Overview: The Austrian Radon Action Plan including Radon Database & Radon Risk Communication

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www.ages.at
Austrian Agency for Health and Food Safety
Main focus of this presentation

1. Overview: Radon situation in Austria
3. The Austrian Radon Database: Pro’s & Con’s
4. Radon Risk Communication
5. Summary & Conclusion
What you want to say.

What they're interested in.

Relevance
Radon situation in Austria
**AFFECTED POPULATION**

AUSTRIA: 9 federal states

- Total population: 8,6 mio.

- **Population RPK 1**
  - Radon potential 0 - 200 Bq/m³

- **Population RPK 2**
  - Radon potential 200 - 400 Bq/m³

- **Population RPK 3**
  - Radon potential > 400 Bq/m³
Average radon concentration in buildings (ref.: WHO)
Current legal frame for radon protection in Austria

• 1992: „Recommendation concerning reference levels for indoor radon concentration“ by the Austrian Radiation Protection Commission with the following key elements:

  - **action level** (400 Bq/m³ for existing buildings)
  - **design level** (200 Bq/m³ for future buildings)
  - set up a **radon potential map**
  - set up **guidelines for mitigation and prevention**
  - **inform** the public
Current legal frame for radon protection in Austria

**2004:** Amendment to the Radiation Protection Act (StrSchG) - § 38b „Regulation concerning radon in dwellings“

The responsible ministry (BMLFUW) is legally obliged to

- collect all radon data in a central data base
- set up appropriate radon maps,
- inform the public on regions with elevated radon potential
- set up recommendations to reduce exposure to radon.
- make available all relevant information to the public and the authorities

**2008:** Ordinance on exposure due to natural radiation sources (NatStrV) § 2 (1) Z 1.: Workplaces with potentially elevated radon exposures (water supplies, underground workplaces, show mines and caves, radon spas)

No specific regulation or obligation yet for **public buildings, schools, kindergartens, workplaces!**
Building legislation: OIB-Directive 3

Building legislation is responsibility of federal states → harmonisation through so-called OIB-directives.
(OIB ... Austrian Institute of Construction Engineering)

Radon:
OIB-RL 3, ch. 8.2: „Habitable rooms are to be effected (designed/constructed) so that there is no harm to the health of the user due to ... radon emission from the ground.“

The annotation to the OIB-RL 3 refers to the reference levels and standards.

In 8 out of 9 federal states compulsory → information of the builder/owner through the building authority in the process of giving the construction permit.
Status Quo

Dwellings

- Free radon test kits for private homes: ca. 400 dwellings per year
- Radon mitigations: ca. 10 per year
- Preventive measures in new buildings: ca. 40 per year
- Consultancies via the radon hotline: ca. 100 per year

Radon exposed workplace (water works, mines, etc.)

Only a small percentage of the effected companies have done the mandatory dose assessment for their workers so far.

Conclusion: The impact on the improvement of the over all radon situation in Austria of the current radon legislations and various actions is currently quiet small.
Development of the Austrian Radon Action Plan: Current status
Milestones of the past – summary

- Identification of radon prone areas!
- Better understanding of factors determining the indoor radon concentration!
- Set-up of Standards and information material!
- Establishment of methods for mitigation and prevention!
- Appointment of a national radon centre!
- Radon in dwellings is included in Radiation Protection Act!
- Radon protection in building code!

Much know-how acquired over the past 25 years !!!

BUT: Little impact in terms of overall reduction of radon risk (preventive measures mandatory but often not implemented; only 0.1% of houses expected to be > 400 Bq/m³ mitigated; low public awareness) → future task

\[12\]
Development of a National Radon Action Plan

- WP 1: Reference Levels
- WP 2: Radon prone areas
- WP 3: workplaces & public buildings
- WP 4: New buildings & existing buildings
- WP 5: Risk communication & training
- WP 6: Radon strategy & action plan
### Schedule for those six workpackages

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Arbeitspaket 1: Referenzwerte
- 2015: Q3, Q4
- 2016: Q1
- 2017: Q2
- 2018: Q3, Q4, Q1, Q2

Arbeitspaket 2: Radonrisikogebiete
- 2015: Q3
- 2016: Q1
- 2017: Q2
- 2018: Q3, Q4, Q1

Arbeitspaket 3: Arbeitsplätze
- 2015: Q3
- 2016: Q4, Q1
- 2017: Q2
- 2018: Q3, Q4, Q1

Arbeitspaket 4: Bestehende Gebäude und Neubauten
- 2015: Q3, Q4
- 2016: Q1, Q2
- 2017: Q3
- 2018: Q4, Q1

Arbeitspaket 5: Radon-Risikokommunikation und Ausbildung
- 2015: Q3, Q4
- 2016: Q1
- 2017: Q2
- 2018: Q3

Arbeitspaket 6: Radonschutzstrategie, Maßnahmenplan
- 2015: Q3
- 2016: Q4
- 2017: Q1
- 2018: Q2
Some thoughts on the determination of reference levels

- EU BSS requests **300 Bq/m³** at the highest...

- The reference level has a direct impact on...
  - *Number of buildings that should be mitigated*
  - *Expenses for remediation to decrease radon conc. below the RL*
  - *Radon testing effort*

- Impact of lowering the RL from 400 Bq/m³ to 300 Bq/m³ **for existing buildings** on the overall radon situation in Austria:
  - *More dwellings above RL (ca. 7 % instead 4.4 %)*
  - *High effort to detect those dwellings above RL*
  - *Willingness to take mitigation measures when above RL still stays very low*

- **For new buildings:** raising the RL from 200 Bq/m³ to 300 Bq/m³ will not have a big impact or cause any changes.
The Austrian Radon Database: Purposes & Benefits

- Documentation of all data:
  - Results of radon tests
  - building data
  - personal data

- Basis for:
  - Austrian Radon Potential Map
  - Transfer of knowledge
  - Support for projects, radon testing
  - effective monitoring of radon programmes

- Important tool for evaluation and control of various measures at national and provincial level
The Austrian Radon Database

- Legal requirement: Radiation Protection law §38b states...
  ...the ministry of environment has to provide a central radon data base to inform the public about the radon exposure

- Web based central database Administrator: National Radon Centre

- Access via gantries

- Project started: 2008, data base was launched: 2010

- User tests and debugging over a 6 month period (incl. maintenance, service, up-dates...)

- Since then: several up-dates and improvements
The Austrian Radon Database

- Currently: 32,922 data

- Training for all users provided by the National Radon Centre

- Users: Provincial governments, radon testing labs, ministry of environment (BMLFUW), National Radon Centre of Austria

- Costs (2009 until today): ca. € 300,000.- (incl. maintenance, service, up-dates...)
Previous procedure (before central database)

- f.e.: in Upper Austria (OÖ)
Current procedure

- f.e.: Upper Austria (OÖ)
Implementation

• Workflow:
  - registration
  - order to measuring lab
  - data acquisition
  - prevention
  - Remediation

• Central DB which collects:
  - personal data
  - building data
  - measurement data
  - data about prevention, remediation

• XML interface:
  - LIMS-connection (LIMS... Laboratory Information Management System)
  - Radon Potential Map
  - knowledge transfer
Different access rights for organisations and labs

National Radon Centre
- Organisation
- Laboratory
- Administrator
- Offers Trainings
- nationwide

Provincial Governments
- Organisation
- Only data available for the federal state

Laboratories
- Different access rights than the organisations

Value ranges
Data export
Address comparison
Testing campaign
Administration
Remediation
Prevention
Radon testing
Search
Laboratory
Order
What it looks like...

radon database login

Assignment:
- create assignment
- edit or duplicate assignment
- propose a measure
What it looks like...
radon database login

- Prevention and remediation:
  - documentation
What it looks like...
radon database login

- Assignment:
  - create assignment
  - edit or duplicate assignment
  - propose a measure

- Prevention and remediation:

- Measurement:
  - data acquisition:
    - building
    - type of measurement system
    - measurement values
  - data export (xml, csv)
  - print out questionnaire
What it looks like...
radon database login

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- **Administration tools:**
  - to define:
    - measuring campaigns
    - measurement labs
    - values, e.g. measuring instrument
  - address comparison (with PAC)
  - interface for data migration
  - user settings (e.g. permissions)
What it looks like...
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- Assignment:
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- Data export and search:
  - export to XML or CSV:
    - personal data
    - building data
    - data about prevention, remediation
    - measurement data
  - search:
    - address data
Future Option: Online Tool for direct entry into the radon database

- Developed by the Karlsruhe institute of technology
- Comparable tool in use by FANC (Belgium)
- Login KIT database
Die Logindaten sind:
- Schul-ID: SC9999
- Passwort: sUm_15(RIS)
Radon risk communication

... a rather unique communication challenge because:

- No physical evidence (no smell, no taste, not visible)
- It’s natural, it’s been always there → nobody to blame
- No symptoms
- Many things cause cancer
- No "dead bodies", no blood from radon
- People feel safe at home
Why?  Communication goals
What?  Key messages
Who?  Target groups
How?  Communication channels
Communication goals

Step 1: Raise awareness

Step 2: Create understanding / build confidence & trust

Step 3: Convince people to take action

Task is not just to raise awareness, but to create risk perception which leads to action !!!
Information on...
...Personal health risk
...Risk reduction

Key messages

Requirements
simple, easy to understand and short

Everybody
General key facts

Different target groups
Specific messages
Radon is the second most important cause of lung cancer in many countries.

Radon measurement is inexpensive and mitigation can be done at moderate cost as well.
Decision makers
- Local + central governments
- Stakeholders
- Politicians

Public
- General public
- Population segments
- NGOs

Target groups

Industry
- Building professionals
- Remediators
- Measuring comp.

Trusted influencers
- Physicians
- Pharmacists
- Teachers
- Journalists
Target group specific web presence:
www.radon.gv.at

- Members of the public
- Building professionals
- Employers
- Authorities
- Constructors
Workshops for professionals
Stumbling blocks in risk communication

- Loss of trust caused by insufficient transparency
- Apathy, once developed, can turn into a main obstacle for effective risk communication
- Confusion caused by the use of technical terms
- Loss of trust caused by inconsistency
Average number of deaths per year in Austria distinguished by cause of death

- Radon induced lung cancer
- Car accident
- Fire
- Drown
- Homicide

... equals 10 deaths

Source: Statistik Austria
Summary: The key to success... ...7 ingredients for a successful radon protection in your country

1. High quality radon map
2. Reliable radon testing methods
3. Practicable methods for prevention and mitigation
4. Quality assurance
5. Training of professionals
6. Legislation (Radiation protection, building industry)
7. Risk awareness

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