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Survey on the Use of Dose Constraints and Reference Levels Made in the Context of the European ALARA Network

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Aims

Established by European Commission in 1996

- **TO PROMOTE** the practical implementation of the ALARA principle in the management of occupational, public and patient exposures to ionising radiation
- **TO CONTRIBUTE** to the definition, evolution and dissemination of ALARA culture by promoting the practical implementation of the ALARA principle in different sectors, for workers and the public, and in all exposure situations
- **TO IMPROVE** the practical implementation of ALARA through networking and co-operation between radiation protection specialists



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Membership & Outputs

Austria	Belgium	Croatia
Czech Republic	Denmark	Finland
France	Germany	Greece
Iceland	Ireland	Italy
Netherlands	Norway	Portugal
Slovenia	Spain	Sweden
Switzerland	UK	



- ALARA Newsletter
- EAN Website (www.eu-alara.net)
- Workshops (ALARA in existing exposure situations, Dublin, Sept 2012)
- Sub-networks (ERPAN, EMAN, EAN-NORM)



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ERPAN Survey

- NEA - CRPPH's Expert Group on Occupational Exposure
 - Case Study 2 (Dose Constraints)
- Email survey of ERPAN members in 2010
 - The application of Dose Constraints in **occupational** exposure in the **non-nuclear** sector as provided for under the 1996 European BSS.
- Did not consider application to members of the public
- 13 respondents
- Language issues/interpretations



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1996 European BSS

Dose constraint: *a restriction on the **prospective** doses to individuals which may result from a **defined source**, for use at the **planning** stage in radiation protection whenever optimization is involved*

- Dose constraints should be used, **where appropriate**, within the context of optimization of radiological protection
- Guidance established by each MS on the appropriate procedures to be applied to comforters & carers and medical research volunteers may include dose constraints



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National Legislation

Country	National Legislation	Name	Occupational exposure
Belgium	Yes	Dose constraint	No
Czech Republic	Yes	Dose constraint	No
France	Not explicitly	Dose objective	Yes
Germany	No	n/a	No
Greece	Yes	Dose constraint	Yes
Ireland	Yes	Dose constraint	Yes
Luxemburg	Yes	Dose constraint	No
Norway	No	n/a	No
Slovenia	Yes	Dose constraint	Yes
Spain	Yes	Dose constraint/ reference value	Yes
Sweden	Yes	Dose constraint/ dose restriction	Yes
Switzerland	Not explicitly	Source related dose value	Yes
United Kingdom	Yes	Dose constraint	Yes



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Who sets them?

Country	Organisation
Belgium	Regulatory Authority
Czech Republic	Regulatory Authority
France	Employer
Germany	n/a
Greece	Regulatory Authority (general), Employer (specific sources)
Ireland	Regulatory Authority
Luxemburg	Regulatory Authority - not used in practice
Norway	n/a
Slovenia	Regulatory Authority (specific task), Employer (specific source)
Spain	Employer (and approved by Regulatory Authority)
Sweden	Regulations, Regulatory Authority
Switzerland	Regulatory Authority
United Kingdom	Employer



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Sectors (non-nuclear)

Country	Application
Belgium	Not used. May be introduced for non-destructive testing in the future
Czech Republic	Not used in the non-nuclear sector
France	All workers in controlled areas
Germany	Not used in the non-nuclear sector
Greece	All occupational exposures
Ireland	All occupational exposures
Luxemburg	Not used
Norway	Only used for non-radiation workers
Slovenia	All occupational exposures
Spain	Industrial radiography
Sweden	All occupational exposures
Switzerland	All occupational exposures
United Kingdom	Occupational exposures where doses are expected to be high (few mSv)



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When are they used?

Country	
Belgium	Task planning (if introduced)
Czech Republic	n/a
France	Operational
Germany	n/a
Greece	Facility design
Ireland	Facility design
Luxemburg	n/a
Norway	n/a
Slovenia	Operational (& facility design)
Spain	Operational
Sweden	Facility design & operational
Switzerland	Facility design & operational
United Kingdom	Facility design & operational



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Ireland

S.I. No. 125 of 2000 (1996 BSS)

- Regulatory authority sets values
 - 0.3 mSv/yr – public
 - 1.0 mSv/yr – occupationally exposed workers
 - Design stage, not a limit
- Applies to all practices
 - Medical (diagnostic, nuclear medicine, radiotherapy)
 - Industrial (NDT, sterilisation facilities , NMDG)
 - Dental, Veterinary
 - Education and Research
 - Discharges (liquid, aerial)
- Well established, universally accepted and implemented



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United Kingdom

- IRR99 (1996 BSS)
 - Dose constraint (workers and public)
 - Employer sets the level
 - Dose investigation level (workers)
 - 15 mSv
- RSA 1992 - Disposal of radioactive waste – dose constraint (public)
 - 0.3 mSv from single source
 - 0.5 mSv from single site



United Kingdom

- Guidance states
 - only likely to be **appropriate** where individual doses from a single source will be a **significant fraction of the dose limit**. Not likely to be appropriate for occupational exposure in:
 - Diagnostic radiology, nuclear medicine, most radiotherapy and other medical exposures
 - Most work in the non-nuclear industrial sector
 - Teaching and most research activities
- Infrequently used in the non-nuclear industrial sector
- Not used as investigation levels once decision is taken on design/plan



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Summary

- Majority of European countries have included dose constraints, or similar concepts, in national legislation
- Most countries use the term “dose constraint”
- Variation in who sets them
- Variation as to whether they apply to tasks (operational) or sources (facility design)



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Summary

- No consistency regarding which sectors they apply to
- Some countries question whether their introduction would add value in the non-nuclear sector
- EC Article 31 Group of Experts has recently established a Working Party on Dose Constraints
 - clarify concept
 - explain application
 - achieve harmonisation