Common Nordic Recommendations for Radon in Dwellings, Draft

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We have a long tradition of cooperation between the Nordic radiation protection authorities
Some recent common documents from the Nordic radiation protection authorities

• Naturally Occurring Radioactivity in the Nordic Countries – Recommendations, 2000
• Mobile Telephony and Health - A common approach for the Nordic competent authorities, 2004
• UV-Radiation of Sun beds - Common public health advice from Nordic radiation protection and health authorities, 2005
# Radon levels in dwellings in the Nordic Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean Bq/m³</th>
<th>&gt;200 %</th>
<th>&gt;400 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>50</td>
<td>3</td>
<td>0,2</td>
</tr>
<tr>
<td>Iceland</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>120</td>
<td>12</td>
<td>3,3</td>
</tr>
<tr>
<td>Norway</td>
<td>90</td>
<td>9</td>
<td>3,6</td>
</tr>
<tr>
<td>Sweden</td>
<td>110</td>
<td>10</td>
<td>3,6</td>
</tr>
</tbody>
</table>
Lung cancer from radon

• More than 1 200 lung cancer deaths can be attributed to radon in dwellings annually in the Nordic Countries (~ 25 million people)
• It is more than 10 percent of the total number of lung cancer deaths
• Almost 2/3 (63 %) of the lung cancer deaths attributed to radon occur among people exposed to less than 200 Bq/m³
Potential effects of remedial measures

• If remedial measures were taken in all dwellings with radon levels exceeding 200 Bq/m$^3$ more than 300 lung cancer deaths could be avoided each year in the Nordic countries

• If the mean radon level were reduced by 10%, 120 lung cancer deaths could be avoided annually
Preventing radon in new dwellings

• For new buildings the reference level should be in the range 100 - 200 Bq/m$^3$
• The goal should be an average level of 50 Bq/m$^3$, or lower, in the new housing stock
• National, regional and local authorities should assure an adequate surveillance of radon levels in new buildings
Reducing radon levels in existing dwellings

• The action level for radon in existing dwellings should be in the range 200 – 400 Bq/m$^3$
• Remedial measures should be undertaken with the aim of bringing the radon level well below 200 Bq/m$^3$, preferably below 100 Bq/m$^3$
• Radon remediation should be undertaken with cost-effective, well documented and validated methods
Measurements

• Decisions for remedial measures should be based on long-term measurements, the duration should be at least 2 months during the heating season

• Measurement systems should be calibrated regularly and the standards used should be traceable to international standards

• Preferably measurements should be performed by accredited laboratories
Education and training

• Education and training of all personnel taking part in radon work is important for a correct information and guidance to the general public about radon and for successful prevention and remediation.

• Training courses should be available for: measurement and mitigation personnel national, regional and local authorities building professionals
Risk communication

• It is recommended that the national authorities provide regional and local authorities with information material on radon in dwellings that could be distributed to the general public.

• Experience from many countries has shown that local communication efforts are the most effective.
Radon and smoking

- Most of the radon-induced lung cancer cases occur among smokers.
- The risk of lung cancer is about 25 times greater for a smoker than for a lifelong non-smoker.
- For smokers the greatest reduction in risk is obtained if they both stop smoking and reduce the radon concentration.
- Experience from the US shows that mixing “stop smoking” and “reduce radon” messages can cause non-smokers to underestimate the radon risk.