



Radon and the System of Radiological Protection

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ICRP Committee 4



New ICRP recommendations

- In progress (public consultation very soon)
- Describe and clarify the application of ICRP 103
- Remain in line with ICRP 65
- Take into account the Statement on radon and future ICRP 115 (nominal risk x 2)
- Simple and pragmatic (no problem without solution)

Characteristics of radon exposure (1)

- People exposed in dwellings (essentially), workplaces and mixed-use buildings
- **Existing exposure situations**
 - Source already exists and cannot be deleted nor modified (control only on the pathways)
 - Particular status of U mines

Characteristics of radon exposure (2)

- Similarities with other existing exposure situations
 - In particular with exposures in **contaminated territories** (ubiquity, variability, individual behaviour, self-help protective actions, many players...)
- Many **challenges**
 - Public health dimension, lack of awareness, consistency with other policies, global risk versus highest exposures (equity), responsibilities, efficiency...

Recommended approach

- **Simple and realist**
 - Same for smokers and non smokers
- **Integrated**
 - All buildings whatever their occupants
 - Mainly a public health dimension
- **Graded**
 - According to responsibilities
 - Taking into account specific situations (underground, spas)
- **Ambitious**
 - Through the selection of the reference level
 - Addressing both the highest exposures and the global risk

Application of the principles (1)

- **Justification of protection strategies**
 - Decision by national authorities to implement a national action plan which is expected to do more good than harm

Application of the principles (2)

- **Optimisation of protection**
 - A unique reference level = **10 mSv/a**
 - Upper value of RL for dwellings = **300 Bq.m⁻³**
 - Idem for mixed-use buildings and “ordinary” workplaces
 - **Graded approach** according to responsibilities (landlord, seller,...)
 - Specific graded approach for **workplaces**
 - 1st step = idem than dwellings
 - 2nd step = realism < 10 mSv/a
 - 3rd step : if > 10 mSv or when national positive list of radon prone work activities (underground, spas...) = occupational exposure

Application of the principles (3)

- **Application of dose limits**
 - Not a requirement for occupational exposure but a principle applicable only in **planned** exposure situations
 - Already applied in U mines
 - **Other cases?** (e.g. when occupational exposure)

National action plan (1)

- **All buildings**
 - General case: collective protection through control of building
 - A few specific cases: control of individual doses
- **National Reference Level**
 - According to the national situation
- **Crescendo of measures**
 - Information, measurements, remediation, support (technical, financial...)
 - Encourage self-help protective actions
 - Priorities, more or less enforcement, more or less consequence of failure

National action plan (2)

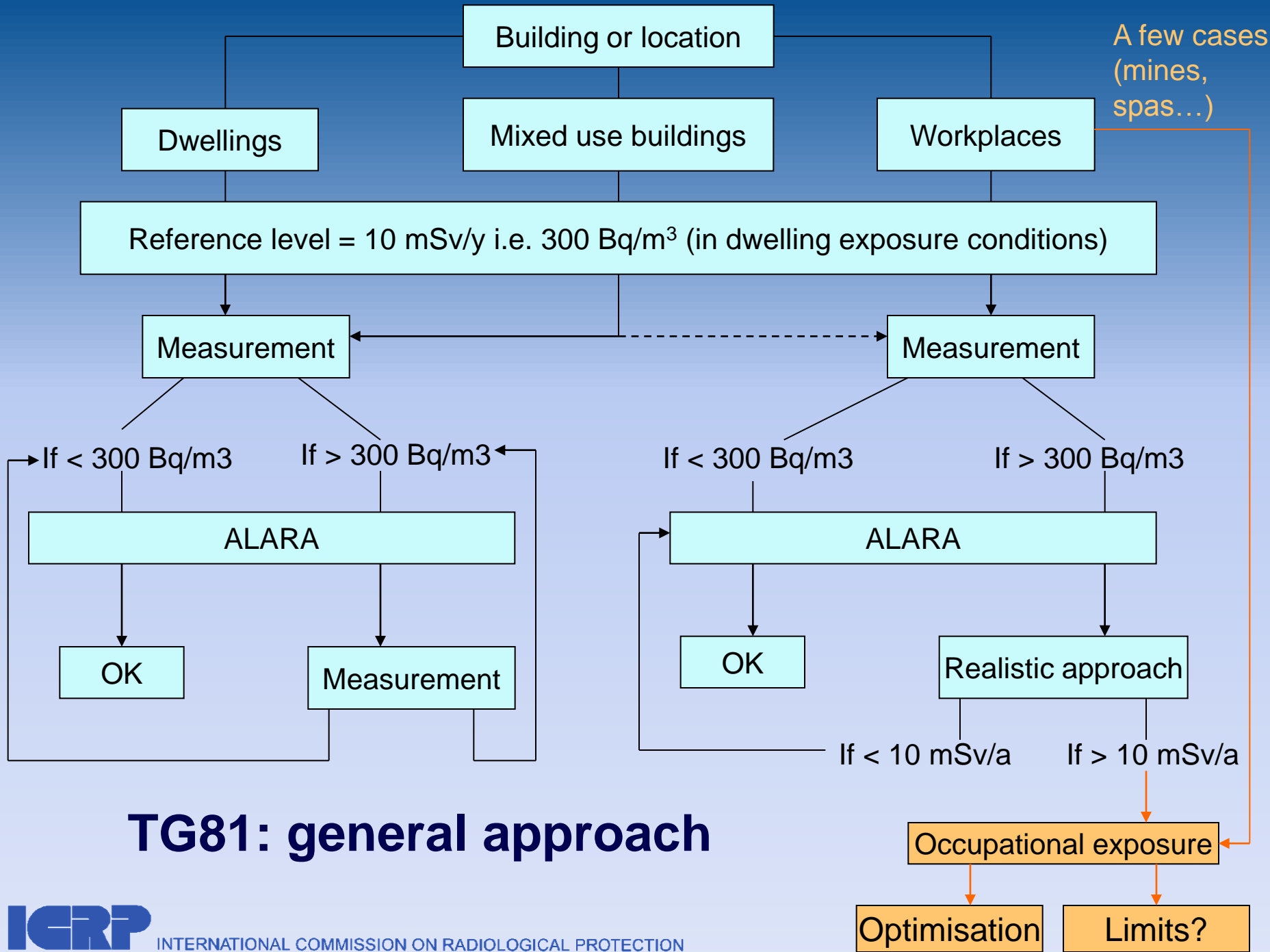
- **New buildings**
 - Prevention
 - Coherence with energy saving programmes
- **Existing buildings**
 - Mitigation
- **ALARA with ambition**
 - Not just below the RL

Discussion (1)

- **What means occupational exposure?**
 - When radon exposure to workers can reasonably be regarded as being the responsibility of the operating management (Pub 103 § 178)
- What about **workers** not occupationally exposed?
 - Managed as members of the public (Pub 65 § 86)
- **Entry point:**
 - Ambiguity of the concept
 - 1,000 Bq.m⁻³ is too high

Discussion (2)

- Application of **dose limits** (controversial issue)
 - In all workplaces? Responsibility of employer, consistency of the protection at work
 - But problems
 - With adventitious radon exposure (offices, shops, workshops...)
 - In mixed-use buildings (What dose limit? Public/Occupational?)
 - With added dose
 - With other sources of radiation
 - In any case the upper value of tolerable risk for occupational exposure should not be exceeded (100 mSv/5 years with a maximum of 50 mSv in a year)

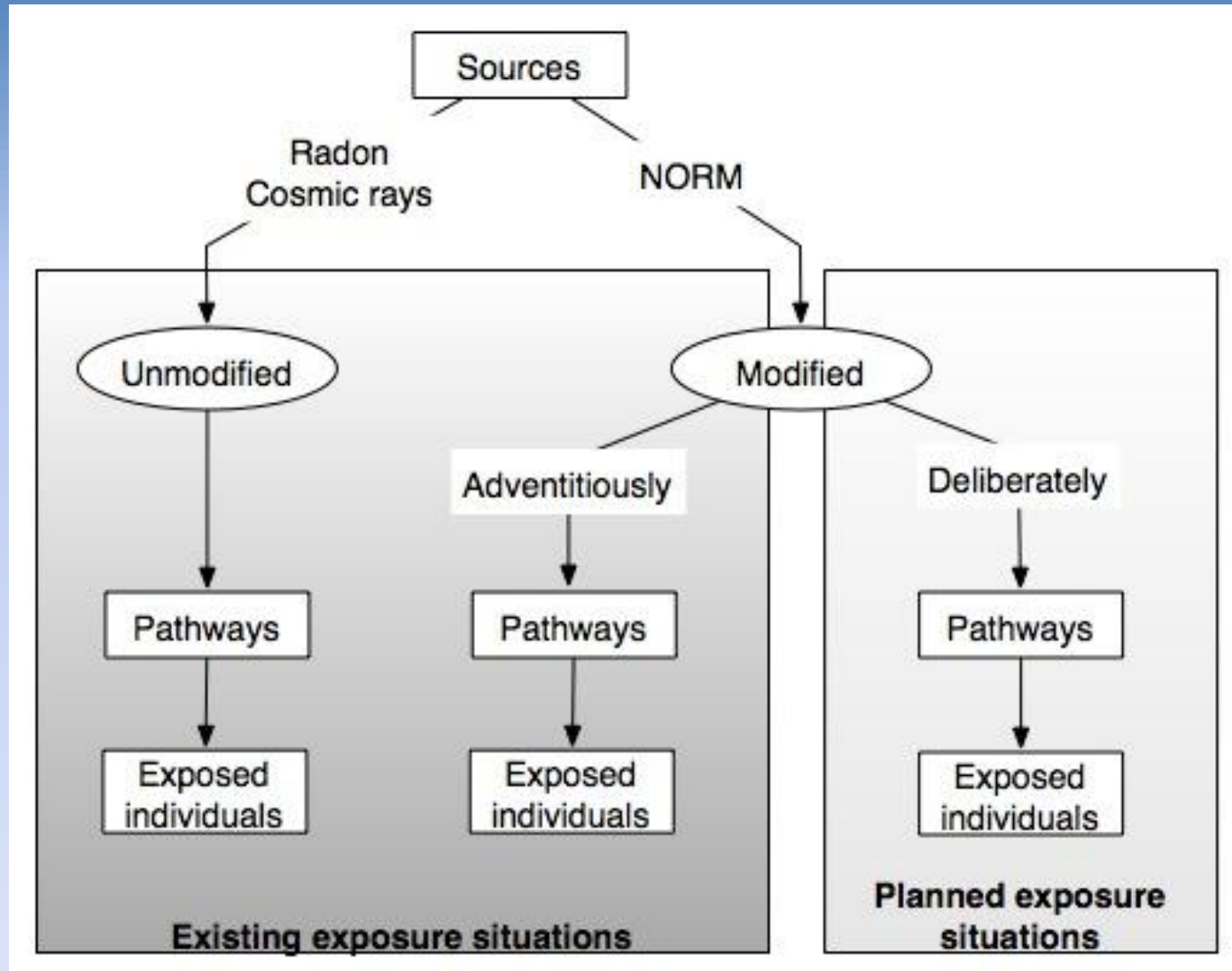


TG81: general approach

Other points

- Exposure to **thoron** is not a problem
- **Uranium mines**: waiting for the dose conversion factors from the Committee 2
- Approach expected to be applicable in **all existing exposure situations**

Exposure to natural radiation



Main messages

- Start with an action plan for dwellings
 - Most part of the risk (because of time spent at home)
 - Prevention + mitigation
 - Optimisation below a RL, applied to the building
- Extend the action plan to mixed-use buildings
- Idem for “ordinary” workplaces
 - Adventitious radon exposure
 - Important part of the risk (not yet addressed)
- Do not forgot the cases where radon is not adventitious
 - Determined with quantitative/qualitative criteria
 - Small part of the risk but individual doses may be high
 - Occupational exposure (control of individual doses)

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