National Radon Action Plan of the Czech Republic

15 years of experiences

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History

- 80s – systematic survey, mapping of situation
- 1989 – first legislation, financial support for search and radon counter- measures,
- 1997 – Atomic law (incl. building mat., water)
- 1999 – 2009 Radon program (first period)
- 2010 – 2019 Radon program (second period)

First Period

- Search for existing buildings with high radon concentrations
- Development of preventive measures in new houses and counter-measures in existing ones
- Public awareness
- Research activities
- State financial support for radon counter-measures in existing buildings

Situation in the Czech Republic

- Measurements in more than 176 000 flats, results:
  - approx. 29 000 flats with radon concentration > 400 Bq/m^3
  - approx. 6 000 flats with radon concentration > 1 000 Bq/m^3
- Estimation:
  - Radon concentration > 400 Bq/m^3 in 2 % of flats (200 000 inhabitants)
  - Radon concentration > 1 000 Bq/m^3 in 0.2 % of flats (7 000 flats, 20 000 inhabitants)
- Remedial measures in approx. 5 000 flats
- Average indoor radon concentration approx. 120 Bq/m^3

Second period

- Main long-term goal of the Action plan:
  Reduction in the number of deaths from lung cancer as a result of the increased exposure to radon
- Pragmatic and useful goals:
  - Public knowledge - radon is one of existing risks in everyday life, known and manageable
  - Professional approach - radon is the standard part of everyday work of designers and civil engineers
- Multi-departmental approach (State Office for Nuclear Safety,Ministry for Regional Development, Ministry of Industry and Trade, Ministry for Finance, Ministry of the Enviroment,…)

Second Period

Radon Action Plan:

1. Awareness strategy
2. Radon prevention strategy
3. Strategy of controlling the existing exposure to radon
4. Expert scientific and technical support of the Action plan task implementation

Prevention

- Based on determination of radon index
  (Radon index is based on measurement of radon concentration in the soil and of soil permeability. It could be low – medium – high. Measurement is required by legislation)
- Implementation of preventive measures during construction
  (Measurement in newly constructed buildings is recommended, but…..)
- What if, despite these measures the concentration is high?

Existing buildings

- Free long-term measurement of indoor radon concentration
- State financial support (*paid only after the efficiency of remedial measures has been proved by measurement, but…)*
- Should old building with new windows be supported?

Measurement and evaluation

- System of licensees for measurement and evaluation of radon concentration indoor, radionuclide concentration in water and building materials and for radon index determination (*requirements: person with special proffesional competence attested by examination, certified equipment, compliance with the recommended methods*)
- More than 130 licensees
- How to control quality of measurement?

Public Awareness

- House purchases cases
- How to explain what is reference level?
- How to explain optimization principle?
- How to explain variability of concentration in time and conditions?

EU BSS Impact

- Unification of reference level
  (*now: 200 Bq/m³ for new buildings*
  and 400 Bq/m³ for existing buildings)
- Regulation of workplaces (requirement for measurement)
- Radon action plan (revision)

Workplaces

- How to determine areas (whole country or lesser areas – administrative units)?
- How to determine other indicators?
- How to avoid stigmatization of areas, prevent commercial impact and unjustified financial and administrative burden?

Keypoints

- Validity of measurement
  - Reliability (control of companies)
  - Comparability (in time and different conditions)
- Effectiveness of prevention
  - Verification of counter-measures efficiency
- Understandability of the system for people
- Determination of workplaces
  - proper targeting