

Application of the radiological protection system for cosmic radiation in aviation

ICRP Publication 132

Sylvain ANDRESZ
CEPN, SCIENTIFIC SECRETARY OF ICRP TG 83

CEPN, 14th June 2017



Boeing B 777-300 "LOISIRS"
468 sièges



SUN,
GALAXIES, ...

$\text{DeD}(z)$

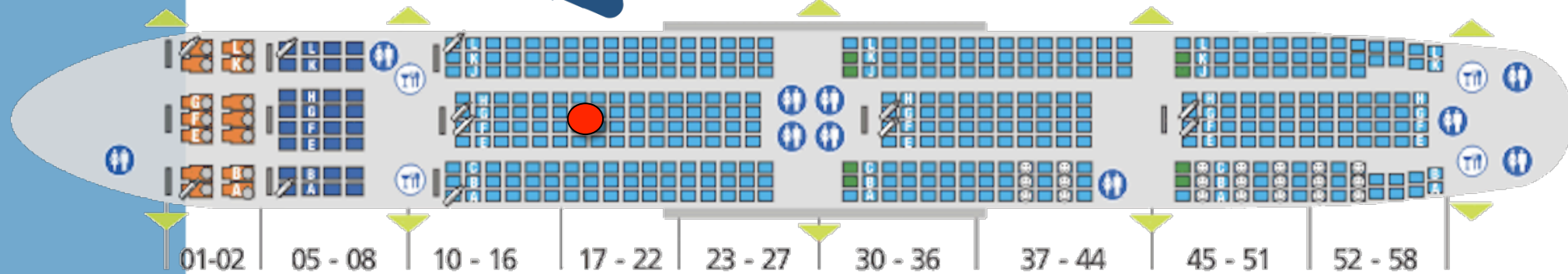
Boeing B 777-300 "LOISIRS"
468 sièges

AIRFRANCE

AFFAIRES

PREMIUM VOYAGEUR

VOYAGEUR



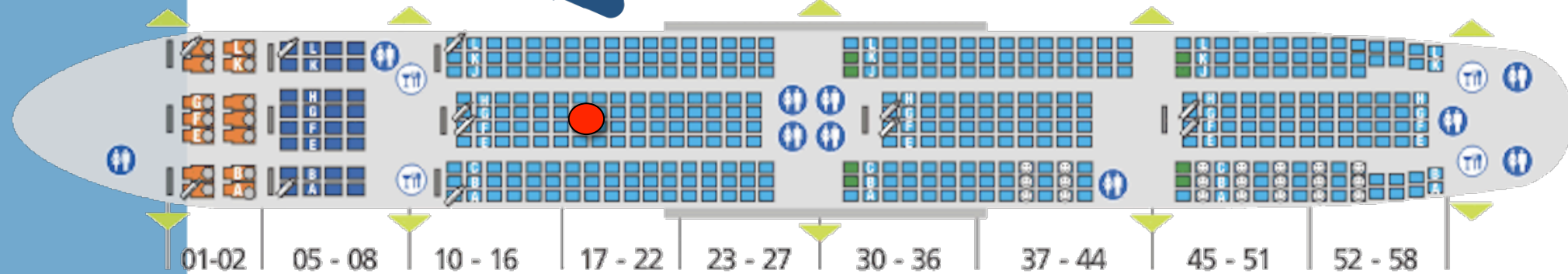
SUN,
GALAXIES, ...

$$\text{DeD}(z, \lambda)$$

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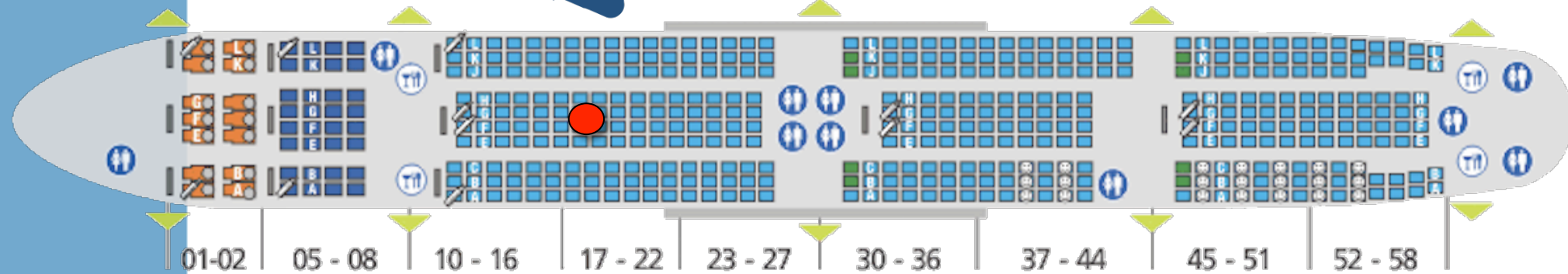
SUN,
GALAXIES, ...

$$\text{DeD}(z, \lambda, \phi_{\text{Soleil}})$$

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SUN,
GALAXIES, ...

$$\text{DeD}(z, \lambda, \phi_{\text{Sun}}) \sim [2 - 7] \mu\text{Sv/h}$$

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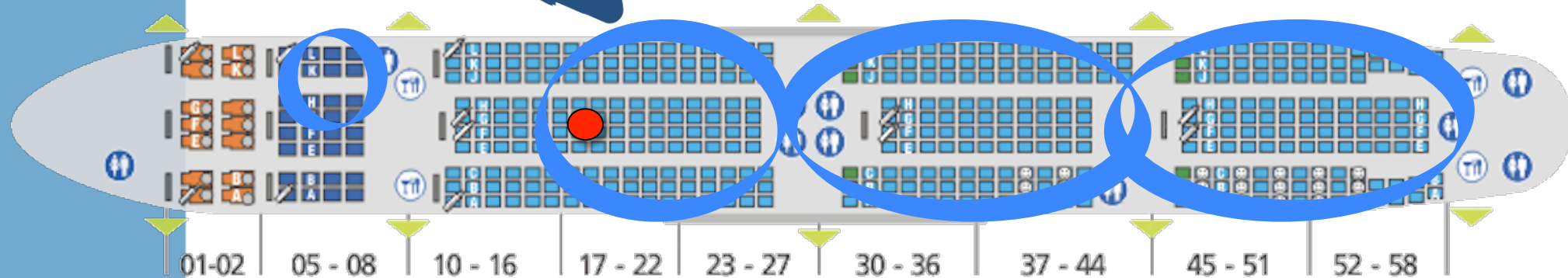
SUN,
GALAXIES, ...

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Occasional flyers

- A few flights/year
- > 3 billion of tickets sold in 2016

SUN,
GALAXIES, ...

$$\text{DeD}(z, \lambda, \phi_{\text{Soleil}}) \sim [2 - 7] \mu\text{Sv/h}$$

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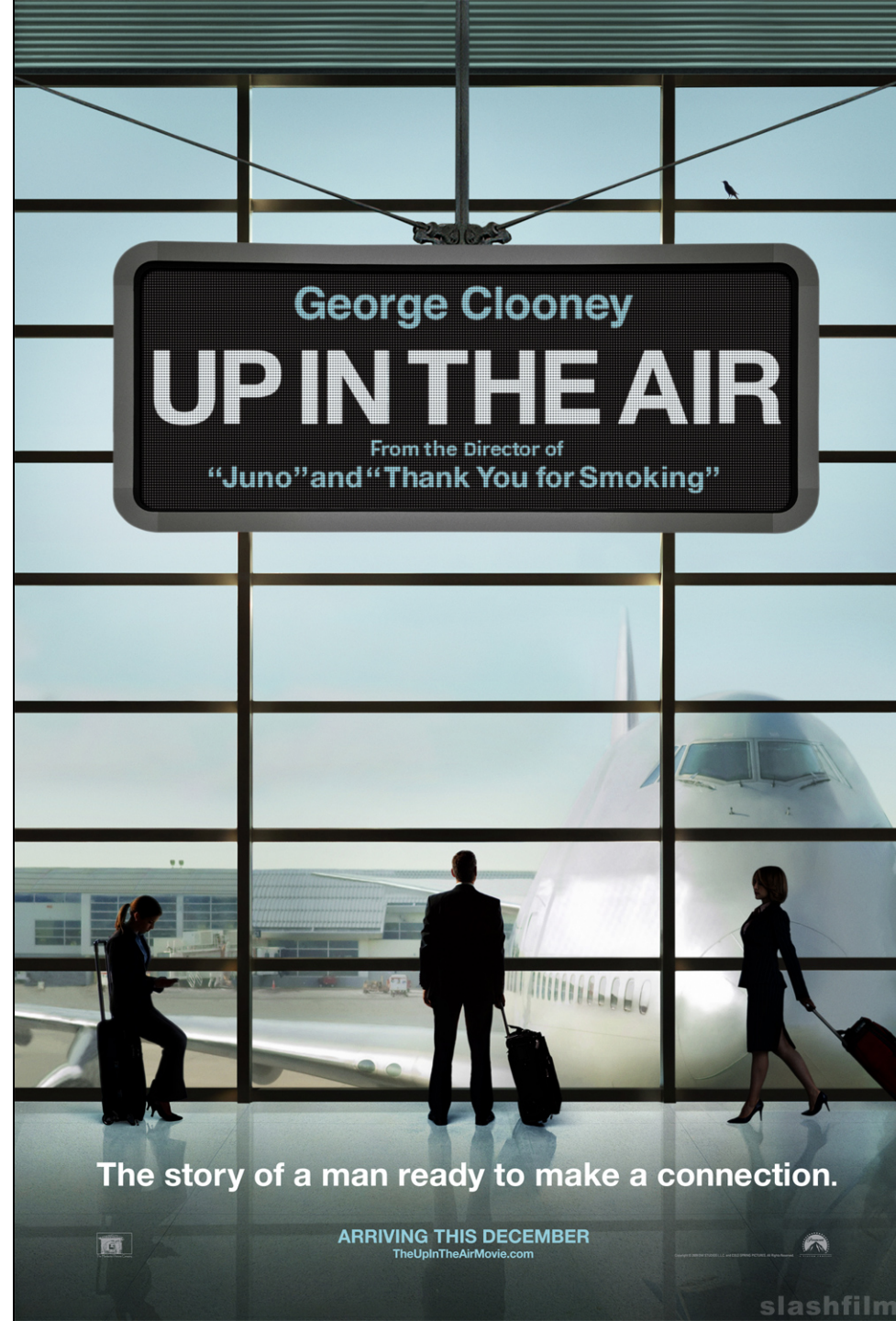
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Frequent flyers

- Many flights/year
- Personal or professional reasons
- Level of exposure ?



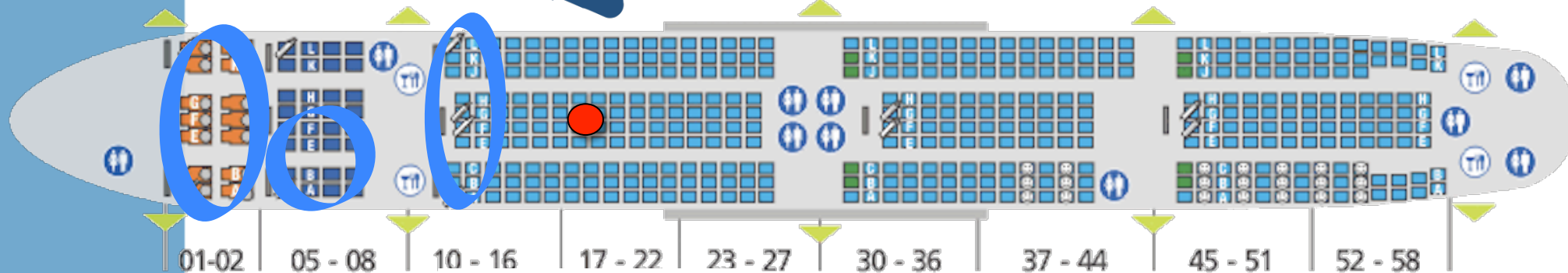
SUN,
GALAXIES, ...

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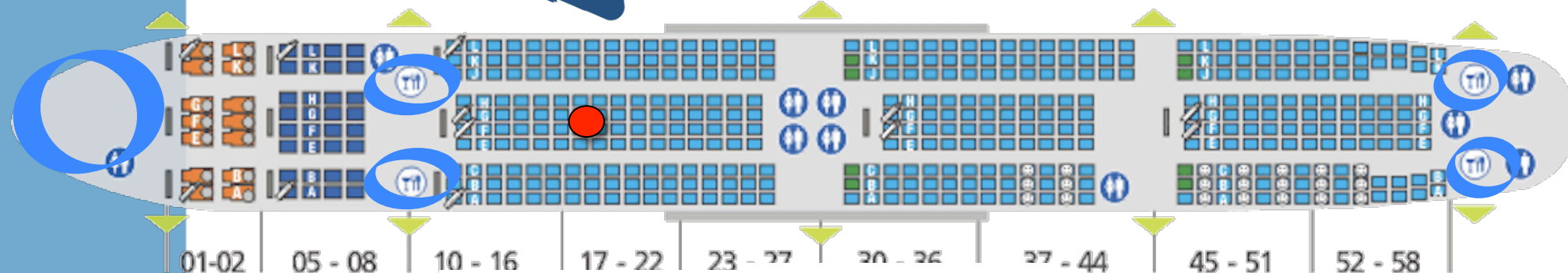
SUN,
GALAXIES, ...

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Aircraft crew

- [1 - 7] mSv/y (Europe)
- ~ 400 000/worldwide
- Sometimes
occupationnaly exposed

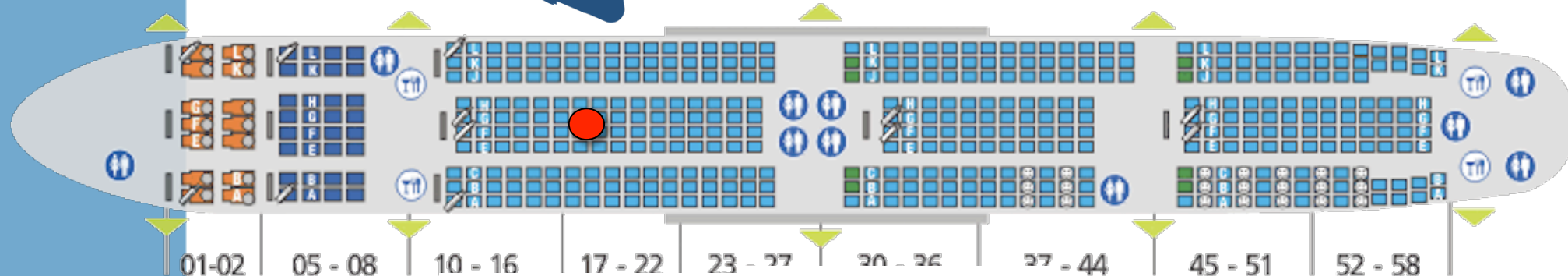
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- Large array of exposure and situations
- Dosimetry ↗
- Little room to manoeuvre

Recommendations of ICRP Publication 132



		[personal reasons]	[professional reasons]	
 INFORMATION	X	X	X [employer]	X [employer]
 EVALUATION OF EXPOSURE	X [auto-evaluation]	X [auto-evaluation]	X [employer]	X [employer]
 PROTECTIVE ACTIONS		-respect RL -frequency	-respect NR -frequency [employer]	-respect NR -frequency & destination [employer]
 MEDICAL SURVEILLANCE				X [routine]

TASK GROUP ICRP: APPLICATION OF THE RADIOLOGICAL PROTECTION SYSTEM TO COSMIC RADIATION IN AVIATION

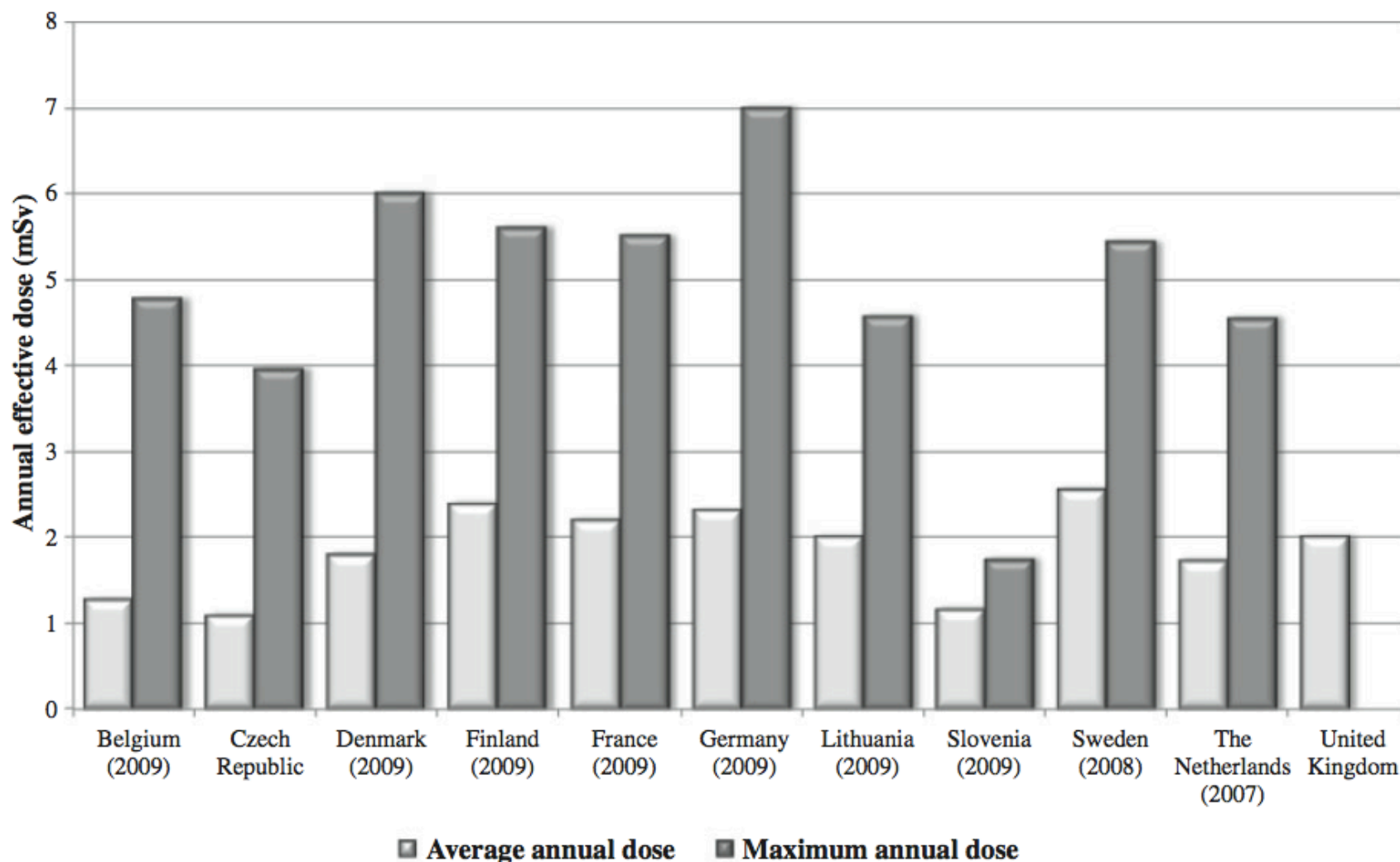
Litterature, documenation, EAN survey ...

UNCHARTED TERRITORY FOR RADIATION PROTECTION

- ✓ GRADED APPROACH
- ✓ SIMPLE ACTIONS
- ✓ COMING FROM EXISTING GOOD PRACTICES

⇒ limit the number of people exposed and the level of exposure
ALARA

⇒ broadcast information about cosmic radiation exposure and natural radioactivity



Extract from ICRP Publication 132 ⇒ EAN Newsletter 36