



Bundesministerium
für Umwelt, Naturschutz
und Reaktorsicherheit

Maintaining Competence in Radiation Protection in Germany

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1st Need for competence assurance

Loss of competence in education and research

- Boom of nuclear energy in the 50s and 60s in Germany
- Founding of institutes in radiation research and radiation protection
- Cut back with the debate on the benefits and risks of ionising radiation
- Decrease in the number of students of physics, chemistry, biology
- Decision to phase out nuclear energy → no more attractive jobs?



1st Need for competence assurance

Loss of competence in administrations

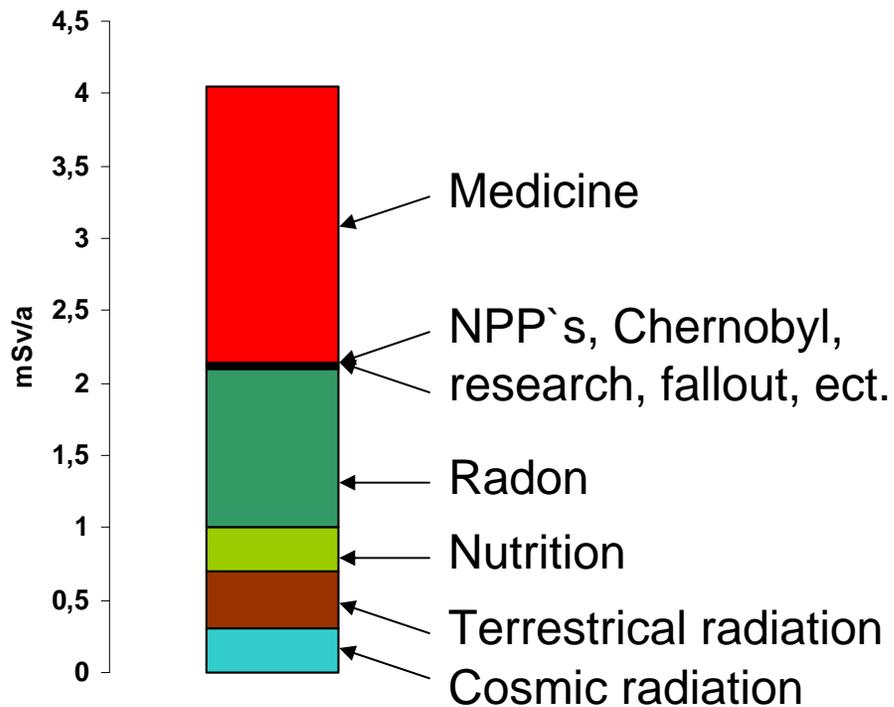
- Reduction of capacities in research and training
- Cancelling of jobs in Länder administrations
- Result: Reducing of supervision activities

Example:

Increasing number of applications of new techniques in medical diagnostics



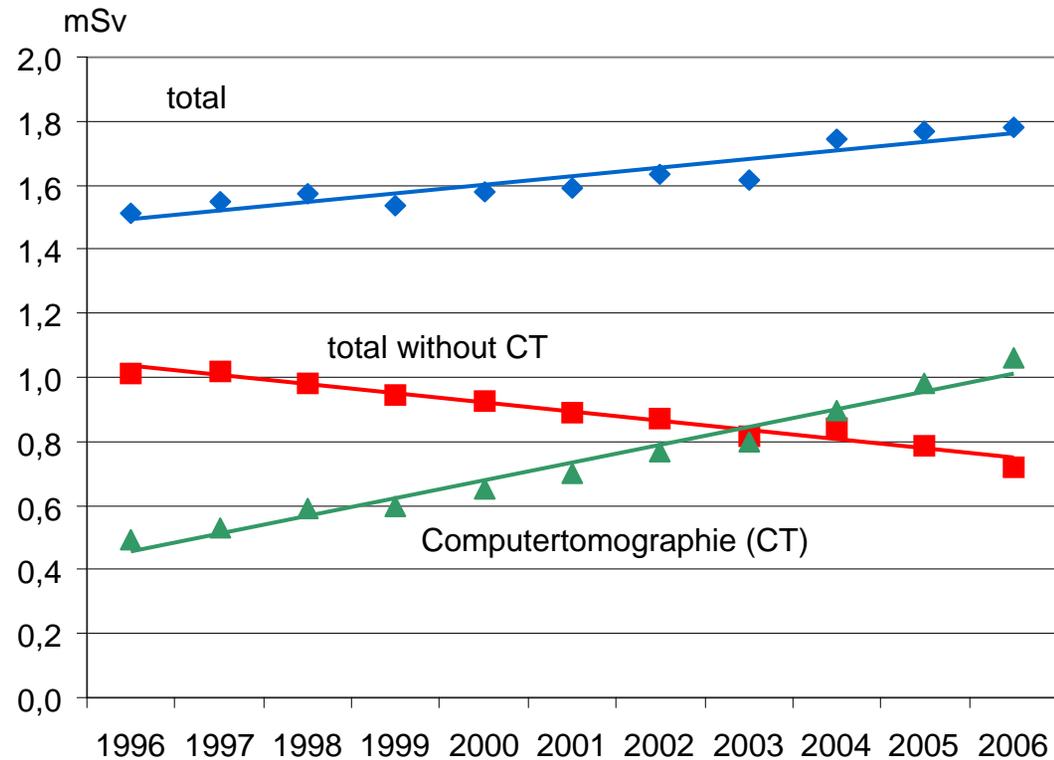
1st Need for competence assurance



Medical radiation exposure in total radiation exposure of the public



1st Need for competence assurance



Mean effective dose per capita (mSv) and year due to x-ray and CT diagnostics in Germany



1st Need for competence assurance

Position papers by the Commission on Radiological Protection (SSK)

- SSK highlighted the trend to loss competence and a lack of integration into international research activities in a number of position papers
- In 2006 SSK stated: ...only few institutions that conduct radiation research...
- SSK required to establish 2 or 3 centres of excellence as a basis for networks with smaller units



1st Need for competence assurance

Latest scientific findings

- specific radio sensitivity of the eye lens
- dosimetry of the eye lens
- gender-specific radio sensitivity
- validity of the basic assumption that the relative radiation effect of small doses and dose rates is only half as big as for high dose ranges (cancer formation and genetic damage should be considered as well as radiation-induced cardiovascular diseases)
- specific radio sensitivity of the skin
- age-dependence of dose coefficients



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2nd Competence assurance measures

Competence of the Federal Länder

- In Germany: Federal states (Länder) are responsible for education, research, training (sometimes reputation and economical interests are in the focus)
 - Influence of the Federal Government is limited
- Activities of the Federal Government to support research centres (e. g. Helmholtz Centre for Environmental Health in Munich, German Cancer Research Centre in Heidelberg)



2nd Competence assurance measures

National programme

- in 2007 founding of the Competence Alliance of Radiation Research – by initiative of the Federal Ministries for the Environment (BMU) and for Research (BMBF)
- Launching of a network which unites researchers from institutes, universities (and some industry) and facilities, involving education and training of young scientists
- Programme covers biological, medical, epidemiological and ecological issues



2nd Competence assurance measures

Issues of the research projects

Radiation protection in medicine

- early diagnosis of radiation impacts, biological indicators
- retrospective and prospective assessments of radiation exposure
- optimisation of therapies for radiation damage
- reduction of diagnostic uses of radiation in medicine

Medical radiation biology

- methods for the evaluation of the risk of radiation-related diseases
- sensitivity of tumour and normal tissue
- gender-related and age-related radio sensitivity
- repair processes for radiation-induced cell damage
- effects of incorporated radionuclides

Radioecology, radiation and environment

- transport of radionuclides in the environment

Transport of radionuclides in food chains and biokinetic behaviour in humans



2nd Competence assurance measures

First results of the national programme

- 8 integrated projects with a total of 40 partners were launched in 2007
- Budget ca. 15 Mio €
- Progress of these projects were presented in September 2009 in an international workshop, e.g. individual radio sensitivity, research on tumour risks, cellular mechanisms in case of radiation exposure, repair mechanisms in radiated cells ...
- Involving young scientists
- important: to strengthened international cooperation
- 2008/2009 new funding period started, 12 projects out of 21 were selected by experts and will start in the years to come



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3rd Lessons to share

- start in time
- finance projects with specific issues, to support education programmes and implementation of institutes
- make sure the financial support by different ministries / organisations
- support of national / international co-operation and exchange of knowledge
- offer a professional career for students and young scientists
- include all players into the process
- offer a panel / floor to present the results of projects;
offer workshops regularly

Programme of radiation research led to enthusiasm within the community → to keep the initiative and to benefit by this work



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Thank you!