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Discussions on the Article 103(3) of the EU BSS

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Art. 103(3)

3. Member States shall identify areas where the radon concentration (as an annual average) in a significant number of buildings is expected to exceed the relevant national reference level.

- Before discussing this article…

What are the requirements in such areas?

- To measure Rn concentration in all workplaces at ground floor and basement (Art. 55.2.a):

> 2. Member States shall require that radon measurements are carried out:
>
> (a) in workplaces within the areas identified in accordance with Article 103(3), that are located on the ground floor or basement level, taking into account parameters contained in the national action plan as under point 2 of Annex XVIII, as well as

- No other requirement is related to such areas.
- Anyway, this is a basic requirement (no remediation without previous measurement of Rn concentration).

Concept and assumption of (Rn priority) areas

- It is a tool for the management of radon exposure and related risks.
- It is a yes/no tool (unless the definition changes with time or with progress of National Radon Action Plan implementation)
- It assumes that the radon distribution over the territory is not uniform, and it is possible to clearly distinguish areas.
- However, radon is present in all the indoor environments and in some countries the quantitative difference among priority/no-priority areas (in terms of average Rn level or in terms of percentage exceeding Rn reference level) can be not so high.
  - (Some countries has defined their whole territory as a Rn priority area)

Art. 103(3) – Considerations (1)

3. Member States shall identify areas where the radon concentration (as an annual average) in a significant number of buildings is expected to exceed the relevant national reference level.

- The definition of such areas (often call “Rn priority” areas) is intended to be flexible:
  - “significant” can clearly be quantified in different ways (we will discuss this point later)
  - “Buildings” imply both dwellings and workplaces

Art. 103(3) – Considerations (2)

> 3. Member States shall identify areas where the radon concentration (as an annual average) in a significant number of buildings is expected to exceed the relevant national reference level.

However:

- "Significant NUMBER" is different from "significant FRACTION" of buildings exceeding RL.
- The NUMBER is related to the collective risk (including number of lung cancers), whereas the FRACTION is related to individual risk.
- Low populated areas with a high FRACTION of buildings exceeding the RL will have a NUMBER of such buildings lower than high populated areas with a lower fraction.

Related EU BSS articles

Reference Levels

Definition 84: “reference level” means in an emergency exposure situation or in an existing exposure situation, the level of effective dose or equivalent dose or activity concentration above which it is judged inappropriate to allow exposures to occur as a result of that exposure situation, even though it is not a limit that may not be exceeded.

Art. 7(1): Member States shall ensure that reference levels are established for emergency and existing exposure situations. Optimisation of protection shall give priority to exposures above the reference level and shall continue to be implemented below the reference level.

Radon in dwellings

Art. 74(2): Under the national action plan referred to in Article 103, Member States shall promote action to identify dwellings, with radon concentrations (as an annual average) exceeding the reference level and encourage, where appropriate by technical or other means, radon concentration-reducing measures in these dwellings.

Implications

- Priority should be given to the identification and remediation of ideally all the buildings (workplaces AND dwellings) with Rn level exceeding the relevant Reference Level
- Application of the optimisation principle should imply to reduce exposure also in buildings with Rn level below the relevant Reference Level.
  - Epidemiological studies in Europe have shown a statistically significant increase of lung cancer risk also for Rn levels in the range 100-200 Bq/m^3.

A rationale criteria for a quantitative definition of radon priority areas

- No quantitative definition of radon priority areas can have a general validity, especially if it is based on FRACTION (exceeding RL) only, due to different distributions of Rn levels.
- However, on the basis of the EU-BSS articles and definition of RL, the following general criteria can be proposed:
  - A good definition of Rn priority areas should identify areas that globally contain a very large fraction (ideally close to 100%) of all the estimated buildings exceeding RL in the country.
  - Feasibility considerations could suggest to plan to achieve the goal of identity and remediate all the buildings (especially the dwellings!) exceeding the RL in more than one NRAP, but, anyway, this goal should be achieved as soon as possible (too small or slow actions means fewer avoided lung cancers).

Thank you for your attention

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