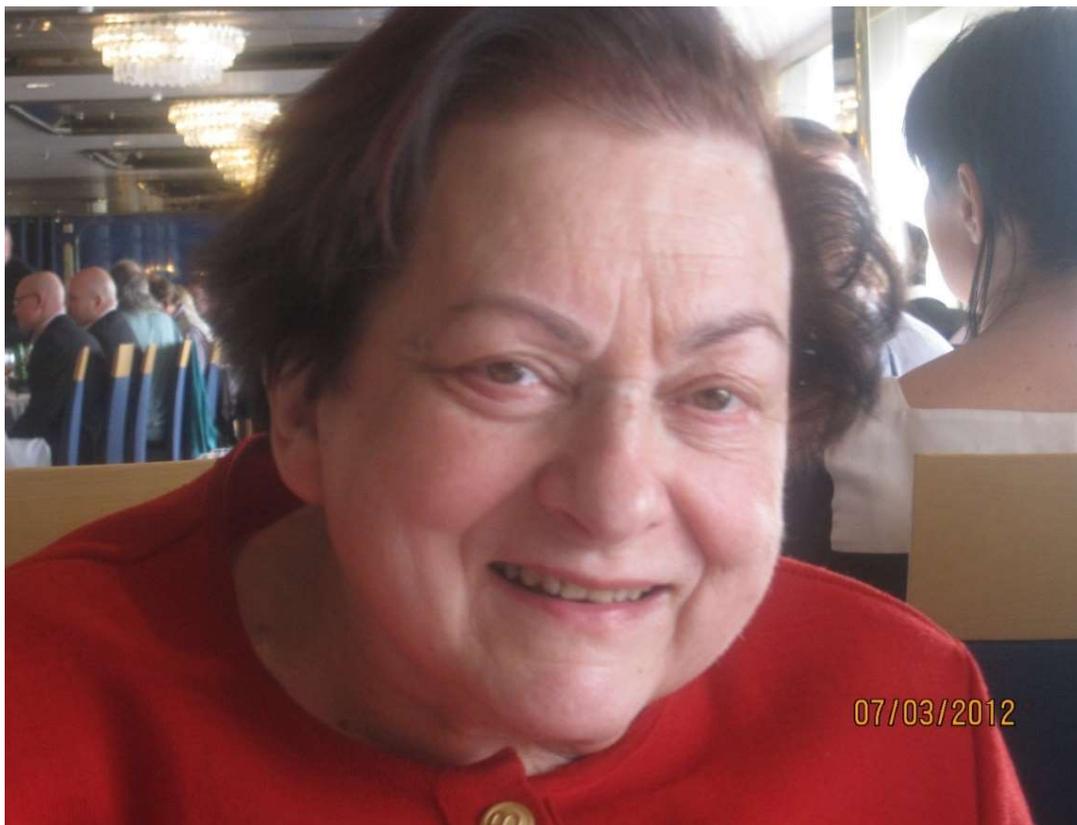


IRPA

- The Nordics were actively involved in the creation of IRPA and some Nordics have been members of the IRPA Executive Committee. The list includes Bo Lindell, Sisko Salomaa and Jack Valentin.
- The Nordic Society for Radiological Protection organized a regional IRPA conference in Finland in 2010 with Tua Rahola as the chair of the program committee.



One of many Nordics in IRPA



Tua Rahola, chair of the programme committee for the IRPA Regional Conference in 2010.



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NEA

- Radiological Protection within the NEA is addressed in the CRPPH – The Committee on Radiological Protection and Public Health.
- Many Nordic 's have played an active role in the CRPPH over the years influencing the work of the committee in many ways.



Some Nordics in NEA-CRPPH



Jan Olof Snihs



Hanneli Altonen



Role of the Nordics ... - conclusion

- The Nordic countries, in particular Sweden, have had profound influence on the development of radiological protection in the past 90 years.
- It is my hope that the influence of the Nordics on the future development of radiological protection will continue, for the common benefit of all mankind, through continued and increased beneficial use of ionizing radiation worldwide.



Role of the Nordics - thanks

- Many thanks to:
 - Abel Gonzales, Jack Valentin, Per Strand and Ted Lazo for valuable discussions.
 - Wendla Paile for providing “hard to find” pictures.

and

Thank you very much !

