

## Case study in the field of radon exposure management in France

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- Franche-Comte Radon pluralist project develop in September 2011 by IRSN, the Montbéliard urban community, the regional agency for air quality monitoring, the health regional agency and the CEPN
- Aims of the project: develop awareness on radon risk and contribute to the information and the support of different actors who deals with the management of radon (general public, doctors, local councilors, building professionals...)
- Actions have been developed according to 3 main areas :
  - Education and training
  - Knowledge enhancement
  - Actions in support of territories (measurement campaigns of radon...)
- Actions are developed to improve the management of radon risk in a general perspective of Indoor Air Quality (IAQ) and energy efficiency in buildings

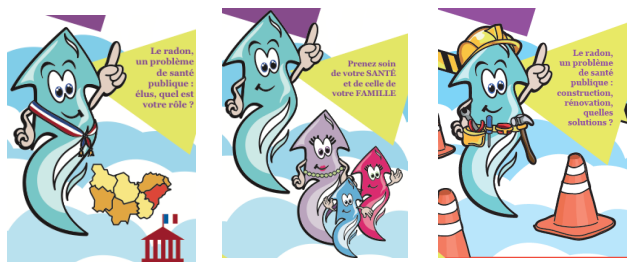
- Target stakeholders of the case study
  - General public
  - Local elected representatives / local communities
  - Building professionals : craftsmen, architects, project managers, ...
  - National and local authorities (regulation, health, environment)
- Aim of the actions
  - Implementation of local initiatives
  - Increase radon risk awareness of the population
  - Implement measurement campaigns
  - Implement remediation actions and preventive actions for new building

- First approach: the health risk: “radon increase the risk of lung cancer”
- RP elements are given about the reference level, way of exposure in an overall context of indoor air pollution
- This basic information is common for all actors (public, building professional and public authorities)
- After this general presentation, specificity of the problematic is developed for each type of stakeholders:
  - For the population: “take care of your health and that of your family”, Information given on measurement possibilities and actors that can help.
  - For public authorities: “*radon is a public health issue: as an elected representative, what is your role*”. Information is given about regulation and their role to develop awareness campaign for the population and to set up measurements in public buildings
  - For building professionals: “*radon is a public health issue: constructions, renovations, which solutions?*” information about remediation technics in old building and preventive measures in new building taking into account the energy efficiency

# RP culture in the field of radon management Processes and tools to develop RP culture -1

- Different working group to develop tools with a validation in plenary session.
- Each group has a common core of RP expert, local councillors, public authorities, university and expert in scientific vulgarisation.
- Added to the common group, representatives of each target stakeholders are involved
- Several tools were developed in concertation with specialist of target stakeholders:

- Leaflets,
- Training courses,
- Awareness session,
- Website...



## Quand et comment réaliser une mesure de radon chez soi ?

- Pour dépister votre logement, il est recommandé d'effectuer la mesure pendant deux mois minimum entre octobre et avril de l'année suivante.
- Il suffit de poser un **dosimètre** dans une pièce en sous-sol (cave, buanderie...) et un second dans la pièce de vie la plus occupée au rez-de-chaussée (chambre, salon...).
- Suite à votre demande de dépistage, un kit radon vous sera fourni. Il contient les dosimètres et toutes les informations nécessaires pour réaliser votre mesure.



## Et après la mesure ?

- Les résultats vous seront communiqués par courrier ou e-mail. Ils seront accompagnés de recommandations en cas de présence de radon en grande quantité.

300 Bq/m <sup>3</sup>		1000 Bq/m <sup>3</sup>	
Concentration FAIBLE	Concentration MOYENNE	Concentration ÉLEVÉE	
Pas d'actions correctrices préconisées	Actions correctrices simples à mettre en place	Actions correctrices à mettre en place impérativement	

- Si une concentration élevée en radon est détectée, un accompagnement personnalisé pourra vous être proposé.
- Il existe des solutions d'atténuation pour réduire la teneur en radon dans votre habitation.

- Population: Need to process step by step
  - Raise awareness about radon risk
  - Provide measurement device
  - Provide feed-back and advice after measurement campaigns
    - After the last campaign, a meeting was organised with inhabitants. Upon 175 measurements, 80 participated to the meeting to explain the results of the campaign and what are the remediation actions
    - Organisation of practical technical meetings – each inhabitant can come with the description of their dwelling and building professionals provide advice
    - After remediation, it will be proposed to make a new measurement
- Building professionals
  - Key actors for the diagnostic phase (after measurement), and then remediation actions
  - Processes to develop RP culture and associated technical knowledge to implement actions are linked to education and training, with two main possibilities :
    - Integration into initial training
    - Continuous education – But this is not mandatory for these type of professionals

- Multi-stakeholder approach works for several reasons:
  - Feedback from the local authorities who organized measurement campaigns since many years: easier to identify priority actions
  - Motivation of the project participants who are actors in the decision making process
  - Pluralist group with a common goal
- Limits:
  - Difficult to develop RP culture on radon issue because it is unknown for public or professionals => Importance of the integration of radon campaign into an overall improvement of indoor air quality and energy efficiency
  - Multi-stakeholder approach needs time
  - Lack of human resource particularly for diagnostic after measurements
  - Long term actions:
    - For the public the dynamic is linked to the measurement campaigns
    - For the public authorities and professionals, the dynamic is linked to the recurrence of the actions and to the involvement of other building professional categories (craftsmen, project manager, architect)

- For initial training dedicated to students in civil engineering, to building professionals, or to technical staff of local communities : small exam (MCQ) and practical case studies allow to evaluate the level at the issue of the training but it is punctual and not an evaluation on the long term
- For the other actors: difficult to evaluate
  - Building professionals: one possibility would be to develop a label or an official agreement
  - Population:
    - Issue of the feedback between measurements and remediation
    - Stop the process after the measurements because:
      - Cost of the remediation action
      - Lack of building professional trained
      - Weak perception of the radon risk



## RP culture in the field of radon management Highlighting the role of RP culture

- RP culture allows different actors to understand the risk associated to radon and the issues associated with risk management:
  - measurements to know the risk in dwellings or public buildings
  - and mitigation actions to reduce radon concentration
- RP culture allows to replace radon among all the risk in order to increase the perception of risk
- RP culture favours the involvement and mobilisation of the various actors, in order to implement radon management action plans adapted to the local situation, and stakeholder involvement processes

- Main risk indicator for radon: concentration level – Specific dose-effect relationship not needed
- RP culture elements includes not only the knowledge of the radon health risk, but also the knowledge of prevention or remediation actions
- An individual culture, but also collective, to be shared by multi-actors
- The efficiency of the radon management actions relies on the involvement of territorial actors (not imposed by the authorities)
- Need to involve also local key players such as the Scientific and Technical Center for Building (CSTB), Cancer League, ...
- Need of dissemination by experts who are recognized by each actors (CSTB - Scientific and Technical Center for Building - for building professionals, ARS – Regional Health Agency / ASN – Nuclear Safety Authority- for the elected representatives...)

- Radon RP culture is a necessary condition for the management of radon risk, but not sufficient. Need to:
  - Develop adaptive structure and expert group
  - Make territorial action step by step in order to test action, and allow to optimise the process (long term process)
  - To set up a scientific monitoring and regulatory surveillance to have an improvement process
  - To develop and share knowledge on efficiency of remediation actions