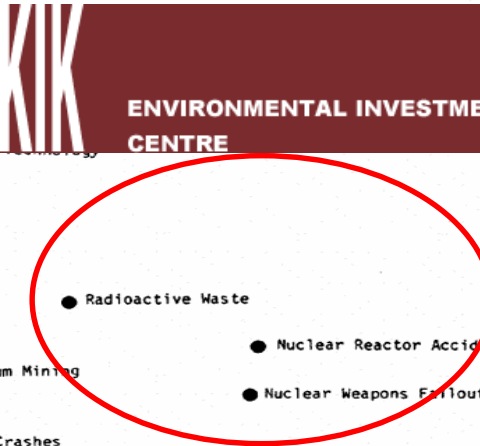
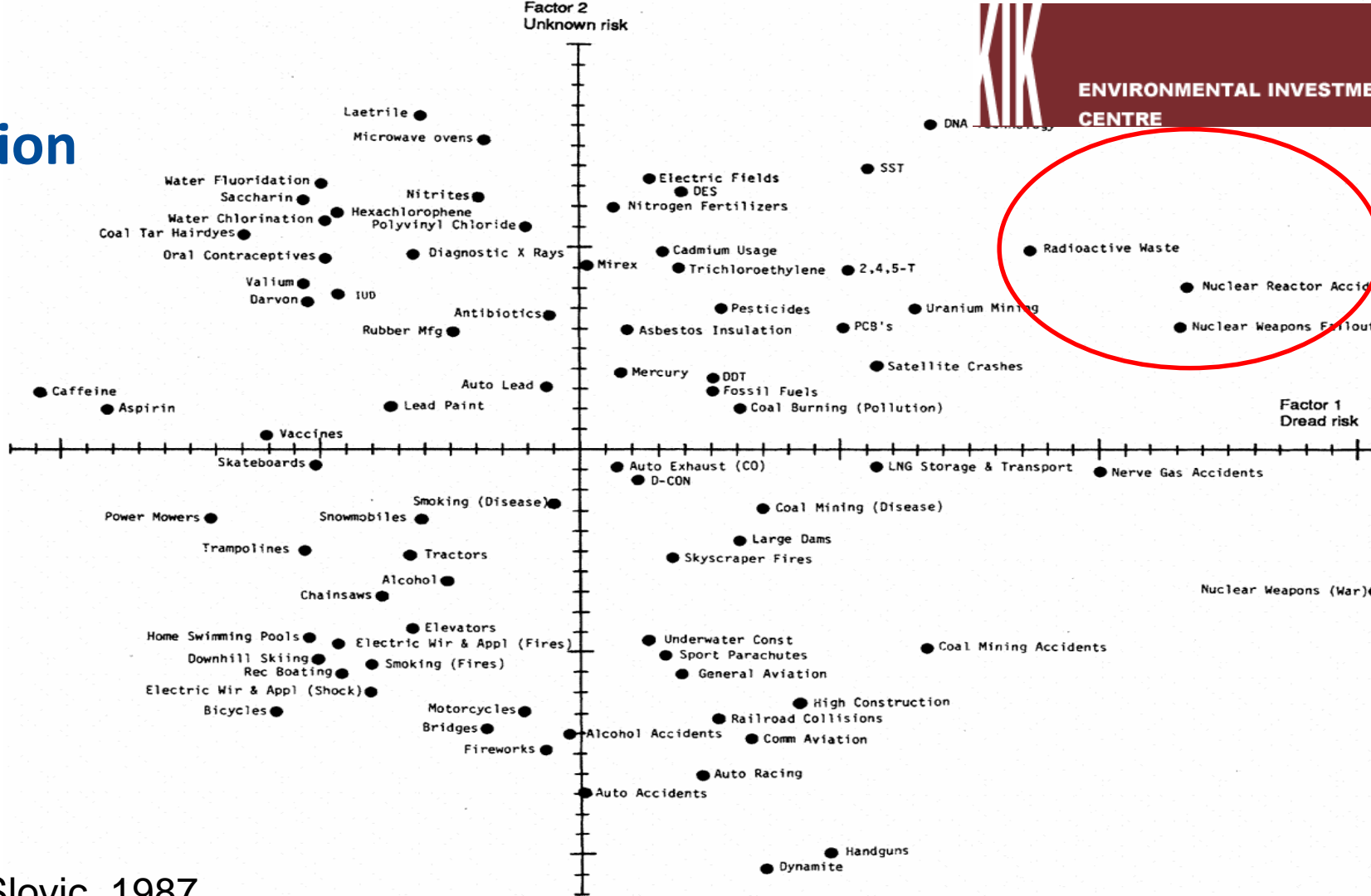


Risk communication

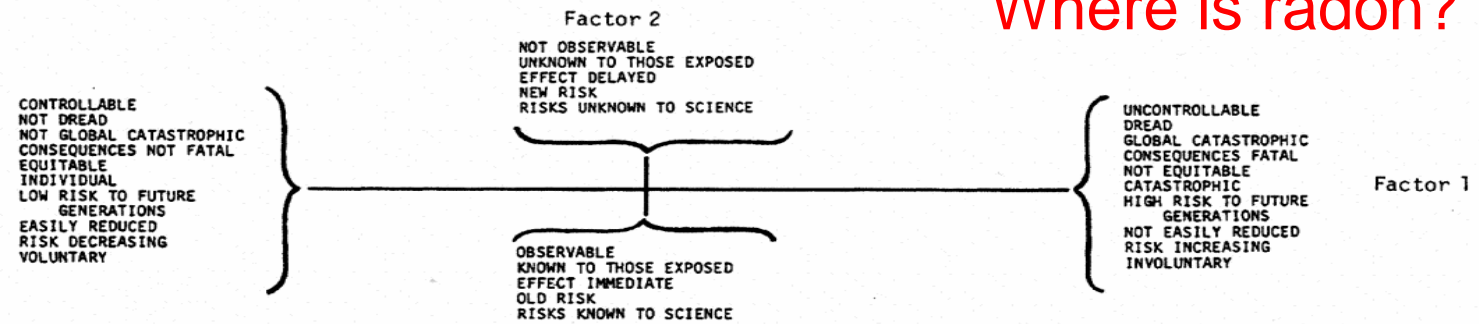
Olli Holmgren and Tuukka Turtiainen
STUK

Risk perception



Source: Slovic, 1987

Where is radon?



Risk communication

Ongoing reciprocal communication among all interested parties is an integral part of the risk management process. Risk communication is more than the dissemination of information, and a major function is the process by which information and opinion essential to effective risk management is incorporated into the decision. (Bennett and Calman 1999)

- The days when “we know best” are over
- From an expert’s viewpoint, illogical statements are published and believed (internet)
 - Example: National Health Authority and <http://karppaus.info/>, among many others
- Are we in a risk of someone starting to promote radon as beneficial for health?

Article on Bad Gastain (Me Naiset, Feb 2016)



The rich and the famous of Europe including the royals enjoy the baths and health benefits of radon-bearing mineral water

- No. of readers: 415 000
- I wrote a comment on the webpage stating facts about radon exposure



- People can vote if they like the comment or not

BSS stipulates

- National action plans are needed for addressing long-term risks from radon exposure:
 - Strategy for communication to increase public awareness and inform local decision makers, employers and employees of the risks of radon, including in relation to smoking.
- Under the national action plan, Member States shall:
 - promote action to identify dwellings, with radon concentrations (as an annual average) exceeding the reference level and
 - Encourage radon concentration-reducing measures in these dwellings
- Member States shall ensure that local and national information is made available on:
 - indoor radon exposure and the associated health risks
 - on the importance of performing radon measurements and
 - on the technical means available for reducing existing radon concentrations

Wide audience

Private

Home owners

Tenants

Landlords

Measurers

Construction
companies

Employers

Employees

Real estate
agents

Public, local

Municipalities

Occupational
health
inspectorate

Universities

Vocational
schools

Associations

Public, national

Public Health
institute

Occupational
health institute

Mining safety

Ministries

Radiation safety

Associations

Journalists

Tools and channels

- Media relations
 - New findings about radon
 - Relations must be cultivated
- Websites
 - Basic information, supplementary information
 - Good for information that needs to be updated
- Printed publications
 - Specific target audiences
 - Important key documents
- Digital publications
 - Updating information is easier

Tools and channels

- Meetings, workshops, exhibitions, trade shows
 - Discussions with target audiences
- Public consultations
 - Receiving different perspectives
 - Testing messages with different audiences
 - Radon action plan
- Stakeholder networks
 - Better understanding of the environments in which we operate
 - Commitment to common goal
- Social networks
 - Reach new audiences

Message 1: Radon is a health risk

- This message should be targeted to all actors in the society
- Risk communication is the only tool for this message (which cannot be forced by regulations)
- First question: How many people know that radon is a health risk?
- Second question: Do they know what risk is related to radon?
- The difficult part: The target audience is mixed and interpret the science in different ways
 - Risk perception may vary

A survey: Risk awareness

- 2015–2016 we carried out a questionnaire survey on risk awareness of radon*
- Questionnaire in the internet, promoted by ads and during radon survey (fb, twitter, associations, etc.)
- In total 807 people filled in the questionnaire

| Parameter | Distribution |
|------------------|-------------------------|
| Gender | 44% female |
| Age | Mean 48 (14–93) |
| Ownership | Owner 88% |
| Type of dwelling | Single family house 57% |
| Children | 66% |
| Smokers | 5% |

* Data is not yet published. Author: Dr. Katja Kojo, STUK

Source of information

- 93% of respondents had heard about radon

| Source | No of replies |
|-------------------------------|---------------|
| Mass media | 584 |
| Friends/relatives | 186 |
| Building inspection authority | 104 |
| STUK | 252 |
| Health care | 33 |
| House supplier/designer | 75 |
| Other | 156 |

What are the expected health risks

- 96% of respondents agreed that radon is a health risk, however

| Health risk | No of replies |
|------------------------|---------------|
| Asthma | 214 |
| Lung cancer | 706 |
| Heart disease | 42 |
| Headache | 235 |
| Rashes | 58 |
| Rhinitis, blocked nose | 149 |
| Fever | 25 |
| Eye problems/itchiness | 108 |
| Other | 32 |

A lot of work still left
to be done

Source of information

- Mass media was the most important source of information
 - Newspapers, radio, internet etc.
- We can put information on internet freely, but how do we get stories to the newspapers, magazines and radio?
 1. Press releases about new findings, regulations etc.
 2. By offering topics/articles directly
 3. Networking at exhibitions, trade shows, training courses etc.

Saturation problem: the same media does not want to publish news about radon repeatedly

Timing problem: More interesting news overwhelm people's attention, measurements not available in summer

Content problem: It does not concern me

Secrets of radiation

- Building and fostering media relations
- The journalists should be considered an ally in communication
- STUK has provided and keeps providing a two-day course for journalists at cost and organizes excursions to NPP's
- Six courses have been given and about 100 journalists have attended
- Radon is included
- Well received



SÄTEILYN
SALAT

Source of information, the internet

- Easy to update
- Information on radon on the website
 - The language should be simple enough for majority of readers
 - Information on a variety of topics, e.g.:
 - Occurrence and risk areas
 - Measurements
 - Related health risk (including in relation to smoking)
 - Radon entry to houses
 - Radon-safe building
 - Remediation in old houses
 - www.radon.fi
 - Provide information that assist in personal decisions

STUK's internet page

10 suosituinta sivua Stuk.fi-sivustol

| Sivu | Käynnit | Kaikista käynneistä | Kävijät |
|--|---------|---------------------|---------|
| www.stuk.fi/aiheet/sateily-ymparistossa/sateilytilannetanaan | 8 299 | 53,04 % | 8 216 |
| Etusivu | 2 173 | 13,89 % | 1 855 |
| www.stuk.fi/aiheet/radon | 423 | 2,70 % | 404 |
| www.stuk.fi/saannosto | 329 | 2,10 % | 288 |
| www.stuk.fi/aiheet/sateily-terveydenhuollossa | 290 | 1,85 % | 269 |
| www.stuk.fi/saannosto/stukin-viranomaisohjeet/ydinturvallisuusohjeet | 283 | 1,81 % | 207 |
| www.stuk.fi/tietoa-stukista/yhteyshenkilot | 270 | 1,73 % | 249 |
| www.stuk.fi/aiheet/radon/radon-suomessa | 268 | 1,71 % | 261 |
| www.stuk.fi/aiheet/radon/radon-suomessa/pientaloasuntojen-radonpitoisuudet-suomen-kunnissa | 260 | 1,66 % | 223 |
| www.stuk.fi/ajankohtaista | 256 | 1,64 % | 234 |

- According to the study, 252/807 learned about radon from STUK
- Radon is the most popular page after “radiation today”
- People stay on each radon topic 1–2 minutes
 - The length of the text should reflect to this
- Links to more detailed guides and e-publications for those who have more interest

Experiences:

Municipal health authorities

- Municipal health authorities manage the risk communication on local level (but not always)
- In the 90s municipal health authorities ordered large batches of radon detectors and distributed these to the home owners
 - Cheaper price, information on areal occurrence
- Establishing cooperation with the municipalities is becoming more difficult:
 - Too high workload at (federation of) municipalities
 - Frequent staff changes
 - Limited financial resources
- STUK provides a lectures for training of health inspectors at universities and provides training at national refresher courses for health inspectors, if asked

Message 2: Measuring radon is beneficial

- Let's look at the questionnaire study about attitude towards measuring radon

| Health risk | No of replies |
|--|---------------|
| Measuring has not occurred to me before | 125 |
| I have not yet decided whether to measure or not | 145 |
| I have decided not to measure | 28 |
| I want to measure | 213 |
| I have already measured radon | 147 |
| I have started the measurement | 82 |
| Don't know | 59 |

Target audience

- Home owners
 - House managers, landlords
 - Prospective home buyers
 - Real estate agents
 - Employers
-
- Municipal health authority should provide information locally and encourage home owners to measure
 - Occupational safety administration should be aware of statutory measurements at workplaces (certain municipalities and types of work places) even though supervision is carried out by STUK
 - Again, the audience is huge.

What could be reasons for not to measure?

| Argument | Counter-argument |
|--|---|
| The value of my house will decrease if radon is found | Radon can be remediated with a couple of thousand euros and the value will no decrease |
| It is more difficult sell the house if radon problem is known | It will be easier to sell the house, when present (low) radon levels are known |
| I have lived here already 15 years, I don't want to know that I have been exposed to radon | Exposure and risk are both cumulative. Therefore, radon remediation is always beneficial |
| Measuring is very expensive | At the cheapest, you can have radon measured with 35 euros |
| Remediation is difficult and expensive | Remediation is only a couple of thousands which is a small money compared to the property value |

To provide a solution is a good approach

- When you encourage people to measure, try to overrule possible arguments already in the message
- When you present something negative (radon) always try to provide solution in the next sentence
 - “Radon may be a risk in area xx especially in houses built in the 70s and 80s. However, measuring radon is simple and cheap and radon remediation is not very expensive, on average 2500 euros.”

Experiences

- Awareness of radon has increased and in many municipalities prospective buyers of a house want to know the radon levels
- STUK is promoting radon measurements before or after the sale
 - If the radon level is not known, a sum can be reserved of the sale price separately for possible radon remediation
- We have tried to encourage companies who have measured radon in their premises to use this in their PR

Nationwide radon surveys in Finland

- Indoor radon measurements offered free of charge

First

- 1991, 3067 dwellings
- random population sample

Second

- 2006-2007, 2866 dwellings
- random population sample, participation rate 48%
- mean 96 Bq/m³

Third

- 2009, 1561 low-rise residential houses
- random sample from new construction register
- construction completed in 2006 -2008

Background information

- Population 5.4 million
- 1.35 million dwellings in low rise residential houses
- 1.07 million dwellings in apartment houses

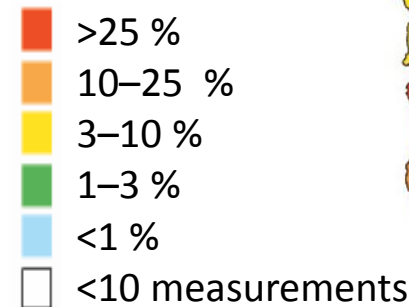
Radon risk mapping

- Radon maps are based on indoor radon measurements
- Started in 1980 by researchers at STUK, 1st map in 1983
- First radon directive in 1986, National Board of Health
 - STUK prepared **measurement plans for all municipalities** based on indoor radon measurements and geological data (uranium concentration and air permeability of the soil)
 - Active mapping of indoor radon concentrations in all municipalities until 1996
- 40 000 houses measured through activities of local authorities
- Activities continued in many municipalities
 - In radon-prone regions, 10–18% of houses have been measured
 - In 2008, 20–41% of low-rise residential houses have been measured in 13 municipalities (336 municipalities in total)
 - Altogether 6% of low rise residential buildings have been measured in the whole country

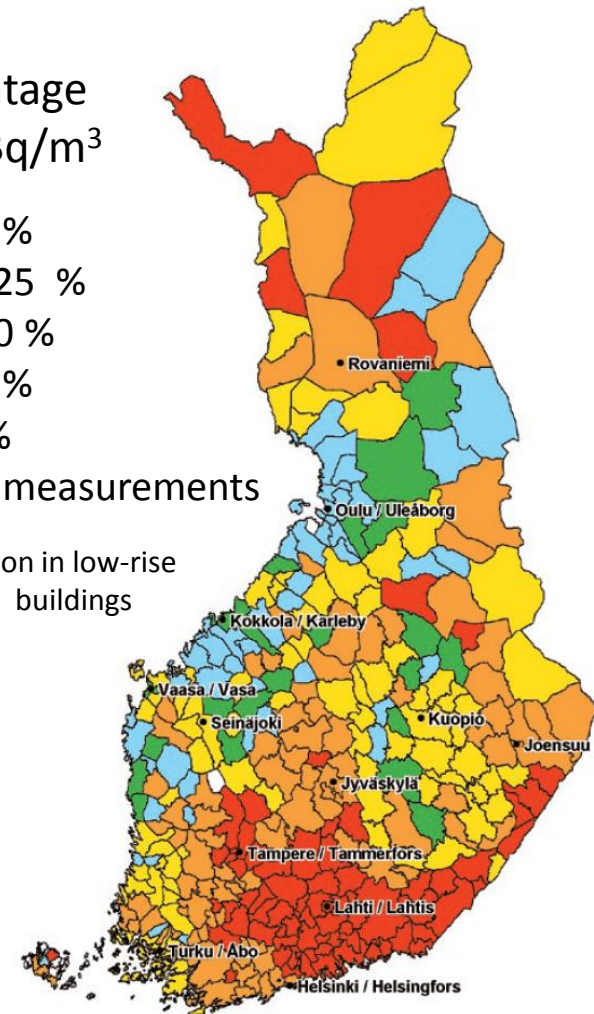
Radon Atlas of Finland 2010

- Based on 87 000 low-rise residential houses measured between 1980 and 7/2008
- Measurement results collected in a national radon data base
 - Almost all measurements in Finland have been done by STUK
- Currently 106 000 houses (6%) and 6000 apartments in blocks of flats have been measured
- Measurement statistics of all municipalities at www.stuk.fi

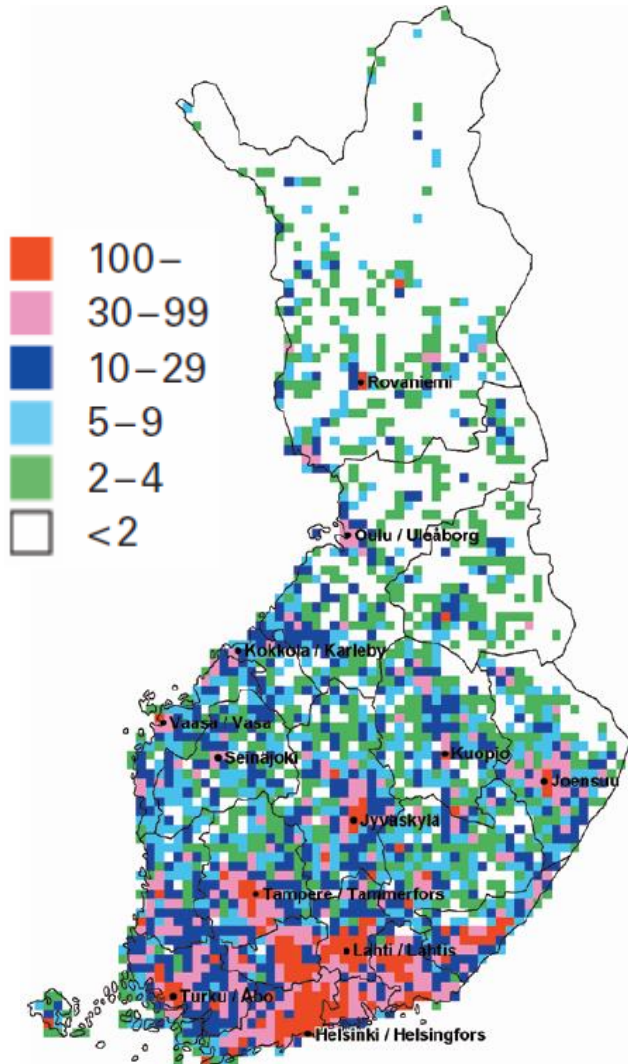
Percentage
>200 Bq/m³



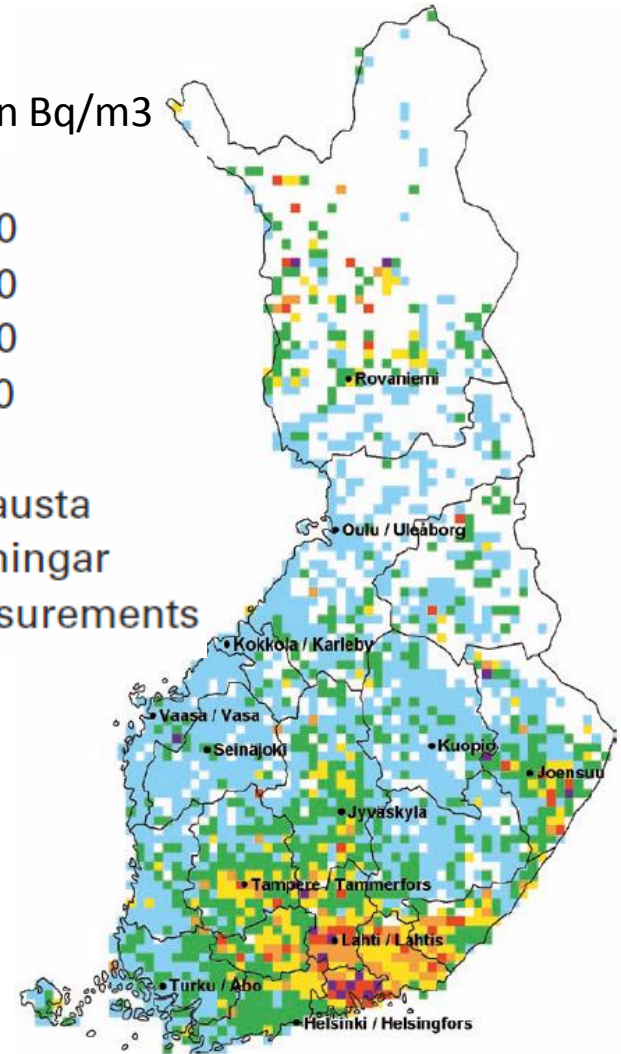
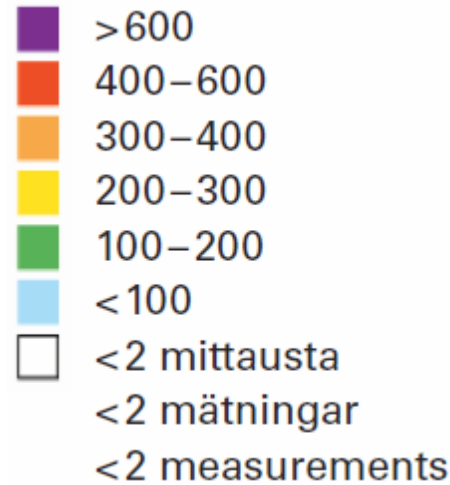
Indoor radon in low-rise
residential buildings



Radon atlas of Finland 2010



Average Rn concentration Bq/m³



Number of houses measured in 10 x 10 km squares

Radon campaigns

- Directed to radon-prone areas
- Cooperation with local health authorities
- Measurements offered with a discount of the normal price
 - Campaign measurement: 33 EUR (Normal price 43 EUR in 2011)
- Since 2003 already 30 000 houses have been measured
 - Mitigation level of 400 Bq/m³ has been exceeded in 5000 houses
- **Training of mitigation companies belongs to the campaign programme**
 - Rising the supply and demand simultaneously
- Direct-mail advertising since 2008, earlier, newspaper advertisement
- Participation rate 4–5%



Message 3: Remediation is straightforward

- Target audience
 - Home owners
 - House managers
 - Building authority
- Remediation techniques
 - First guide on remediation was published in 1992
 - Latest guide from 2012
- Radon safe building
 - First guide 1993
 - Radon has a design value in the present building code

Remediation training

- Once a year STUK organizes a one-day training about remediation
- Training takes place in different towns
- About 40 participants (a mix of construction companies, house managers, health inspectors)
- Short introduction to radon and associated risks but mainly on construction techniques
- Important forum for dialogue:
 - STUK will learn, what information is missing/needed
 - We can adjust/improve our guides based on real experience
 - Example 1: short-term measurements
 - Example 2: certificate for remediation

Training professionals

- Information transfer
- Sharing GOOD practice, showing BAD practice
- Capacity building
- Knowledge maintenance and knowledge increasing
- Sharing the experience
- Sharing new information from science to industry
- Sharing the experience and requests from industry to science

How to educate and train the professionals.

- Short term
 - Training courses
 - Workshops
 - Presentation of radon issue at Regular department meetings
- Long term
 - Radon included into life-long education system, continuing education of professionals
 - Radon related lectures included in existing courses at building professionals' education and training institutions.
- E-learning

Opinion makers

- Medical doctors, teachers (all grades), building control officers, real estate brokers (agents), lawyers etc. are out of the main stream requiring education
- However, these professionals can highly influence the perception of radon risk among general public therefore they should be involved in at least an informational lectures
- Different structure, tailored to the specific target group – help from communicators

Education of opinion makers

- Education in this sense is more communication than real education
- As the opinion makers may highly influence the public but also other stakeholders and their perception of radon risk, the clear explanation of radon problem should be delivered to them.
- Possible collaboration in future could be discussed as well.
- It is not recommended to overload opinion makers with too detailed information → develop messages and educational material containing targeted information for the specific opinion makers' group
 - e.g. medical doctors should receive more detailed information on health effects and simple key messages on radon measurement (without measurement we do not know if radon is present or not and what is the level) and building protection (prevention and high radon levels can be reduced).