



**RADONORM SUBTASK 6.3.1 START-UP AND TEST FOR CITIZEN SCIENCE
MODEL FOR RADON MEASUREMENT AND MITIGATION ACTIONS**

FRENCH PILOT-PROJECT (2021-2022)

EXTENDED DATA



This project has received funding from the Euratom research and training programme 2019-2020 under grant agreement No 90000

— Introductory note —

In the framework of the development of the RadoNorm Subtask 6.3.1 pilot-project in France, a number of documents have been produced. These documents are grouped and presented as ‘annexes’ in this document as listed below.



TABLE OF CONTENT

ANNEXE 1 — LEAFLET FOR THE RECRUITMENT OF PARTICIPANTS (IN FRENCH)	3
ANNEXE 2 — QUESTIONNAIRE ABOUT THE BUILDING SELF-ASSESSMENT GUIDE	4
ANNEXE 3 — PROTOCOL TO COMPARE THE BUILDING SELF-EVALUATION GUIDE WITH AN EXPERT	7
ANNEXE 4 — FEEDBACK QUESTIONNAIRE ABOUT THE PARTICIPATION TO THE PILOT-PROJECT	9
ANNEXE 5 — ADEQUATION OF THE PILOT-PROJECT WITH THE TEN PRINCIPLES IN CITIZEN SCIENCE	11
ANNEXE 6 — APPLICATION FORM FOR ETHICAL COMMITTEE AND DATA MANAGEMENT PLAN	14
ANNEXE 7 — DATA MANAGEMENT PLAN	23
ANNEXE 8 — INFORMATION DOCUMENT AND CONSENT FORM	37
ANNEXE 9 — SLIDESHOW PREPARED FOR AND DURING THE IN PERSON-MEETINGS, 15 AND 16 JUNE 2022 (IN FRENCH)	42
ANNEXE 10 — RADON EXPERTISE REPORT FROM THE VISIT PERFORMED 20 JULY 2022 (CEREMA DOCUMENT) (IN FRENCH)	47
ANNEXE 11 — SLIDESHOW PREPARED FOR AND VALIDATED AFTER THE FINAL MEETING, 22 JULY 2022 (IN FRENCH)	50

ANNEXE 1 — LEAFLET FOR THE RECRUITMENT OF PARTICIPANTS (IN FRENCH)



APPEL À PARTICIPER À UN PROJET DE SCIENCE CITOYENNE SUR LE RADON

En France, les experts sur les travaux de remédiation du radon sont rares. Il est parfois difficile pour les particuliers exposés au radon de savoir vers qui se tourner et quelle démarche adopter.



Pour aider les particuliers, des experts ont développé un **outil en ligne d'auto-évaluation du bâtiment**. Cet outil permet aux utilisateurs d'identifier les voies d'entrée et de transfert du radon dans leur maison et de préconiser des travaux adaptés.

La 1ère version de l'outil est destinée à être testée, améliorée et finalisée : **un objectif qui sera mené à bien si des habitants et futurs utilisateurs sont impliqués !**

C'est dans ce cadre que **nous vous invitons à participer à un projet de science citoyenne** avec des experts du CEREMA* et de la Haute École d'Architecture de Fribourg afin de mettre à jour l'outil en ligne. La nouvelle version pourrait ensuite être utilisée pour soutenir des démarches de gestion du radon dans l'habitat en France.

En pratique, votre participation à ce projet consisterait à :

1. Tester la 1ère version de l'outil et compléter un questionnaire ;
2. Participer à 2 réunions avec les experts pour aborder plus concrètement les améliorations à apporter. Les réunions sont prévues à la Communauté d'Agglomération de Vesoul (6, rue de la Mutualité, Vesoul) les 15 et 16 juin 2022 (par ex. de 18h00 à 20h00).

Ce projet est coordonné par le CEPN* en partenariat avec le Pays Vesoul-Val de Saône.

Vous souhaitez plus d'information sur ce projet ?

Contactez M. Sylvain Andresz, CEPN
✉ sylvain.andresz@cepn.asso.fr, 01 55 52 19 27

Vous souhaitez participer ?

Envoyez un message à
Mme Anne-Laure Rivière ✉ santeco.pvvs@vesoul.fr
& M. Sylvain Andresz ✉ sylvain.andresz@cepn.asso.fr
Au plus tard pour le 15 mai (le nombre de participants est limité)

* CEREMA : Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement, <https://www.cerema.fr>
* CEPN : Centre d'études sur l'Évaluation de la Protection dans le domaine Nucléaire, <https://cepn.asso.fr>

ANNEXE 2 — QUESTIONNAIRE ABOUT THE BUILDING SELF-ASSESSMENT GUIDE

Dear Sir or Madam

Thank you for your interest in participating to a citizen science project.

The objective of the project is to test and help finalise a building self-evaluation guide that propose radon remediation solutions adapted to the characteristics of the building.

For this first step, we propose you to test the "version 1" of the guide which is on-line and to fill this questionnaire to formalise your experience, help us identify potential improvements and pave the next ways for the project.

- METHOD -

For this step, we propose you to access the self-evaluation guide at:

<https://jurad-bat.net/auto-evaluation>

- The guide requires no download, installation etc. or any special operation from you.
- We advise you to read this questionnaire thoroughly before starting the test.
- The questionnaire is anonymous.
- When answering the question from the guide, you should pretend that your radon measurement is > 300 Bq/m³.
- If you do not understand a question in the guide: make a note of it (in point 4, part B of this questionnaire) and continue.
- After you have answered all the questions, a pdf report summarising your answers will be edited. Download the pdf and keep it. You can use it to finish completing the questionnaire.
- If you wish, you can start the guide again and then pretend you radon measurement is < 300 Bq/m³ and complete part E of this questionnaire.

Please return your questionnaire to sylvain.andresz@cepn.asso.fr by 5 June.

ABOUT RADON

For general information about radon, you can refer to:

- The JuradBatwebsite:
<https://jurad-bat.net/grand-public/le-radon-quest-ce-que-cest>
- The Radiation Protection and Nuclear Safety Institute:
<https://www.irsn.fr/FR/connaissances/Environnement/expertises-radioactivite-naturelle/radon/Pages/Le-radon.aspx>
- "Indoor air quality, why is it important?" (a Cerema video):
<https://www.cerema.fr/fr/actualites/qualite-air-interieur-pourquoi-est-ce-important-video-14>

PART A.— Quick feedback

On a scale from 1 to 5, how would you evaluate	
1. Clarity and understanding of the questions	⊖ 1 2 3 4 5 ⊕
2. Your ability to answer	⊖ 1 2 3 4 5 ⊕
3. Clarity and understanding of the illustrations	⊖ 1 2 3 4 5 ⊕
4. Usability and design	⊖ 1 2 3 4 5 ⊕
5. Clarity and understanding of the report	⊖ 1 2 3 4 5 ⊕
6. Usability of the report	⊖ 1 2 3 4 5 ⊕
6. The usefulness of this guide for an individual after radon measurement	⊖ 1 2 3 4 5 ⊕
7. Approximate time to answer the questions of the guide min

PART B.— About the questions (if radon concentration is > 300 Bq/m³)

1. The introduction should be clarified/modified/simplified	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
Suggestion:	
2. Several building configurations are missing (= I do not find my building configuration)	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
Details about the uncovered configurations:	
<ul style="list-style-type: none"> - Ground- building interface; - Radon pathway; - Air renewal technique; - Foreseen building works; - I live in a flat; - Other (please detail). 	
3. Some questions might have been asked several times. Is it a problem for you?	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
Which questions?	
4. I did not understand some questions/some questions are not clear	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
Did you identify which one? (You can refer to the report.)	
5. Some questions might be supported by a drawing/illustration	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
Did you identify which one? (You can refer to the report.)	
6. I am ready to provide pictures.	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree

PART C.— General questions

1. The ergonomics of the guide is adequate	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2. It might be useful to save the answers and come back later to finish the guide	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3. Grouping all the questions together will be clearer	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
4. Using the guide requires to consult document, to move in the house, ...	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
5. It will be interesting to test the guide "for real" and compare the results obtained with those from a human expert	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
6. I am ready and able to host such a test in my home	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree

Other general remarks? recommendations?

PARTIE D. — The report

1. The recommendations are sufficient to make (or contract) remediation work in the building.	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. The report should be shorter/more synthetic	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3. Maximal size recommended for the report pages
4. It might be useful to rank the remediation work, ex. from the simplest to the more complicated or sorted by price	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
8. An estimation of the cost and efficiency of the remediation work might be useful	Agree <input type="checkbox"/> Not agree

Other general remarks? Recommendations??

PART E. — If radon concentration is < 300 Bq/m³

1. Among the following themes included in this part, is there some clarification/modification needed			
	Yes	No	Remarks, suggestion
Aeration	<input type="checkbox"/>	<input type="checkbox"/>	
Heating	<input type="checkbox"/>	<input type="checkbox"/>	
Kitchen hood	<input type="checkbox"/>	<input type="checkbox"/>	
Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	
Basement	<input type="checkbox"/>	<input type="checkbox"/>	
Foreseen renovation/thermal retrofit works	<input type="checkbox"/>	<input type="checkbox"/>	
2. Recommendations for radon remediation should be proposed even when the radon concentration is < 300 Bq/m³		<input type="checkbox"/> Agree <input type="checkbox"/> Not agree	

Thank you for your time!
Please send back the questionnaire before 5 June
Next meeting 15 and 16 June to discuss the results!

ANNEXE 3 – PROTOCOL TO COMPARE THE BUILDING SELF-EVALUATION GUIDE WITH AN EXPERT

The aim of this document is to help compare the self-evaluation guide with the building diagnosis performed by a 'human' expert. Different aspects from the guide and the expert are examined: the questions asked, the themes addressed, the consideration about the building specificities and the general approach followed in the diagnosis. The point of view of the participant, who have experienced the two approaches, is also collected to participate in the comparison.

(1) Question appearing the self-evaluation guide	Is this question asked by the expert?
• Does the basement of your building have a crawl space?	
• Does the basement of your building have a cellar with earth/clay floor?	
• Is there an unused chimney pipe connected with the basement?	
• Does the building have a buried or semi-buried basement?	
• Do the surfaces in contact with the ground (wall, floor) have any visible defects such as cracks or holes.?	
• Do the surfaces in contact with the ground have one or more water drain(s) or siphon(s)?	
• Do the surfaces in contact with the ground have openings for the passage of ground networks (electricity, gas, ...)?	
• Is the building heated with geothermal energy (like geothermal probe)?	
• Is the building equipped with ventilation installations using a ground-air exchanger (Canadian well or Provençal well)?	
• Are you planning renovation works on the floor of the basement?	
• Does the building has natural stone/concrete walls?	
• Is there a door between the basement and the living area?	
• Are there any other openings/elements that connect the basement with the living space, e.g. air intake for an unsealed combustion device, electrical box, access hatch to pipes, central hoover or laundry chute?	
• Is there an unsealed combustion device (stove, ...)?	
• Is there a kitchen hood with an extraction mode?	
• Is the air renewal in your dwelling provided by natural ventilation or manual opening of the windows?	
• Is the air renewal of your dwelling provided by a mechanical ventilation system?	
• Is the building equipped with a controlled single flow mechanical ventilation system?	
• Is the building equipped with a distributed mechanical ventilation or individual extractor system?	
• Is the building equipped with insufflation mechanical ventilation system?	
• Is the building equipped with double flow mechanical ventilation system?	
• Is there sufficient space between the door and the floor in the house?	
• Are you planning to install an unsealed combustion device?	
• Are you planning to change the windows?	
• Do you plan to refurbish/change the floors of the rooms or to change the doors?	
• Are you planning to install a single flow controlled mechanical ventilation system?	
• Are you planning not to install a controlled mechanical ventilation system?	



- Are you planning to remove a non-watertight floor (e.g. wood on a sand bed or terracotta tiles on a sand bed) of the ground floor or in the basement?

(2) What issues addressed by the expert during the diagnosis are not covered by the tool?

- ...
- ...

(3) Does the expert use plans, measurements, instruments, etc.? If so, are these elements important in establishing the diagnosis? Could these practices be integrated (or not) into an online tool?

- ...
- ...

(4) Does the building have specificities (difference between the building and an archetype) diagnosis? How are these specificities resolved by the expert? Can these change the result of the diagnosis and the proposed remediation?

- ...
- ...

(5) The expert's diagnosis lasted approximately minutes.

(6) What is the expert's initial diagnosis? Is it different from the diagnosis provided by the self-evaluation tool? Why or why not?

(7) Open a discussion with the participant in order to get his/her point of view on the two approaches and the differences between them.

ANNEXE 4 — FEEDBACK QUESTIONNAIRE ABOUT THE PARTICIPATION TO THE PILOT-PROJECT

Dear Sir or Madam,

You took part in a citizen science project as a citizen or an expert and we would like to deeply thank you for your time and your participation. The last step consists in collecting your feedback about this project.

You are ...	<input type="checkbox"/> Citizen : go to A then C; <input type="checkbox"/> Expert : go to B then C
-------------	---

PART A.— Quick feedback: citizen

Would you say that ...	
1. Your awareness concerning radon at home, diagnosis and remediation has been awoken	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2. Your level of information/knowledge about the following topic has increased:	
2a. Radon	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2b. Diagnosis	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2c. Remediation	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2d. Other: ...	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3. You are likely to search for more information/knowledge about the following topics:	
3a. Radon	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3b. Diagnosis	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3c. Remediation	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3d. Others: ...	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
4. You are ready to speak about the subject to those around you (parents, friends, neighbour, ...)	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
5. You might implement action at home thanks to the project (change your habit, remediation work, ...)	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
6. You might drive or implement action in other people homes (parents, friends, neighbour, ...) thanks to the project	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree

PART B. — Quick feedback: expert

Would you say that	
1. Your awareness concerning citizen science applied for radon at home has been awoken	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2. The project has modified your point of view about:	
2a. Diagnosis	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2b. Remediation	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2d. Other: ...	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
3. The project might change the way you talk about:	
2a. Diagnosis	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2b. Remediation	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
2c. Other: ...	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
4. I am ready to speak about the project and the results in my organization	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree
5. I am ready to speak about the project and the results beyond my organization within its networks	<input type="checkbox"/> Agree <input type="checkbox"/> Not agree

PART C. — General

Would you say the project met your expectations?		☹ 1 2 3 4 5 ☺
Details:		
<p>Could you provide us a short testimony about your participation in the project at an individual level (motivation, benefits ...) and if a collective results – local, regional or beyond – can be expected (information, diagnosis, ...)?</p>		

Thanks for your time!
Please send back the questionnaire by mail before 26 September.

ANNEXE 5 – ADEQUATION OF THE PILOT-PROJECT WITH THE TEN PRINCIPLES IN CITIZEN SCIENCE

Purpose. — The European Citizen Science Association published the “10 principles in citizen sciences”¹ which are today regarded as the gold standards and list of good practices applicable for citizen sciences project. We have confronted the 10 principles against the French pilot-project and documented our answers below.

Principle 1. Citizen projects actively involve citizens in scientific endeavour that generates new knowledge and understanding. Citizens may act as contributors, collaborators, or as project leader and have a meaningful role in the project

The experts will share their expertise with the citizens regarding building diagnostics to identify sources of radon emission and the associated problematics. Citizens will help to answer them and actively contribute to the construction of a radon self-evaluation tool Version 2 by bringing their views and their common knowledge through feedback, participation to technical meetings, eventually testing the tool in the field, and bringing documents (ex. pictures).

Principle 2. Citizen science projects have a genuine science outcome. For example, answering a research question or informing conservation action, management decisions or environmental policy

The aim is to develop recommendations and technical specification for an effective and user-friendly radon self-evaluation tool V.2. Such a tool is very much needed to fill the need of expertise to drive radon remediation in homes (and identify when a human expert is needed).
The tool will incorporate the dual view of citizen and experts for improved knowledge regarding radon, evaluation of radon sources and adapted remediation techniques.

Principle 3. Both the professional scientists and the citizen scientists benefit from taking part Benefits may include the publication of research outputs, learning opportunities, personal enjoyment, social benefits, satisfaction through contributing to scientific evidence e.g. to address local, national and international issues, and through that, the potential to influence policy

For the citizen:

- Participation to a citizen science project with a scientific outcome (cf. Principle 2) and with the purpose of increasing the radiation protection against radon of the population overall;
- Information on radon, on how to identify radon sources and pathways in houses and to remediate;
- Prescription from expert to remediate their house (if needed). This is also the opportunity to test the tool in the field.
- Radon measurement device for re-test.

For the experts:

- Gain insight about radon perception and how diagnostic and remediation is understood from the public;
- Specifications for a usable and operational tool embedding the common knowledges of citizens;
- Added value of a tool ‘validated by citizen’ and tested in the field;
- Documents from citizens (ex. picture, ...) to enhance the tool;

Elected representatives (Pays Vesoul-Val de Saône, Pays de Montbéliard ...) can use the feedback of the project to address radon remediation strategy in their county.

Local building professionals/federation: outreach on radon, diagnosis and remediation techniques.

Finally, all the partners can act as ambassador of the result of the citizen science project.

Principle 4. Citizen scientists may, if they wish, participate in multiple stages of the scientific process This may include developing the research question, designing the method, gathering and analysing data and communicating the results

The citizens will be offered to participate in the design of the protocol and the schedule. The citizen will utterly participate in the construction of the specifications of the tools V.2 by bringing their feedbacks

¹ <https://ecsa.citizen-science.net/documents/>

on the tool V.1, participate to the technical meetings at Vesoul, test the tool in the field (if applicable), bring documentation (ex. photos) and provide support in communicating the outcomes: e.g. article in local journal.

Principle 5. Citizen scientists receive feedback from the project. For example, how their data are being used and what the research, policy or societal outcomes

Documentary and scientific feedbacks to the citizen will consist in the documents developed in the project (survey, agenda, synthesis, ...), incorporating their views in the specifications of the tool V.2. If applicable, the tool V2 will be published on Jurad-Bat website.

Citizens who test the tool in the field can receive, if they wish, advice on remediation in their home from the experts. All citizen can be offered dosimeters for radon re-test.

Principle 6. Citizen science is considered a research approach like any other, with limitations and biases that should be considered and controlled for. However, unlike traditional research approaches, citizen science provides opportunity for greater public engagement and democratisation of science

The limitations and uncertainties regarding diagnosis and remediation techniques will be discussed between citizens and experts.

The replicability (or not) of the evaluation tool in other contexts/countries will also be considered.

Principle 7. Citizen science data and meta-data are made publicly available and where possible, results are published in an open access format. Data sharing may occur during or after the project, unless there are security or privacy concerns that prevent this

The tool V.1 is already public, and so will be the new version.

Cf. Principle 10 for details on the data management plan.

Principle 8. Citizen scientists are acknowledged in project results and publications

Yes, cf. Principe 4.

Principle 9. Citizen science programmes are evaluated for their scientific output, data quality, participants experience and wider societal or policy impact

The tool V1 was an output of the research Interreg project² (2014-2020) where several French and Swiss organizations collaborated to address radon and indoor air quality. This project was financially supported by European regional funding (FEDER) plus Swiss federal funds. This project is built upon the scientific validity and legitimacy of Jurad Bat project and adding the value of citizen science. Radon experts from France and Swiss are taking part all along, ensuring the quality and validity of the outputs.

Principle 10. The leaders of citizen science projects take into consideration legal and ethical issues surrounding copyright, intellectual property

- The tool V.1 does not need nor store personal data to work.
- If needed to facilitate the project, user accounts will be created for the citizens. Only the data necessary to create the account will be collected (minimization principle). If so, the database of user accounts is not public and is RGPD compliant.
- The list of the participants to the radon measurements campaigns 2019-2021 is managed by Pays Vesoul-Val de Saône (PVVS) under its own data management and PVVS will be in first line to contact the citizen.
- The data from the participants to the citizen science project will be managed by the leader of the project (CEPN) in line with the good practices of data management of the National Commission of Informatic and Liberties (CNIL³)
 - Only the essential data are collected.

² <https://www.interreg-francesuisse.eu/beneficiaire/jurad-bat-ameliorer-la-gestion-du-risque-radon-dans-les-batiments-de-larc-jurassien/> (in French)

³ <https://www.cnil.fr/fr/adopter-les-six-bons-reflexes> (in French)

- Clarity and transparency to the people who provide data
- Organize and access the right of the people to access/modify/delete their data.
- Record keeping with a duration
- Secure the data
- Continuous quality improvement.
- In particular, the internal documents of the project will not be published to ensure the confidentiality of the participants.

ANNEXE 6 — APPLICATION FORM FOR ETHICAL COMMITTEE AND DATA MANAGEMENT PLAN

Remark — For traceability and potential re-use, the ethical application form and the data management plan have been previously grouped in one CEPN document (under reference: NTE 22/13) which undergoes the CEPN internal quality assurance process.

Version 1: March 2022	Creation
Version 2: 29 th August 2022	Final version taking into account the development of the project and the remarks from the RadoNorm Ethical Committee sent by email 26 August 2022

— TABLE OF CONTENT OF THE APPLICATION FORM FOR ETHICAL COMMITTEE —

INTRODUCTION	16
A. GENERAL INFORMATION ON THE PROJECT	17
B. CONTEXT OF THE PROJECT, RESEARCH QUESTIONS AND DATA PRODUCTION	17
C. RISK-BENEFIT ANALYSIS FOR THE PARTICIPANTS	19
D. PERSONAL AND OTHER DATA	20
E. DOCUMENTS PREPARED FOR THE RESEARCH	22



— Glossary —

ARS	<i>Agence Régionale de Santé</i> , Regional Health Authority
BFC	<i>Bourgogne Franche Comté</i> , administrative region located on the east
CEPN	<i>Centre d'étude sur l'Evaluation de la Protection dans le Domaine Nucléaire</i> , Nuclear Protection Evaluation Centre
Cerema	<i>Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement</i> , Evaluation and Expertise centre on risks, environment, mobility and planning
CNIL	<i>Commission Nationale de l'Informatique et des Libertés</i> , Commission on Information Technology and Liberties
CS	<i>Citizen Science</i>
DDT	<i>Direction Départementale des Territoires</i> , Departmental Directorate of the Territories
DMP	Data Management Plan
DPO	Data Protection Officer
FAIR	Findable Accessible Interoperable Reusable data principles
GDPR	General Data Protection Regulation
NGO	<i>Non-Governmental Organization</i> (in France: association under Law of 1901)
HEIA	<i>Haute Ecole d'Ingénierie et d'Architecture</i> , High School of Engineering and Architecture, Fribourg, Switzerland
IRSN	<i>Institut de Radioprotection et de Sûreté Nucléaire</i> , Radiation Protection and Nuclear Safety Institute
PVVS	<i>Pays de Vesoul Val de Saône</i> , small community of municipalities surrounding the city of Vesoul, East of France
WP	Work Package

Introduction

Fontenay aux roses, 13 June 2022

OBJECT: APPLICATION FORM FOR ETHICAL CLEARANCE ADDRESSED TO THE RADO NORM ETHICAL COMMITTEE

Dear Sir or Madam,

You will find hereby the Application Form addressed to the RadoNorm Ethical Committee regarding a research in the context of the RadoNorm Work Package 6.3.1 '*Start up a citizen science model (incubator) for radon measurement and mitigation actions*', application in France.

We would like to ask the RadoNorm Ethical Committee about their views and advice about the content of the Application Form, notably with regard to the information provided to the participants, the adequacy of the research with the ethical principles and the management of data.

The Application Form presents:

- A. General information about the research;
- B. The context of the project, the research questions and the data production method;
- C. The risks and benefits evaluation for the participants;
- D. The Data Management Plan.

The content of this Application Form is based on a similar document that has been addressed to the University of Antwerp Ethical Committee (in the context of the application of WP 6.1.3 in Belgium) and applications form to Ethical Committee for research purposes used by the universities of Paris-Nanterre⁴ and Grenoble⁵.

We have filled the fields with a blue font and the answers have been provided to the best of our knowledge at the time of the writing.

Thank you for your consideration on this application.
Yours sincerely.

Mr. Sylvain ANDRESZ,
Senior Researcher



Mrs. Caroline SCHIEBER,
Project Leader



⁴ <https://www.universite-paris-saclay.fr/recherche/polethis-ethique-et-integrite/comite-dethique-de-la-recherche> (in French)

⁵ <http://www.grenoblecognition.fr/index.php/ethique/ethique-soumettre-un-dossier>, (in French).

A. General information on the project

1. Title: “*WP6 Societal aspects, Subtask 6.1.3. Start-up and test of a citizen science model (“incubator”) for radon measurement and mitigation actions*”, application for France.
2. Discipline: Social Science (and Radiation Protection).
3. Funder: Horizon2020 Euratom Research and Training funding programme, grant n° 900009.
4. Expected start date: 1st September 2020
5. Duration: 60 months
6. Places: France
 - Vesoul city and Pays de Vesoul Val de Saône (PVVS county) in Bourgogne Franche Comté (BFC),
7. Researchers involved
 - Sylvain Andresz, Senior Researcher <sylvain.andresz@cepn.asso.fr>
 - Caroline Schieber, Project Leader <caroline.schieber@cepn.asso.fr>.
 - Employer : Nuclear Protection Evaluation Centre, 28 rue de la Redoute 92260 Fontenay-aux-Roses, France
8. Does the research involve cross-border research in different countries?
YES - ~~NO~~ - ~~N/A~~
9. Is it a national consortium project involving several research centers/research groups?
YES - ~~NO~~ - ~~N/A~~
10. If so, what are the other cooperating research groups (including those at other institutions):
Project coordinator and partners
 - “WP 6 Project Coordinator”: The Belgian Nuclear Research Centre (SCK•CEN) and the University of Antwerp < <https://www.radonorm.eu/workpackages/wp6-tasks/> >.
 - “The WP 6.3.1 on Citizen Science pilot project gathers institutions from France (CEPN), Ireland (Environmental Protection Agency) Romania (National Institute of Public Health) and Norway (National University of Life Science). The leader is Mrs. Dr. Meritxell Martell, from MERIENCE SCP, meritxell.martell@merience.eu, < www.merience.eu >.

B. Context of the project, research questions and data production

1. Background

The project is born by considering the low diagnostic/remediation rate after radon measurement in homes and the lack of diagnostic/remediation professionals in France. A computerised self-evaluation tool (Version 1) was developed in the framework of the Jurad-Bat project. This tool provides a support to identify potential origins of radon in the house and recommends appropriate remediation actions. There were opportunities to engage citizen to test the tool, ensure its understanding and identify improvements, be they in the content, the design and the features

The reasons to initiate the citizen science project are:

- An opportunity for citizen and radon/building experts to co-create an effective and user-friendly self-evaluation tool V.2;
- To bring citizen’s common knowledge and perception in the evaluation tool;
- To test the tool “in the field” and confront tool vs. expert advice. The test can document a case study
- To drive radon remediation (or identify when a human expert is needed)
- To favour the radon remediation process rate;
- To promote awareness and outreach about radon and radon remediation;
- To test the ability of citizen science to engage in radon post-measurements actions

The researchers have demonstrated the alignment of this project with the “10 principles in citizen sciences” published by the European Citizen Science Association ([Appendix A](#)), ensuring that this project fits with the standards and good practices attached to citizen science project.

2. Is the research about the reuse of existing data collected by yourself or someone else? Please also indicate whether the consent has been obtained from the participants for reuse, as well as the original source of the data.

YES - NO -NA

- List of participants to the radon measurement campaigns 2019-2020 and 2020-2021 organized by PVVS. The CEPN has no access to the list of participants and PVVS is the interface between CEPN and the participants of the radon measurement campaigns.
- PVVS has allowed (decision sent by email: 11 March 2022) the usage of the flyer only if it is sent with the results of the radon measurement campaigns.

3. Who are the participants (number, gender, age, etc.)? On the basis of which criteria are they selected?

Experts. The developers of the tool “version 1”:

1. Mrs. Joëlle Goyette-Pernod, Building and radon expert from the High School of Engineering and Architecture of Fribourg⁶, Switzerland;
2. Mrs. Ambre Marchand-Mourry and Mrs. Catherine Nauleau, Building and radon experts from the Evaluation and Expertise Centre on Risk, Environment, Mobility and Planning⁷ (CEREMA), a public body attached to both the Energy and Ecology Minister and the Minister of the Territorial Cohesion.

Citizens: objective is to recruit around 10-12 volunteers identified among the 166 participants of the radon measurements winter campaigns led by Pays de Vesoul Val de Saône (PVVS county) in 2019-2020 and 2020-2021. These citizens will be contacted with a flyer to be sent by PVVS by email and by postal mail at the very same time as the synthesis of the radon measurement campaigns and inviting them to participate.

- **Inclusivity criterion.** These citizens have already received information about radon and have performed a radon test recently. Therefore, these citizens are positioned at the step between test and the diagnosis/remediation, which is the situation when the tool should be used. These citizens are not involved in the qualitative interviews performed by CEPN in the context of RadoNorm WP 6.1.3.
- **Exclusivity criterion:** none explicit, but people without internet access and without minimal computer skill might not be able to access and use the tool “version 1”. This is considered to have minor impacts on the objectives of the project.

Citizens (plan B). In case there is not enough participants (ex. less than 6) to perform adequately the citizen science project, CEPN will use the same flyer to contact:

- Members of CEREMA, members of PVVS administration and Departmental Directorate of the Territories (DDT, a public administration in charge, in particular, of housing);

All these persons are already informed about radon and are also broadly positioned at the step between radon test and diagnosis/remediation. Therefore, they are comparable to the first group but they are living in a wider geographical area, making the citizen science meetings more difficult to hold in practice.

4. Data production methods

- One **questionnaire** (*Questionnaire*) to be used by the citizens to assess the tool Version 1 and direct the project. The questionnaire is anonymous.
- A series of in-person group meetings gathering experts and citizens will be organized at Vesoul town hall during 2 evenings (15 and 16 June, 18h00-20h00). The meetings will be prepared by the researchers with **thematic slideshows** based on the answers in the questionnaires and lead to the production of **notes** eventually handwriting. The meetings will not be audio recorded or filmed.
- If there is a demand, the tool V1 will be **tested on-site** in the house of one or several participants with a building or radon expert from CEREMA or HEIA. The objective is to confront the results provided by the tool vs. those from a human expert. A testing protocol will be elaborated by the experts and the citizens during the group meetings. Incidentally, the participant(s) will obtain advices from expert to remediate their house that will be formalized in a technical report (from CEREMA or HEIA).
- A **validation meeting** can be planned to ascertain the results obtained from the questionnaires, the in-person meetings and on-site test(s). This meeting can be planned with the participants and opened to

⁶ <https://www.heia-fr.ch/fr/>, Switzerland

⁷ <https://www.cerema.fr/fr/regions/bourgogne-franche-comte>

other interested parties: Atmo BFC, Regional Health Authority (ARS), Radiation Protection and Nuclear Safety Institute (IRSN), ...

- The data will be anonymized and their analysis will be used to inform **the results** – both the technical results for the update of the tool V1 and the results from the implementation of the citizen science pilot project – and the reports of the project under various formats: slideshow, note, publication/article, ... intended for RadoNorm partners, the scientific community and other interested parties.

Justification of the anonymization. The researchers intend to **not** diffuse the raw data from the interviews and the informed consent. Radon in home can be a sensitive issue (health perspective, remediation difficult in practice, devaluation of home, etc.). In addition, these raw data could be used for commercial purposes (by radon solution providers). Anonymization will be performed by the researcher when writing the results so it will not be possible to trace back the data/opinion/results to the identity of the participants.

C. Risk-Benefit analysis for the participants

- Implication of the participants. Test the online building self-evaluation tool and answer a questionnaire (estimated time: 1 h), two in person meetings at Vesoul town hall (15 and 16 June, from 18:00-20:00) and an on-line validation meeting (approx. 1 h)*
- Will the participants receive compensation? The participants will not receive a direct financial compensation for their participation., however,
 - All the participants will receive a solid track dosimeter to retest their home for radon;
 - A dinner will be organized for the in-person meetings;
 - A radon diagnosis can be performed by an expert of the Cerema for the participants who request it (estimated value of such diagnosis is 800 €).
- What are the risks for the participants? No risk in participating to the study has been identified.
- Specific risk due from Covid-19. No additional risk due to Covid in participating to the study has been identified. The researchers will follow the regulation for the management of the Covid applicable at the dates of the meetings.

Risk in social science ^A	Yes	No	Details and remarks:
1. Will you collect "personal data"? ^B If so, on which legal ground (e.g. legitimate interest, consent)?		✓	The researchers do not seek to collect personal data. PVVS is managing the list of participants of the former radon campaigns and will not share it with the researchers. The name and the email address of the participants will be collected and are necessary to perform the project
2. Will you collect "sensitive data"? ^C		✓	No
3. If participants are reimbursed for participation, is personal data collected?		✓	No direct financial reimbursement for participation and/or for the collection of personal data.
4. Does the intended population also consist of minors? State the specific age category under "remarks".		✓	No
5. Is the intended population (also) composed of vulnerable groups and persons?		✓	No
6. Do questions from the study deal with sensitive topics?		✓	No
7. Does the research initially use deception to achieve the research objectives?		✓	No
8. Does the research entails threatening, disgruntling or shocking materials?		✓	No
9. Does the research need to use physical stimulus (audio, visual, ...) or the deprivation of physiological needs (eating, drinking, sleeping, ...)?		✓	No

10. Does the research entail to make audiovisual recordings?		✓	No
11. Does the research require lengthy or repeated tests where personal data is required for linking the data?		✓	No
12. Is there a risk that participants will be exposed to physical or psychological disadvantages during the study (stress, anxiety, humiliation, use of experimental methods such as hypnosis?)		✓	No
13. Will you mislead the participants at the start of the study (because you cannot state the exact purpose of the study from the start).		✓	No
14. Will you (now or later) share data with partners from other countries (i.e. will you do cross-border research)?	✓		The results will be shared with WP6 partners. The researchers consider to publish the results of the analysis in scientific report (CEPN reports; available on CEPN website) and if possible in scientific peer-review journal. Part D and the Data Management Plan describe the way the data will be managed.
15. Could ethical risks arise during the study that were not mentioned above?		✓	

D. Personal and other data

- Storage medium (of the researchers): Document will be stored in the hard drive of the computers of the researchers and saved on external hard drive (Time Capsule, CEPN owned). Access to the documents requires individual password. No external storage or storage on the Cloud.
The results of the research might be stored on the RadoNorm website and or Store^{DB}, which is the platform for the archiving and sharing of the primary data outputs from research on low dose radiation in Europe.
- Use of a service provider: No
- Specific software: No (Microsoft Office).
- Expected size of the data < 100 Mo.
- Is the consent of the participants obtained after a clear and objective explanation of the purpose and the risks of the research? If this is not the case, what is the reason participants are not informed?
The flyer and the information letter will inform the participants about the purposes of the citizen science project and what the participations entails. The informed consent form will be sent with information letter before the in-person meetings (to allow the participants to read it carefully).
At the first in-person meeting (15 June), the researchers will ask orally to the participants if they have any questions about the project and will then to answer these questions. Then the consent forms will be signed by both parties and one exemplar will be kept by the participants.
- Are the participants informed of the right to discontinue their participation in the study at any time?
The participants will be informed about their right to not answer any question and to stop their participation without justification and at any time in the information letter, the consent form and this will be reminded orally at the beginning of the in-person meetings.
- Are the participants informed they have access to the personal data?
The participants will be informed about their rights to access, modify, oppose, delete, transfer and limit the data they have provided upon request addressed to the researchers and this will be reminded orally at the beginning of each interview. A specific Data Management Plan has been produced and is available to the participants upon request.

8. General data policy

The general data policy is design to be in line with the good practices of data management edited by the Commission on Information Technology and Liberties (CNIL) <https://www.cnil.fr/fr/adopter-les-six-bons-reflexes> (in French) application for NGO:

- Only the essential data are collected and those collected are needed to achieve the project

Element of compliance:

- The questionnaires and the agenda of the in-person meetings are design to collect only the data necessary to achieve the objectives of the project.
- The tool version 1 does not require (personal) data to work and does not store data. The developers of the tool version 1 informed the CEPN (by mail: 11 April 2022) that they choose not to declare /notify the JuradBat website/the tool V1 to the CNIL in the absence of any form of data collection.
- PVVS is managing the list of participants of the radon measurement campaigns and will send the flyer inviting to participate. Therefore, the only personal data the researchers will get are the name and the email addresses of the volunteering participants.

2. *Clarity and transparency to the people who provide data*

Element of compliance:

- The researchers have elaborated a flyer ([Appendix B](#)) and an information document ([Appendix C](#)) presenting the project, what the participation entails, the broad management of data and the ethical considerations.
- An informed consent ([Appendix C](#)) summarising these elements will be signed by both parties and one version will kept by the participant and one version by the researchers.
- The participants can contact the researcher at any time by mail or phone provided on the flyer and the informed consent should they have any question or wish to access the Data Management Plan or the ethical approval.

3. *Organize and access the right of the people to access/modify/delete their data.*

Element of compliance: The participant can contact at any time the researchers by mail or phone provided on the flyer and the informed consent at any time to access, modify, oppose, delete, transfer and limit the data they have provided.

4. *Record keeping with a duration*

Element of compliance: All the data coming from the project will be archived during the active part of the RadoNorm project. More details on [Part I. Archiving and Preservation](#).

5. *Secure the data*

Element of compliance:

- The data will be stored in the hard drive/external hard drive of the researchers. The raw data will not be shared or stored outside CEPN.
- Anonymization will be applied in the analysis of the data and it will be not possible to trace back the identity of the participants in the results.
- Question about CEPN IT system can be addressed to CEPN Webmaster, franck.levy@cepn.asso.fr.

6. *Continuous quality improvement.*

Element of compliance: the researchers will assess the DMP of the other partners in WP 6.3.1 (if so) and upgrade if necessary. The researchers will adapt the DMP in the light of any improvement/remarks/new idea formulated.

E. Documents prepared for the research

Documents ^A	Check list of attachment
- Application form for ethical clearance addressed to RadoNorm Ethical Committee	✓
- Data Management Plan	✓
- Flyer	✓ ¹
- Information Letter and consent form	✓ ¹
- Questionnaire for the self-evaluation tool (in French, not attached)	-
- Proposal for the French approach: executive summary of the project, compliance with the European Citizen Science Association 10 principles	✓ ¹

¹ Documents are included in the appendix of the Data Management Plan.

ANNEXE 7 — DATA MANAGEMENT PLAN

Introduction

Every research carried out using information relating to persons is subject to the European General Data Protection Regulation EU2016/679 on data protection of natural person (also known as GDPR⁸) and the French legislation: Law of 6 January 1978 as amended ("Loi informatique et libertés").

CEPN is partnering in the RadoNorm project Work Package 6 where personal information are collected. Pursuant to and for the purposes of the application of the legislation and also to be in line with the Guidelines on Data Management of EU Horizon2020 projects⁹, the researchers at CEPN concluded that a Data Management Plan (DMP) will formalize the processes for data collection and processing and also make it transparent and sharable upon request.

The layout of this DMP is inspired from the model proposed by the French Commissariat à L'Énergie Atomique et aux Énergies Alternatives (CEA)¹⁰. The CEA DMP model is H2020 compatible.

The GDPR has also introduced the function of Data Protection Officer (DPO) who is the key stakeholder with regard to the data management in a given organization. In particular, a DPO should be in charge of writing the DMP and following its application. Because CEPN is a French Non-Governmental Organization, a different regime applies¹¹ and the designation of a DPO is not mandatory for CEPN (cf. GDPR Article 37 I.). Therefore, the DMP has been filled in by the researchers at CEPN in charge of the RadoNorm WP6.1.3 project. —

Version number	Date	Description of the modification
Version 1	16/03/2022	Creation
Version 2	29/08/2022	Final version taking into account the development of the project and the remarks from the RadoNorm Ethical Committee sent by email 26 August 2022

⁸ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

⁹ H2020 Programme Guidelines on FAIR Data Management in Horizon 2020, European Commission Directorate for Research and Innovation, July 2016. According to this document, a DMP describes the "data management life cycle for the data to be collected, processed and/or generated and. As part of making research data findable, accessible, interoperable and re-usable (FAIR), a DMP should include information on:

- the handling of research data during and after the end of the project
- what data will be collected, processed and/or generated
- which methodology and standards will be applied
- whether data will be shared/made open access and
- how data will be curated and preserved (including after the end of the project)"

¹⁰ Available at https://dmp.opidor.fr/public_templates, version 21/05/2021.

¹¹ Particularly, *Guide de sensibilisation au RGPD pour les associations*, CNIL, non daté, https://www.cnil.fr/sites/default/files/atoms/files/cnil-guide_association.pdf

TABLE OF CONTENT OF THE DATA MANAGEMENT PLAN

INTRODUCTION	23
A. INFORMATION ABOUT THE PROJECT	26
B. PRESENTATION OF THE PROJECT	26
C. DATA DESCRIPTION	27
D. DATA PROTECTION IMPACT ASSESSMENT (DPIA) ✕	30
D. FAIR DATA - MAKING DATA FINDABLE	32
E. FAIR DATA - MAKING DATA ACCESSIBLE	32
F. FAIR DATA - MAKING DATA INTEROPERABLE	32
G. FAIR DATA - INCREASE DATA RE-USE	32
H. ALLOCATION OF RESOURCES	33
I. ARCHIVING AND PRESERVATION	33
F. REFERENCES ✕	34
APPENDIX A. COMPLIANCE WITH THE EUROPEAN CITIZEN SCIENCE ASSOCIATION PRINCIPLES	35
APPENDIX B. FLYER	35
APPENDIX C. INFORMATION DOCUMENT AND CONSENT FORM	35
APPENDIX D. ANSWER FROM THE RADONORM RESEARCH ETHICAL COMMITTEE	36

— Glossary —

ARS	<i>Agence Régionale de Santé</i> , Regional Health Authority
BFC	<i>Bourgogne Franche Comté</i> , administrative region located on the east
CEPN	<i>Centre d'étude sur l'Évaluation de la Protection dans le Domaine Nucléaire</i> , Nuclear Protection Evaluation Centre
Cerema	<i>Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement</i> , Evaluation and Expertise centre on risks, environment, mobility and planning
CNIL	<i>Commission Nationale de l'Informatique et des Libertés</i> , Commission on Information Technology and Liberties
CS	<i>Citizen Science</i>
DDT	<i>Direction Départementale des Territoires</i> Departmental Directorate of the Territories
DMP	Data Management Plan
DPO	Data Protection Officer
FAIR	Findable Accessible Interoperable Reusable data principles
GDPR	General Data Protection Regulation
NGO	<i>Non-Governmental Organization</i> (in France: association under Law of 1901)
HEIA	<i>Haute Ecole d'Ingénierie et d'Architecture</i> , High School of Engineering and Architecture, Fribourg, Switzerland
IRSN	<i>Institut de Radioprotection et de Sûreté Nucléaire</i> , Radiation Protection and Nuclear Safety Institute
PVVS	<i>Pays de Vesoul Val de Saône</i> , small community of municipalites surrounding the city of Vesoul, East of France
WP	Work Package



— Remarks —

- Text in black comes from the DMP model and the researchers have completed the fields with blue colour.
- According to the DMP notice, title in **bold** shall be completed at the end of the project and completing the title in normal font is indicative.
- According to the DMP notice, fields with an asterisk * shall be completed to respect the H2020 projects requirements.
- In addition to the DMP mode, the researchers have added several fields, noted with ✖.

A. Information about the project

Project name*

“RadoNorm Work Package (WP) 6.1.3, Start up and test a citizen science model (incubator) for radon measurement and mitigation actions”. Citizen Science Pilot Project – Application for France
More information about the European RadoNorm project at <https://www.radonorm.eu>.

Project acronym: None

Project objectives

The objective of this WP is to support local communities and citizens to launch citizen science projects on the topic of radon. Pilot citizen science projects will be developed and tested in four countries in 2022: Ireland, France, Norway and Romania. At the end of 2022, the RadoNorm project will invite any interested party (e.g. local communities, NGOs, universities, social civil groups, etc) to apply for funding to conduct a citizen science initiative in their community (open calls).

Funder (Europe, ANR, organism, Industrial, ...)

Horizon2020 Euratom Research and Training funding programme.

Call number* and grant agreement number

Grant Agreement n°900009

Project coordinator and partners

- The Belgian Nuclear Research Centre (SCK•CEN) and the University of Antwerp are the leaders of the RadoNorm Work Package 6 on Societal Aspects < <https://www.radonorm.eu/workpackages/wp6-tasks/>>.
- The WP 6.3.1 on Citizen Science pilot project gathers institutions from France (CEPN), Ireland (Environmental Protection Agency) Romania (National Institute of Public Health) and Norway (National University of Life Science). The leader is Mrs. Dr. Meritxell Martell, from MERIENCE SCP, meritxell.martell@merience.eu, < www.merience.eu >.
- The Nuclear Protection Evaluation Centre (CEPN) is partnering in various tasks of RadoNorm WP6 and is notably in charge of the developing and applying WP 6.3.1 for France.

Contact, Employer and affiliation of the contact

- Sylvain Andresz, Senior Researcher sylvain.andresz@cepn.asso.fr
- Caroline Schieber, Project Leader caroline.schieber@cepn.asso.fr
- Employer: Nuclear Protection Evaluation Centre, 28 rue de la Redoute 92260 Fontenay-aux-Roses, France

Project start date: 1st September 2020

Project duration: 60 months

Additional Information: none

B. Presentation of the project

Purpose and relation to the objectives of the project*

The project is born by considering the low diagnostic/remediation rate after radon measurement in homes and the lack of diagnostic/remediation professionals in France. A computerized “building self-evaluation tool” (Version 1) was developed in the framework of the Jurad-Bat project¹² and is included on the Jurad-Bat website¹³. This tool provides a support to identify the potential origins of radon in the house and recommends appropriate remediation actions. There were opportunities to engage citizen to test the tool, ensure its understanding and identify improvement, be they in the content, the design and the features.

The objective of the projects are:

- To take the opportunity for citizen and radon/building experts to co-create an effective and user-friendly self-evaluation tool V.2;

¹² The tool V1 was one of the results of the research Interreg project¹² (2014-2020) where several French and Swiss organizations collaborated to address radon and indoor air quality. This project was financially supported by European regional funding (FEDER) plus Swiss federal funds.

¹³ <https://jurad-bat.net/evaluation> (in French).

- To Bring citizen’s common knowledge and perception in the evaluation tool;
- To test the tool in the field: confront tool vs. expert advice. The test can document a case study;
- To drive radon remediation (or identify when a human expert is needed);
- To Favour the radon remediation process rate;
- To promote awareness and outreach about radon and radon remediation;
- To test the ability of citizen science projects to engage citizens in radon post-measurements actions;

The researchers have demonstrated the alignment of this project with the “10 principles in citizen sciences” published by the European Citizen Science Association ([Appendix A](#)), ensuring that this project fits with the standards and good practices attached to citizen science projects.

Recruitment of the participants ✂.

Experts. The developers of the tool “version 1”:

3. Mrs. Joëlle Goyette-Pernod, Building and radon expert from the High School of Engineering and Architecture of Fribourg¹⁴, Switzerland;
4. Mrs. Ambre Marchand-Mourry and Mrs. Catherine Nauleau, Building and radon experts from the Evaluation and Expertise Centre on Risk, Environment, Mobility and Planning¹⁵ (CEREMA), a public body attached to both the Energy and Ecology Minister and the Minister of the Territorial Cohesion.

In 2022, the management of the JuradBat website, including the tool V1, will be transferred to Atmo in Bourgogne Franche Comté. Atmo¹⁶ is an NGO devoted to the measurement and management of outdoor and indoor pollutions, including radon. Representatives of Atmo will be kept informed by the researchers as the project develops and they might participate to the meetings as observers.

Citizens: around 10 volunteers identified among the 166 participants of the radon measurements winter campaigns led by Pays de Vesoul Val de Saône (PVVS county) in 2019-2020 and 2020-2021. These citizens will be contacted with a flyer ([Appendix B](#)) to be sent by PVVS by email and by postal mail at the very same time as the results of the radon measurement campaigns and inviting them to participate.

- **Inclusivity criterion.** These citizens have already received information about radon and have performed a radon test recently. Therefore, these citizens are positioned at the step between test and the diagnosis/remediation, which is the situation when the tool should be used. These citizens are not involved in the qualitative interviews performed by CEPN in the context of RadoNorm WP 6.1.3.
- **Exclusivity criterion:** none explicit, but people without internet access and without minimal computer skill might not be able to access and use the tool “version 1”. This is considered to have minor impacts on the objectives of the project.

Citizens (plan B). In case there is not enough participants (ex. less than 6) to perform adequately the citizen science project, CEPN will use the same flyer ([Appendix B](#)) to contact:

- Members of CEREMA, of PVVS administration and Departmental Directorate of the Territories (DDT, a public administration in charge, in particular, of housing);
- Swiss citizens.

All these persons are already informed about radon and are also broadly positioned at the step between radon test and diagnosis/remediation. Therefore, they are comparable to the first group but they are living in a wider geographical area, making the citizen science meetings more difficult to hold in practice.

C. Data description

Data types*: Text, pictures

File formats*: Word (.docx), pdf and .ppt for presentation.

Re-use of existing data*

¹⁴ <https://www.heia-fr.ch/fr/>, Switzerland

¹⁵ <https://www.cerema.fr/fr/regions/bourgogne-franche-comte>

¹⁶ <https://www.atmo-bfc.org/accueil>

- List of participants to the radon measurement campaigns 2019-2020 and 2020-2021 organized by PVVS. The CEPN has no access to the list of participants for this project and PVVS is the interface between CEPN and the participants of the radon measurement campaigns.
- PVVS has allowed (decision sent by email: 11 March 2022) the usage of the flyer only if it is sent with the results of the radon measurement campaigns.

Data production methods*, Data set naming rule, Data set reference and name*

- One **flyer** (*Flyer*) presenting broadly the project and inviting to participate and one **information document** presenting the project more thoroughly and an informed consent ([Appendix C](#)).
- One **questionnaire** (*Questionnaire*) to be used by the citizens to assess the tool Version 1 and direct the project. The questionnaire is anonymous.
- A series of in-person group meetings gathering experts and citizens will be organized at Vesoul town hall during 2 evenings (15 and 16 June, 18h00-20h00). The meetings will be prepared by the researchers with **thematic slideshows** based on the answers to the questionnaires and lead to the production of **notes** eventually handwriting. The meetings will not be audio recorded or filmed.
- If there is a demand, the tool V1 will be **tested on-site** in the house of one or several participants with a building or radon expert from CEREMA or HEIA. The objective is to confront the results provided by the tool vs. those from a human expert. A testing protocol will be elaborated by the experts and the citizens during the group meetings. Incidentally, the participant(s) will obtain advices from expert to remediate their house that will be formalized in a technical report (from CEREMA or HEIA).
- A **validation meeting** can be planned to ascertain the results obtained from the questionnaires, the in-person meetings and on-site test(s). This meeting can be planned with the participants and opened to other interested parties: Atmo BFC, Regional Health Authority (ARS), Radiation Protection and Nuclear Safety Institute (IRSN), ...
- **The results of the projects** will cover two topics:
 - Technical results for the update of the tool V1: it can be technical recommendations, advices, guidelines, new wording, images, etc. that will come from the analysis of the data from the questionnaire, the meetings (and eventually the on-site test).
 - Results from the implementation of the citizen science pilot project for radon: planning, how it works in practice, results and lessons learned, perspective for another citizen science project for radon etc.

Both topics will inform the reporting of the project under various formats: slideshow, meetings with RadoNorm partners or French stakeholders (Atmo BFC, ...), note/deliverable and publication/article addressed to the RadoNorm community, the Manager of the JuradBat website and any stakeholders engaged in the management of radon in homes. Appropriate naming will be applied on the documents produced during the course of the project.

Storage medium, Material and physical storage site: All the data will be stored in the hard drives in the computers of the researchers and saved on external hard drive (Time Capsule, CEPN owned). Access to the data requires individual password. No external storage or storage on the Cloud.

Use of a service provider: No

Specific software: No (Microsoft series).

*Expected size of the data** < 100 Mo (15 interviews expected, no picture/sound/video).

General data policy

The general data policy is designed to be in line with the good practices of data management edited by the French National Commission for Information Technologies and Liberties (CNIL) <https://www.cnil.fr/fr/adopter-les-six-bons-reflexes> (in French) application for NGO:

7. *Only the essential data are collected and those collected are needed to achieve the project*

Element of compliance:

- The questionnaires and the agenda of the in-person meetings are designed to collect only the data necessary to achieve the objectives of the project.
- The tool version 1 does not require (personal) data to work and does not store data. The developers of the tool version 1 informed the CEPN (by mail: 11 April 2022) that they choose not to declare /notify the JuradBat website/the tool V1 to the CNIL in the absence of any form of data collection.

- PVVS is managing the list of participants of the radon measurement campaigns and will send the flyer inviting to participate. Therefore, the only personal data the researchers will get are the name and the email addresses of the volunteering participants.
8. *Clarity and transparency to the people who provide data*
Element of compliance:
- The researchers have elaborated a flyer ([Appendix B](#)) and an information document ([Appendix C](#)) presenting the project, what the participation entails, the broad management of data and the ethical considerations.
 - An informed consent ([Appendix C](#)) summarising these elements will be signed by both parties and one version will be kept by the participant.
 - The participants can contact the researcher at any time by mail or phone provided on the flyer and the informed consent should they have any question or wish to access the Data Management Plan or the ethical approval.
9. *Organize and access the right of the people to access/modify/delete their data.*
Element of compliance: The participants can contact at any time the researchers by mail or phone provided on the flyer and the informed consent at any time to access, modify, oppose, delete, transfer and limit the data they have provided.
10. *Record keeping with a duration*
Element of compliance: All the data coming from the project will be archived during the active part of the RadoNorm project. More details on [Part I. Archiving and Preservation](#).
11. *Secure the data*
Element of compliance:
- The data will be stored in the hard drive/external hard drive of the researchers. The raw data will not be shared or stored outside CEPN.
 - Pseudonymization will be applied in the analysis of the data and it will be not possible to trace back the identity of the participants in the results.
 - Question about CEPN IT system can be addressed to CEPN Webmaster, franck.levy@cepn.asso.fr.
12. *Continuous quality improvement.*
Element of compliance: the researchers will assess the DMP of the other partners in WP 6.3.1 (if so) and upgrade if necessary. The researchers will adapt the DMP in the light of any improvement/remarks/new idea formulated.

Data property

Data usage*

- The technical results might include technical recommendation, advices, guidelines, new wording etc. to be used by Atmo to update the tool.
- The results from the implementation of the citizen science project are essential part of the RadoNorm WP 6.3.1 deliverables and can also be of use for applicants to the RadoNorm open call in Autumn 2022 to continue the work engaged.
- Perspectives include the possibility to later test the tool V2 in other places in France or in other countries, to incorporate other functionalities, to build a tool for expert etc.

Potential for re-use*

- A similar approach can be implemented in another French Region or in another country (translation necessary) to enrich the results obtained in the pilot project.
- The result of the project can be used in the design of comparable tools for the management of radon address to citizen or experts.

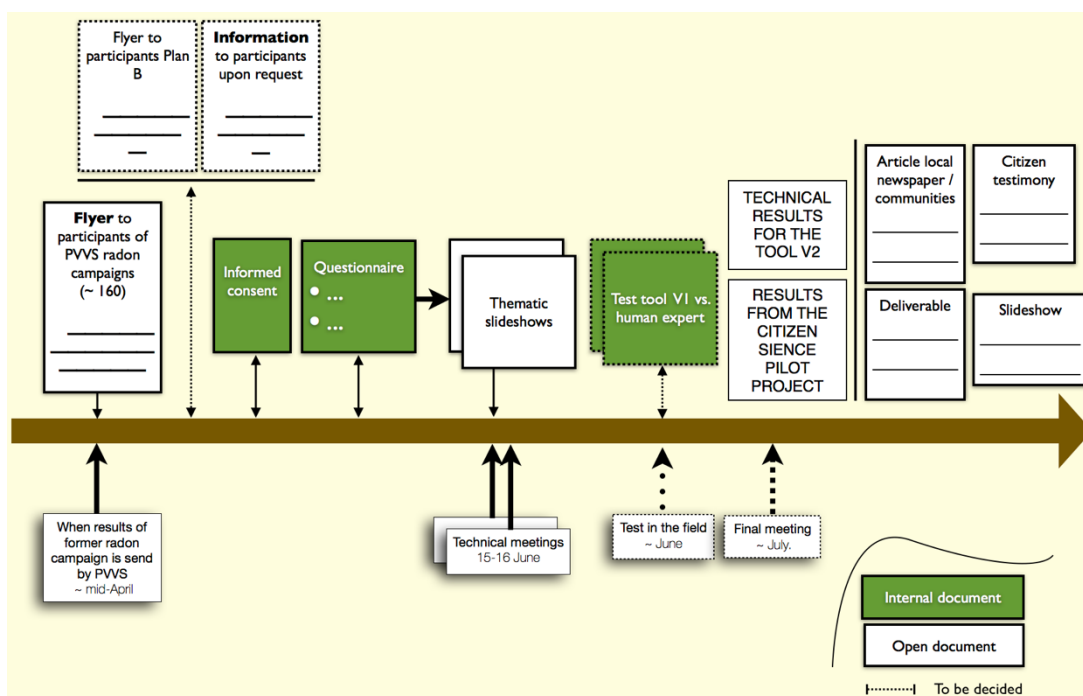
Dissemination principles*

- Internal documents include: the filled informed consents, the filled questionnaires, the notes taken during the meetings and the results of the on-site testing. This document will not be shared and remain confidential.
- Open documents include: the flyer ([Appendix B](#)), the information document and clear informed consent ([Appendix C](#)), the clear questionnaire, the slideshow for the meetings and the results (technical and from the citizen science project implementation) under the various format that can

be shared to WP 6.3.1 Members, on the Store^{DB} (<https://www.storedb.org>¹⁷). In this case, the questionnaires and the analysis are available to all RadoNorm partners.

- The above principles applied for any other documents that will need to be produced during the course of the project: diffusion among RadoNorm 6.1.3 partners and storage in Store^{DB} if requested.
- The result of the analysis will be free to access and can be shared to all RadoNorm partners, and the scientific community and any other stakeholder with an interest about the management of radon at home. Intended channel of diffusion:
 - Slideshow presenting the results at meeting/conference (RadoNorm and others) and RadoNorm website;
 - RadoNorm deliverable: RadoNorm website, <https://www.radonorm.eu/publications/deliverables/>;
 - CEPN report: CEPN website, <http://cepn.asso.fr>;
 - Open access publication in scientific journal.

The Figure down below synthetizes expected calendar of production of the documents and the dissemination principles.



Scientific publications

The researchers consider to publish the results of the analysis in a scientific report (CEPN internal note; available on CEPN website) and if possible in scientific peer-review journal.

D. Data Protection Impact Assessment (DPIA) ✂

Article 35 of the GDPR introduces the Data Protection Impact Assessment (DPIA). A DPIA is a process designed to describe the assess the risks to the rights and freedoms of natural persons resulting from the collection and the processing of personal data and to determine the measures to address them when necessary.

¹⁷ Store^{DB} is the platform for the archiving and sharing of the primary data outputs from research on low dose radiation in Europe. STORE^{DB} is funded under contract numbers 23228 (STORE), 249689 (DoReMi), 662287 (CONCERT) and 900009 (RadoNorm) from the EC Euratom Programme.

Use of existing list of activities where a DPIA is required. In France, the CNIL provides a list of activities where a DPIA is required¹⁸ and another list where a DPIA is not required¹⁹, yet the project described in this document does not fit in none of the list.

Assessment on the need of a DPIA. A DPIA is not required when the processing is not “likely to result in a high risk to the rights and freedoms of natural persons” (RGPD, Article 35(1)). After the publication of the RGPD, the EU Expert Group on Article 29 “Data Protection Working Party” has produced a guideline document²⁰ which provide a consistent interpretation of the circumstances where a DPIA is mandatory (or not) based on a 9 criteria check-list. A DPIA is mandatory if 2 criteria of the list are met. In France, the CNIL has reproduced per se these guidelines in its recommendations²¹.

Criteria	Applicable	Precision
1. Evaluation or scoring, including profiling and predicting	No	No aspects concerning the data subject's performance at work, economic situation, health, personal preferences or interests, reliability or behavior, location or movements are collected.
2. Automated-decision making with legal or similar significant effect:	No	-
3. Systematic monitoring	No	-
4. Sensitive data or data of a highly personal nature	No	Only the necessary data are collected and in particular, no sensitive or highly personal data are collected
5. Data processed on a large scale	No	The number of data set is very limited in size, as well as the volume, duration/permanency and the geographical scale (see description of the project in B).
6. Matching or combining datasets	No	Not particularly: only data from former radon measurement campaigns at PVVS are re-used
7. Data concerning vulnerable data subjects	No	The citizens are not vulnerable (children, employee, elderlies, asylum seekers, ...) yet some of them might have elevated radon concentration in their home. The on-line tool and experts will provide advice on remediation if needed.
8. Innovative use or applying new technological or organisational solutions,	No	The technology of the on-line tool is not more innovative than other existing on-line diagnosis/self-evaluation tool
9. When the processing in itself “prevents data subjects from exercising a right or using a service or a contract”	No	On the contrary, the project aims at finalizing the on-line tool and boost its usage for radon self-evaluation.
Total	0 criteria	

The researchers therefore conclude that a Data Protection Impact Assessment is **not** required.

¹⁸ <https://www.cnil.fr/sites/default/files/atoms/files/liste-traitements-aiPd-requise.pdf>

¹⁹ <https://www.cnil.fr/sites/default/files/atoms/files/liste-traitements-aiPd-non-requise.pdf>

²⁰ Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is “likely to result in a high risk” for the purposes of Regulation 2016/679, Adopted on 4 April 2017 As last Revised and Adopted on 4 October 2017, <https://ec.europa.eu/newsroom/article29/items/611236>

²¹ <https://www.cnil.fr/fr/ce-quit-faut-savoir-sur-lanalyse-dimpact-relative-la-protection-des-donnees-aiPd>; See : Quand est-ce qu’une analyse d’impact est obligatoire ?

D. FAIR Data - Making data findable

Standards and Metadata format*

No metadata (data on data) will be produced in the context of this project.

Persistent and unique identifier*

- CEPN and RadoNorm reference number associated to the document produced.
- Digital Object Identifier (DOI): if the results of the analysis are published in a scientific peer-review journal.
- Identification number from the data repository Store^{DB} (if so).

Search keywords*

Proposed keywords: RadoNorm, citizen science, radon at home, radon diagnosis and remediation, online-system

Version numbers*

Only one version is planned for most of the working documents (questionnaires, letters, ...)

E. FAIR Data - Making data accessible

Data openly available*

Cf. the dissemination principles that separate between internal and open documents.

Tools to read or re-use data*

No specific software needed. Every valid Microsoft Office suites (or equivalent: OpenOffice etc.) and .pdf reader (Adobe etc.) can read/re-use the documents and results produced for this project.

Ways to make data available*

Working documents (flyer, questionnaire, information document, informed consent): Could be made available upon request and could be uploaded on the data repository Store^{DB} (if recommended).

Results of the analysis:

- Available to the all the RadoNorm partners at the occasion of meeting, conference etc. under the framework of RadoNorm project and uploaded on the data repository Store^{DB} (if recommended, see below).
- Available to the scientific community, people with an interest in the management of radon at home after publication.

Data repository*

If recommended by the WP 6.3.1 project leaders: the results and the working documents will be uploaded on Store^{DB} (<https://www.storedb.org>)

F. FAIR Data - Making data interoperable

Standards, vocabularies, or methodologies for data and metadata*

Any valid Microsoft Office suites (or equivalent: OpenOffice etc.) and .pdf reader (Adobe etc.) can read/re-use the questionnaires, the working document and the results. No special standard, vocabulary or methodology that can limit the data interoperability have been identified. No metadata will be produced.

Inter-disciplinary interoperability*

No special standards, vocabulary or methodology that can limit the data inter-discipline interoperability have been identified.

G. FAIR Data - Increase data re-use

*Data licensing** If possible, the results will be published in scientific journal under the Open Data Commons Licence for larger diffusion and accessibility.

*Date of data release** Publication of the results and availability of the data: end 2022-2023 (estimated).

*Access to third parties** The published results can be cited with respect to the copyright law. The working documents can be re-used by any third party to iterate the study in another place/time.

Restricted re-use: exception to the general diffusion principles*

The researchers intend to not diffuse the internal documents defined in Part C. Radon in home can be a sensitive issue for different reasons: health perspective, remediation is difficult in practice, devaluation of home, etc.). In addition, these raw data might be re-used for commercial purposes (by radon solution providers etc.).

H. Allocation of resources

*Data quality assurance processes**

- If the two questionnaires are uploaded in Store^{DB}, the quality insurance programme of this data repository will apply.
- The published results will follow the quality assurance process of the journal.

*Length of time for re-use** The re-use of the working document is possible 3 years starting at their creation.

*Costs for making data FAIR and how to cover these costs**. For publication in OpenAccess: cost of the publication. Otherwise, no (additional) specific cost required.

Data manager responsible during the project*

Sylvain Andresz, Senior Researcher at CEPN, sylvain.andresz@cepn.asso.fr

Responsibilities of partners

*Potential value of long term preservation** The published results could be useful for any researchers with an interest in the management of radon or citizen science project.

But the long term preservation of the working document is not very pertinent given that the on-line tool is a one-of-its-kind and that the tool will undergo several updates/upgrades within the years, making the working document (questionnaire, ...) quickly obsolete.

*Costs of long-term preservation** The preservation of the data does not require additional cost (other than the cost already engaged by CEPN for its IT system and maintenance).

I. Archiving and preservation

Data at the end of the project:

Data	Storage	Security	Duration (estimated)	Purposes
1. Flyer, 2. Questionnaire (clear), 3. Information document, 4. Informed consent (clear)	– CEPN hard drive, – StoreDB*	Free access Can be send upon request	Active duration of RadoNorm	– Transparency – Any third party can re-use the documents
1. Questionnaires (filled in), 2. Informed consent (signed), 3. Notes taken during the meeting (handwriting eventually)	– CEPN hard drive	– Access by password.	Active duration of RadoNorm	The data produced are kept to answer any question, re-work the data etc.
Slideshow	– CEPN hard drive, – RadoNorm website/StoreDB*	Free access		Diffusion of the results

Deliverable	RadoNorm website/StoreDB*	Free access	Active duration of RadoNorm	Meeting the objectives of WP 6.1.3
CEPN note	CEPN website	Free access	10 years (min.)	General diffusion of the result
Scientific article	– CEPN website, – publisher website	Free access	Publisher decision	General diffusion of the result
Any other documents produced in the course of the project	– CEPN, – RadoNorm website/StoreDB*	– Access by password – Can be send upon request	Active duration of RadoNorm	

* If requested by the project leaders of RadoNorm WP 6.3.1.

Estimated final volume: < 100 Mo

Provisions for data security Security of long term preservation* Other data management procedures**

- CEPN: all the data will be stored on the hard drives and external hard drives of the researchers (access by password) and the results will also be stored on the CEPN website server. The security, confidentiality and integrity will be maintained by the CEPN Webmaster over the time.
- Store^{DB} and RadoNorm website: external security management as applicable.
- Published data: external security management as applicable.

*Impact of ethical or legal issues**

The RadoNorm Ethical Review Committee (ERC) has reviewed this Data Management Plan and sent several comments that have been considered in the final version. The ERC considers that due consideration has been taken to respect the conditions for informed consent and protect the privacy of participants.

F. References ✂

- CNIL, Commission Nationale de l'Informatique et des Libertés, various publications, <https://www.cnil.fr/professionnel>
- Community-based participatory research, A guide to ethical principles and practice, Centre for Social Justice and Community Action, Durham University, National Co-ordinating Centre for Public Engagement, November 2012.
- Future directions for citizen science and public policy, ed. K. Cohen and R. Doubleday, Centre for Science and Policy, June 2021, ISBN: 978-0-9932818-1-5
- Getting it right: implementing data protection in citizen science research, Robin Pierce and Mariana Evram, Insights **35**, 1-6, 2022, <https://doi.org/10.1629/uksg.538>
- Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), Official Journal of the European Union, 04 May 2016.

Three appendixes were attached to the Data Management Plan sent to the RadoNorm Ethical Committee:

Appendix A. Compliance with the European Citizen Science Association principles

See Annexe 5 of this document.

Appendix B. Flyer

See Annexe 1 of this document.

Appendix C. Information document and consent form

See Annexe 8 of this document.

Appendix D. below presents the answer from RadoNorm Ethical Committee with regard to the Ethical Application Form and the Data Management Plan.

Appendix D. Answer from the RadoNorm Research Ethical Committee

De: **Meskens Gaston** <gaston.meskens@sckcen.be>
 Objet: RE: Application for Ethical Review • RadoNorm 6.1.3 & 6.3.1 (France)
 Date: 28 août 2022 à 08:12
 À: Sylvain Andrez <sylvain.andrez@cepn.asso.fr>
 Cc: Deborah Oughton <nmbu.no>, Perko Tanja <tanja.perko@sckcen.be>, Martell Lamolla Meritxell (Ricomet) <meritxell.martell@merience.eu>, Nadja Zeleznik <Nadja.Zeleznik@ejmv.si>

MG

Dear Sylvain

The RadoNorm REC has reviewed your Application and DMP documents for both the RadoNorm Qualitative Approach (subtask 6.1.3) and Citizen Science Incubators (6.3.1) projects. We appreciate the extended and coherent approach used to draw up these documents, and the care for detail and consistency.

We have only two remarks:

(1) about storage of the informed consent forms.

For the documents related to the RadoNorm Qualitative Approach (subtask 6.1.3) project, the text about the storage of the informed consent forms is somewhat confusing. While in the end, the document makes clear (with the annexes) that the objective is to have two copies of the consent form, one kept by the researchers and one for the participant, the text on page 8 of the application form reads *An informed consent signed by both parties is kept by the participant*. This may give the impression only the participant is in possession of the signed form.

The same language is used on page 9 of the DMP of the RadoNorm Qualitative Approach (subtask 6.1.3). However, on page 10 of the DMP, under 'Dissemination principles', the text reads *The signed informed consents and the raw data from all the interviews (XX Name, Date) will be only stored by and accessed by the Researchers at CEPN involved in the RadoNorm project*, now giving the impression only the researchers remain in possession of the consent forms.

You may want to modify this language to make it consistent with the real aim: both researchers and participants keep a signed form.

The Citizen Science Incubators (6.3.1) project has more consistent language in that sense. Page 6 of the Application form reads *Then the consent forms will be signed by both parties and one exemplar will be kept by the participants*. Although also here, it would be good to explicitly state that both parties keep an exemplar.

(2) about anonymization versus pseudonymization in the Citizen Science Incubators (6.3.1) project.

On page 5 of the application form, it reads *The data will be anonymized*. However, on page 7 it is specified that *Pseudonymization will be applied in the analysis of the data [...]*. The text explaining the justification of the anonymization on page 5 suggest that you mean pseudonymization in the context of this project. Is that correct? If so, please change 'anonymization' into 'pseudonymization'.

Finally, with respect to the highlighted text in yellow referring to ethical issues on both the

data management documents (to be completed after ethics review):

Impact of ethical or legal issues*
 (to be updated after the Ethical review)

After making the proposed changes, we suggest that you can then add something like: "due consideration has been taken to respect the conditions for informed consent and protect the privacy of participants"

That's all. Obviously we remain ready to answer any further question.

Best regards & success with the research.
 Gaston Meskens

On behalf of the RadoNorm REC.
 Deborah H Oughton
 Gaston Meskens

From: Sylvain Andrez <sylvain.andrez@cepn.asso.fr>
 Sent: woensdag 27 juli 2022 17:06
 To: Meskens Gaston <gaston.meskens@sckcen.be>; Deborah H Oughton <deborah.oughton@nmbu.no>
 Cc: Perko Tanja <tanja.perko@sckcen.be>; Martell Lamolla Meritxell (Ricomet) <meritxell.martell@merience.eu>; Nadja Zeleznik <Nadja.Zeleznik@ejmv.si>
 Subject: Application for Ethical Review • RadoNorm 6.1.3 & 6.3.1 (France)

Dear Deborah,
 Dear Gaston,

We hope this message will find you well.

In March 2022, you offered to review the ethical dimensions the French contribution to RadoNorm Qualitative Approach (subtask 6.1.3) and Citizen Science Incubators (6.3.1). We have elaborated the layouts for an Ethical Application Form and a Data Management Plan and have completed them for the two subtasks, leading to a total of 4 documents (attached).

These documents might look a bit over-sized with regard to the actual ethical and data issues of the project, but we wanted to address this job seriously and in a manner than can be re-used in other circumstances.

Normally the documents should be self-explanatory, however, should you have any question feel free to ask.

ANNEXE 8 — INFORMATION DOCUMENT AND CONSENT FORM

Information on RadoNorm citizen science project

The RadoNorm project

The RadoNorm project²² is a European project combining scientific and social research to improve radon management in houses. One of the research areas of RadoNorm is dedicated to social sciences and includes, among other topics, the feasibility study of the implementation of citizen science projects in the field of radon management.

A citizen science project is broadly defined as "any form of scientific knowledge production involving experts and citizens and non-scientific research actors"²³ and the application of this type of project to the case of radon is very novel. In the framework of RadoNorm, pilot projects of citizen science comparable to the one carried out in France are also initiated in Ireland, Norway and Romania.

In addition to the academic aspects, the project carried out in France also has the advantage of making it possible to consolidate a decision-making tool on the remediation of radon in the home and thus to contribute to providing answers to the difficulties that may be encountered by individuals.

This project complies with the "Ten Principles of Citizen Science" developed by the European Association of Citizen Science²⁴ and has also been evaluated as a "participatory science" project and therefore with a high degree of citizen involvement. The documents supporting these assessments are available on request.

This project is coordinated by Sylvain Andresz, Senior Researcher and Caroline Schieber, Project Leader at the Centre d'études sur l'Évaluation de la Protection dans le domaine Nucléaire (CEPN²⁵). The CEPN has been involved since 2004 in Bourgogne Franche Comté in supporting territorial radon management actions and has notably participated (with the Cerema and HEIA) in the steering committee of radon measurement campaigns in PVVS.

Participating in this research

Your participation entails:

1. Test the self-evaluation tool version 1 and complete a questionnaire to formalize your experience and will help direct the development of the project.
2. 2 technical meetings with the experts to develop the specification for the version 2 at the town hall of Vesoul, 15 and 16 June 2022.
3. Participate to a final meeting presenting the results and perspectives.
4. Acting as ambassador of the project.

If applicable, we would like to test the self-evaluation tool version 1 "for real" in the house of a participant. This will be the opportunity for you to ask a human expert about radon remediation of your house (if you feel concerned).

²² <https://www.radonorm.eu>

²³ Les sciences participatives en France, Houllier F. Merilhou-Goudard, archive ouverte HAL, 2020 <https://hal.inrae.fr/hal-02801940/document>

²⁴ ECSA (European Citizen Science Association). 2015. Ten Principles of Citizen Science. Berlin. <http://doi.org/10.17605/OSF.IO/XPR2N>

²⁵ <https://www.cepn.asso.fr>

Note that you can stop your participation at any time without any justification.

Benefits in taking part

1. To participate to a citizen science project with a genuine scientific outcome, first-of-its-kind in France and with the purpose of increasing the radiation protection against radon of the population overall;
2. To get information on radon, on how to identify radon sources and pathways in houses and to remediate;
3. Prescription from expert to remediate your house (if applicable).
4. To obtain another radon measurement device for re-test.

Your data

The tool version 1 does not require personal data from you to work, nor required to download application, file or cookies. The following documents: the synthesis produced by the tool, the questionnaire, the consent form and any exchange you should have with the experts by phone or mail will not be distributed, shared and communicated outside the research team. The 15 and 16 June meeting will not be recorded and a anonymous synthesis will be produced. The researchers will not collect more data than needed for the research and not collect any type of 'sensitive' data..

You have the right to access, modify, oppose, delete, transfer and limit the data you have provided and can exercise this right any time by asking the researcher who have co-signed the consent form with you.

As part of the RadoNorm project, the results are intended to be published and distributed to the RadoNorm partners, the scientific community and any interested parties in the management of radon in homes. You will be informed about the publication of the results.

A Data Management Plan compatible with the Horizon2020 project requirements has been prepared for this project and can be sent to you upon request.

Ethical approval

The RadoNorm Ethical Committee will be asked to provide an advisory consultation on the study. The application form can be sent to you upon request. The RadoNorm Ethical Committee has informed that the project can start before the advisory consultation has been provided (3 March 2022 decision). The answer of the Ethical Committee can be sent to you upon request.

INFORMED CONSENT FOR PARTICIPATION IN A CITIZEN SCIENCE PROJECT

One copy of this document is for you, another copy is archived under the responsibility of the researchers.

PART (1/2) ----- FOR THE PARTICIPANT

I, the undersigned _____ agree to participate in a citizen-science pilot-project led by Sylvain Andresz and Caroline Schieber, Nuclear Protection Evaluation Centre (CEPN). The purpose of this document is to specify the terms of participation in the study.

- I have read the information letter
- I have been given sufficient information about this research study. The purpose of my participation has been explained to me and is clear.
- My participation in this study is voluntary. There is no explicit or implicit coercion whatsoever to participate.
- Participation involves to test the self-evaluation tool, answer a questionnaire and participate to 2 (even 3) meeting with experts, moderated by the researcher(s) from CEPN that will take place at Vesoul 15 and 16 June 2022. I allow the researcher(s) to take written notes during the discussion. I know there will be no recording (by audio/video tape) of the discussion.
- I have the right not to answer any question in the questionnaire or during the meetings without justification. I am aware that I am, at any point of time, I am fully entitled to withdraw from participation without any justification.
- I am aware that I have the right to access, modify, oppose, delete, transfer and limit the data I have provided upon request addressed to the researchers.
- I have been informed about the objectives for which the data I have provided are collected, treated and used.
- I have been given the explicit guarantees that, otherwise I wish so, the researcher will not identify me by name or function in any reports/documents based on information obtained from the study, and that my confidentiality as a participant in this study will remain secure. I can access the Data Management Plan of the project if I wish so.
- I have been given the guarantee that the RadoNorm Ethical Committee has been informed about the research and the adequacy of the research with ethical principles and human rights. I can access the application form sent to the Ethical Committee and the answer. I can contact the Committee through the researchers at CEPN.
- I have read and understood the points and statements of this form.
- I have been given a copy of this consent form co-signed by the researcher carrying out the study.

Participant's Signature

Date

Researcher's Signature

Date

For any information you can contact:

Sylvain Andresz, < sylvain.andresz@cepn.asso.fr >, tél. 01 55 52 19 27

One copy of this document is for you, another copy is archived under the responsibility of the researchers.

PART (1/2) ----- FOR THE RESEARCHER

I, the undersigned _____ agree to participate in a citizen-science pilot-project led by Sylvain Andresz and Caroline Schieber, Nuclear Protection Evaluation Centre (CEPN). The purpose of this document is to specify the terms of participation in the study.

- I have read the information letter
- I have been given sufficient information about this research study. The purpose of my participation has been explained to me and is clear.
- My participation in this study is voluntary. There is no explicit or implicit coercion whatsoever to participate.
- Participation involves to test the self-evaluation tool, answer a questionnaire and participate to 2 (even 3) meeting with experts, moderated by the researcher(s) from CEPN that will take place at Vesoul 15 and 16 June 2022. I allow the researcher(s) to take written notes during the discussion. I know there will be no recording (by audio/video tape) of the discussion.
- I have the right not to answer any question in the questionnaire or during the meetings without justification. I am aware that I am, at any point of time, I am fully entitled to withdraw from participation without any justification.
- I am aware that I have the right to access, modify, oppose, delete, transfer and limit the data I have provided upon request addressed to the researchers.
- I have been informed about the objectives for which the data I have provided are collected, treated and used.
- I have been given the explicit guarantees that, otherwise I wish so, the researcher will not identify me by name or function in any reports/documents based on information obtained from the study, and that my confidentiality as a participant in this study will remain secure. I can access the Data Management Plan of the project if I wish so.
- I have been given the guarantee that the RadoNorm Ethical Committee has been informed about the research and the adequacy of the research with ethical principles and human rights. I can access the application form sent to the Ethical Committee and the answer. I can contact the Committee through the researchers at CEPN.
- I have read and understood the points and statements of this form.
- I have been given a copy of this consent form co-signed by the researcher carrying out the study.

Participant's Signature

Date

Researcher's Signature

Date

For any information you can contact:

Sylvain Andresz, < sylvain.andresz@cepn.asso.fr >, tél. 01 55 52 19 27

PART (2/2) ----- FOR THE RESEARCHER

I, the undersigned _____
hereby confirm that I have informed the procedures as described in the
information form with


I have explicitly asked whether any ambiguities or questions remained and
have answered these to the best of my abilities.

Furthermore, I confirm that
_____ has given permission
to participate in the project.

Researcher's Signature


Date

ANNEXE 9 —SLIDESHOW PREPARED FOR AND DURING THE IN PERSON-MEETINGS, 15 AND 16 JUNE 2022 (IN FRENCH)




Un projet de science citoyenne sur le radon

Réunion à Vesoul, 15 et 16 juin 2022




This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019165.



- Un projet de science citoyenne ...
 - Européen
 - Inédit
 - Pilote
- Avec deux objectifs ...
 - Tester et participer au processus d'amélioration d'un outil d'auto-évaluation du bâtiment
 - Démontrer la faisabilité d'un projet de science citoyenne portant sur le radon



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019165.



Programme

- 1. Présentation de l'outil
- 2. Discussion sur les réponses apportées aux questionnaires
 - Retour à chaud
 - Les questions
 - Le compte rendu/les travaux
 - Généralités sur l'outil
 - Les illustrations
 - Situation < 300 Bq/m³
- 3. Perspectives

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019165.

COMMENCER L'AUTO-EVALUATION

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019165.

1 Les questions

Configuration bâtiminaire non-prise en compte

- Quid maison sur terre-plein avec garage attenant sur dalle fissurée ?
- Quid appartement ?
- Rd C semi-enterré = sous-sol semi-enterré ?

- Collecter du REX sur les configurations non-prises en compte : le cas échéant, cela peut faire évoluer l'outil
- Raisonner par zone homogène ? Il faut alors indiquer qu'il convient de réitérer l'évaluation

1

1 Les questions

Des questions sur les questions

- « Faiblesse du joint de dilatation paramétrique » ? (2 X)
- Simplifier: « Existe-t-il une porte palière entre le sous-sol et l'espace de vie » ?
- Simplifier: « Appareil de combustion non-étanché » (= poêle ou pellet)
- Définir: ventilation naturelle

Et trouver les réponses

- Je ne sais pas si le bâtiment est sur terre-plein (j'habite en appartement)
- Le bâtiment est-il équipé d'une ventilation mécanique répartie ou d'extracteurs individuels ? avec une réponse type O / N
- Comment évalue-t-on le détalonnage ?

La réponse figurait dans le guide

1

2 Le compte rendu/les travaux

	O'k coord/Pas d'ok coord
Les préconisations sont suffisantes pour faire les travaux	2/2
Le compte rendu devait être plus synthétique.....	3/2
Taille max:	10 p., 5 p., 1 p., pas important
Forme de présentation des travaux	5/0
Estimatif de coût	5/0

- Le schéma utilisé pour répondre aux questions sur le sous-bassement n'a pas paru plus
- Le compte-rendu reprend à usages des questions répondues par la négative, avec parfois les photos/ schémas ce qui l'alourdit
- On ne retrouve pas toujours les intitulés des questions, ex. pour les zones de travail
- Clarifier les objectifs à faire (vert) et celles à ne pas faire (orange), en particulier sur un schéma
- L'évaluation est souvent mise en avant mais c'est une habitude, indépendante des travaux
- Faire un compte-rendu très synthétique, avec des liens vers des détails, fiches etc.
- Rendre le compte-rendu + lisible, mieux planifier les sauts de page, code couleur, ...
- L'estimatif de coût est nécessaire pour déclencher les travaux

- Très long, informatif, clair
- « Tous les chantiers ! » Cela peut faire peur

1

Intermédiares - Pourquoi avoir participé ?

Ce que l'on a supposé:

- Participer à un projet de science citoyenne inédit
- Participer au processus de finalisation d'un outil d'auto-évaluation du bâtiment
- Contribuer à la gestion du radon dans l'habitat, à la radioprotection
- Disposer d'information sur le radon, les moyens de remédier, les travaux, ...
- Bénéficier d'un diagnostic fait par un expert
- Disposer d'appareils pour une nouvelle mesure du radon

Et en vrai ??

Quels autres facteurs pourraient motiver des citoyens ??

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ANNEXE 10 – RADON EXPERTISE REPORT FROM THE VISIT PERFORMED 20 JULY 2022 (CEREMA DOCUMENT) (IN FRENCH)



Affaire suivie par :
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Rapport d'expertise radon – logement
RadoNorm

Expertise réalisée le mercredi 20/07/2022

Contexte d'intervention – suite dépiages hivers 2019 et 2021

Nom de la pièce	Étage	Résultat 2019 (Bq/m ³)	Résultat 2021 (Bq/m ³)
salon	RDC	390	439

I. Description générale – constats

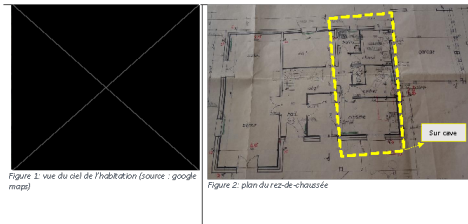


Figure 1: vue du ciel de l'habitation (source : google maps)

Figure 2: plan du rez-de-chaussée

Principe constructif : La maison a été auto-construite par le propriétaire-occupant, entre 1983 et 1985. Les murs sont en parpaing, la dalle du rez-de-chaussée en béton, et l'étage sur plancher bois. Rez-de-chaussée et étage sont reliés par un escalier ouvert sur le hall (cf Figure 3).



Figure 3: escalier ouvert entre RDC et 1er étage

Un garage, attenant à la maison, est accessible via la chaufferie (Figure 2) grâce à une porte d'accès non-étanche. Ce garage est peu chauffé, la perméabilité à l'air y est moins soignée (porte et fenêtre non étanches, joint périphérique visible, ...). Un four à pizza a été installé dans le garage, dont les fumées s'évacuent grâce à une cheminée construite directement en extérieur.

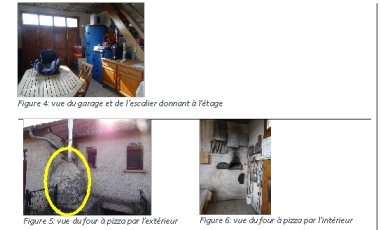


Figure 4: vue du garage et de l'escalier donnant à l'étage

Figure 5: vue du four à pizza par l'extérieur

Figure 6: vue du four à pizza par l'intérieur

Le garage communique, via un escalier ouvert, avec un étage, lui-même accessible depuis la chambre parentale.

Isolation : Les murs sont isolés par l'intérieur avec 10 cm de polystyrène (sauf ceux du garage), tout comme la sous-pente du toit. La dalle béton est isolée avec 5 cm de polystyrène.
Sous-Bassement : La maison est bâtie sur remblai, sauf pour la partie nord qui se situe sur une cave (cf Figure 2).

La cave, en terre-battue (cf Figure 7), dispose d'une ouverture en saut-de-loup, qui est en bonne partie masquée derrière une étagère (cf Figure 8). La porte d'accès, en bois, est non-étanche. Les passages de réseaux (arrivée/évacuation d'eau, électricité) transpercent la cave.



Figure 7: cave en terre-battue, avec passage réseaux électriques (zoom photo) et canalisations d'eau

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Figure 8 : ouverture de la cave en saut-de-loup, avec étagère en bois devant

Étanchéité Sol/bât Le carrelage, qui recouvre l'ensemble du rez-de-chaussée, est en bon état général. L'affaissement de la dalle selon deux lignes, depuis le dégagement jusqu'au séjour et du hall au séjour, laisse apparaître des fissures. Les passages de réseaux repérés (électricité, eau, chauffage) sont non étanchés. Ils transitent par des espaces dont l'activité volumique en radon est potentiellement plus élevée :

- La cave pour l'eau et l'électricité ;
- Le garage pour le chauffage.




Figure 9 : chauffage bois dans le garage et passage de ses conduits dans l'espace occupé

Equipements Le chauffage est assuré par une chaudière bois récente, située dans le garage (cf **Erreur ! Source du renvoi introuvable.**). L'espace qualifié de « chaufferie » sur le plan n'a plus cette fonction (Figure 2). Il n'a pas d'aménagement d'air spécifique. L'évacuation des fumées se fait en toiture. L'ensemble des réseaux liés au chauffage traverse le mur (de manière non-étanchée) pour rejoindre la partie occupée.




Figure 10 : module d'entrée d'air sur la face interne du battant

Travaux Durant l'hiver 2021, l'ensemble des menuiseries du rez-de-chaussée a été remplacé. Les menuiseries actuelles sont en bois et aluminium, double vitrage et semblent performantes en terme d'étanchéité à l'air. Des modules d'entrée d'air sont repérables sur la face intérieure des battants

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dans toutes les pièces (cf Figure 10) – pièces humides comprises (cuisine, salle d'eau/toilettes). En revanche, aucune mortaise n'est percée, la face extérieure des battants est dénuée de tout percement (cf Figure 11).



Figure 11 : absence de percement de mortaise sur la face externe du battant

Ventilation Il n'y a aucun élément de système de ventilation en place, ni naturel, ni mécanisé.

Aération Les occupants indiquent essayer de penser à aérer suite à l'obtention de leurs résultats de mesure radon. En été, les fenêtres sont ouvertes systématiquement, en hiver ils essaient d'ouvrir avec pour objectif d'atteindre 10 minutes dans la journée.

Préconisations sur la gestion du radon, par ordre de priorité de mise en œuvre conseillée

- Ventiler naturellement la cave

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Figure 12 : Ventilation naturelle de la cave (Quadrat)

Pour renouveler l'air de la cave et éviter qu'il ne se charge en radon, il est conseillé d'améliorer le renouvellement d'air de la cave. En pratique, cela signifierait déstructurer le saut de loup en décaissant l'étagère qui se situe devant, et ouvrir un interstice dans façade opposée afin de permettre un balayage naturel. Une ouverture de même section que celle du saut de loup pourrait être pratiquée au sein de la porte d'accès en bois.

2) Étanchéifier les passages de réseaux

L'ensemble des défauts d'étanchéité repérés à l'interface entre le bâtiment et le sol attenant (plancher bas ou mur enterré) – décollement de plinthes, fissures, retrait de dalle, joints périphériques, trous, gaines, passages de réseaux, intérieur des gaines/fourreaux – devra être traité systématiquement par des travaux d'étanchéement, par **application d'un mastic d'étanchéité de sol** (acryliques, élastomères à élasticité permanente, polyuréthane...).

NE : il est plus efficace de traiter le radon au plus près de sa source - aussi est-il conseillé d'étanchéifier les passages de réseaux depuis la cave avant qu'ils ne remontent dans les parties occupées du bâtiment.



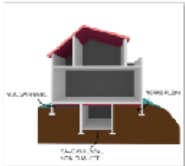
Figure 13 : Étanchéité des parements et passage de réseau (Quadrat)

D'autre part, il est conseillé d'étanchéifier la porte d'accès au garage ainsi que celle donnant depuis l'étage au-dessus du garage dans la chambre parentale. Cette recommandation vaut pour la gestion du radon, mais également du monoxyde de carbone et autres polluants émis dans le garage. Il est recommandé de calfeutrer ces portes en mettant en œuvre un joint adhésif périphérique de calfeutrement / d'isolation.

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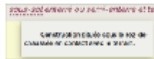
① Les questions

- Les configurations de bâtiments particulières
 - Exemples rapportés : « Maison sur terre-plein avec garage adossé sur dalle fissurée », « appartement », « Un RdC semi-enterré correspond-il à sous-sol semi-enterré ? »
 - Le diagnostic sur plan du 16 juin présentait les 3 types de sous-sol
 - En France, la configuration semi-enterrée n'est pas rare (cf. Suisse)
- Inclure toutes les configurations imaginables dans le guide n'est pas possible
 - Collecter du REX sur les configurations non prises en compte ? le cas échéant, cela peut faire évoluer le guide
 - Travailler par zone homogène ?
 - Permettrait d'affiner le résultat ; il faut alors indiquer de réitérer l'auto-évaluation pour chaque zone
 - Le particulier est-il en capacité de définir les zones homogènes ?



① Les questions

- Des demandes de clarification
 - Ex. 'Faiblesse du joint de dilatation paramétrique' ? 'Existe-t-il une porte palière entre le sous-sol et l'espace de vie' ? 'Appareil de combustion non-étanche' (= poêle ou pellet)
 - Ambiguïté du couple questions-réponses ex. 'Le bâtiment est-il équipé d'une ventilation mécanique répartie ou d'extracteurs individuels?' - 'OUI/Non'
 - Utiliser plus fréquemment la définition dynamique au survol d'un mot
- Notamment sur la ventilation
 - « J'ai bloqué sur la ventilation »
 - Les définitions des experts ≠ de celles des citoyens : test en réunion du 15 juin sur le mot « ventilation » = thème transverse de l'équilibre vulgarisation-précision



② Le compte rendu


- « Très long » (10-15 pages) aussi « très informatif », « clair »


Des propositions pour raccourcir <i>Tailles plus petites : 1, 2, 5 ou 10 pages ou pas impairement</i>	Des propositions pour adapter
<ul style="list-style-type: none"> Le compte-rendu reprend toutes les questions répondues par la négative, il faut plutôt sélectionner Traiter les répétitions d'illustrations dans le compte-rendu Compte-rendu très synthétique à trois et lieux vers des détails, fiche techniques Rendre le compte-rendu « lisible, mieux placer les sauts de page, code couleur ... 	<ul style="list-style-type: none"> Le schéma utilisé pour répondre aux questions sur le sous-sol semble s'appuyer plus On ne retrouve pas toujours les intitulés des questions, ex. pour les zones de traitement L'opération est souvent mise en jeu et mais doit être habitée, indépendante des travaux Clarifier les actions à faire (vert) et aussi à ne pas faire (orange)

- Compte rendu → travaux
 - « Tous les chantiers ? Cela peut faire peur »
 - « L'estimatif de coût est nécessaire pour déclencher les travaux » (mais cela n'est pas à la portée de l'outil)
 - « Il est impératif de rencontrer un spécialiste pour en parler avant d'engager quoi que ce soit »

③ Cas < 300 Bq/m³


- Quelques demandes :
 - Préciser l'insuffisance d'air comburant
 - Ventilation
 - « Trop d'information », « synthétiser »
 - « Signification de la flèche rouge ? »
 - « Est-ce une incitation à mettre une VMC ? »
- Discussion sur le choix d'utiliser une valeur seuil de 300 Bq/m³ comme point d'entrée
 - Choix basé sur une valeur de référence réglementaire (mais France ≠ Suisse)
 - Grader les travaux au regard de la concentration en radon du particulier ? Pour le moment, le point d'entrée de l'outil reste la mesure de radon
 - Idee de situer des valeurs typiques de concentrations en radon sur une échelle (colorée) pour informer du degré d'urgence à mettre en place les travaux






④ Illustrations

- Quelques besoins :
 - « Mettre une photo d'un joint périphérique en mauvais état »
 - « Mettre une photo d'une interface cave → pièces de vie avec passage de tuyaux »
- Et des offres : tous les participants sont prêts à fournir photos/ schémas aux experts
- Les vidéos sont **attrayantes** que le **texte** (parallèle fait avec les NTIC, les réseaux sociaux,) (thème transverse de l'équilibre vulgarisation-précision)
 - Pourrait permettre d'élargir l'audience, notamment auprès de la jeune génération
 - Les liens vers des vidéos mises en ligne par le Cerema ont été transmis



⑤ Généralités


- Une **ergonomie satisfaisante**
- Un **format qui convient**
- Quelques bugs identifiés :
 - Ouvrir les renvois dans un nouvel onglet (et pas sur la même page)
 - « Je n'ai pas eu les mêmes questions en faisant l'évaluation deux fois »
 - « Quel lien logique entre les questions ? Ex. même en indiquant que la maison est sur terre-plein, la question sur la porte d'accès au sous-sol est posée. De même, on peut cliquer sur tous les modes de ventilation en même temps ? »
 - Bug dans la réponse à la question sur le détalonnage des portes : faire afficher les solutions technique quand on clique sur « non » (et pas sur « oui »)
 - Possibilité de décocher une question non-obligatoire ? D'enregistrer ses réponses ?



⑥ Les diagnostics (sur plan, sur place)

- La majorité des questions du guide sont entendues durant le diagnostic
- D'autres sujets sont abordés*
- Des approches différentes
 - Guide : va du sous-bassement vers les étages
 - Humain : pas de démarche type (part des plans?), il y a une forme de subjectivité
 - Un diagnostic humain qui s'adapte aux spécificités rencontrées : demi-étage en sous-sol, 3 types de sous-sol pour une maison, présence d'un four à pizza, saut-de-loup, ...
- Des instruments qui participent : plan, appareil AER de mesure en continu (RadonMapp) ou mesure de taux de renouvellement de l'air sont aussi possible§
- Capacité à croiser les informations pour un diagnostic individualisé
 - Ex. influence de la construction d'un garage sur le transfert de radon, définition du meilleur emplacement pour poser des entrées d'air
 - Priorisation des travaux (par ordre d'efficacité et de simplicité)

* D'autres éléments : les membranes d'étanchéité, les travaux de rénovation passés ou à venir, l'existence d'un chauffage, la date de construction de la maison, la localisation d'un tableau électrique, le nombre d'étages, présence des murs porteurs, isolation du toit, des murs, les indices d'humidité, le lieu de pose de l'instrumente ...



Une synthèse

- ① Des suggestions d'ordre informelle
 - Quelques bugs
 - Changements plus macroscopiques évoqués : configurations bâtementaires particulières, valeur seuil à 300 Bq.m³
- ② Des éléments ressentis comme **(trop) longs et détaillés**
 - Introduction texte à répartir, film, image interactive, ...
 - Compte-rendu mise en forme à contrôler, document 'à tirer', ...
 - Cas de la ventilation
- ③ Des éléments à clarifier
 - Pour chaque partie, les demandes de clarification ont été collectées
 - Des illustrations peuvent être fournies par les participants ; utilisation de vidéos
 - Un équilibre vulgarisation-précision à affiner

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Une synthèse

- ❑ ④ Le guide ne se substitue pas au diagnostiqueur humain
 - Toute les configuration bâtementaire ne pourront pas être intégrées
 - Le compte-rendu n'est pas suffisant pour déclencher les travaux : il soutient la démarche
 - La pratique du diagnostic humain est ≠ du guide
- ❑ ⑤ Un objectif à préciser
 - « Le guide poursuit plusieurs objectifs en même temps : sensibiliser, s'autoévaluer, expliquer les travaux, ... c'est ce qui en fait sa complexité. Renoncer pour clarifier »
 - « Cet outil est et doit demeurer un outil d'accompagnement. Il ne remplacera jamais le travail du professionnel du radon mais il a pour vocation de permettre à tout un chacun de gagner en compétence et de s'ouvrir sur le sujet [...]. Il ne va pas et ne DOIT pas faire le boulot du professionnel du radon »
 - Le titre 'outil d'auto-évaluation' est-il toujours approprié ?

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Des points de vue exprimés le 22 juillet

- ❑ Le guide avait à la conception l'objectif d'être aussi exhaustif que possible en couvrant les réglementations FR et CH. Néanmoins des choix ont été faits: par exemple les zones homogènes ou la VMC sont des sujets « franco-français »
- ❑ Le guide ne peut pas déterminer des travaux. Chaque bâtiment est un cas particulier. Le chiffrage des travaux par le guide n'est pas possible à ce stade
- ❑ « C'est un outil de vulgarisation, de sensibilisation qui s'adresse à tous ». Le titre reste donc approprié (voire pourrait être adapté : « guide d'auto-apprentissage vis-à-vis du radon »)
- ❑ Le compte rendu est long et potentiellement « rébarbatif » mais il est très complet
- ❑ Equilibre clarté-précision difficile à trouver : c'est un enjeu de fond dans le dialogue experts / non-experts
- ❑ Comment augmenter le caractère ludique ?
 - Vidéo, mini-vidéos (mais la vidéo présente des enjeux qui sont propres, un budget ...)
 - Escape game, ... l'objectif ultime pourrait être d'aboutir à un outil totalement interactif¹

¹ Un exemple : <https://radonka.us.ch>

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Questions ? Réactions ?



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Le déroulement du projet

- ❑ Déroulement du projet « selon les plans »
 - Difficulté à trouver des participants de Vesoul et passage au « Plan B »
 - Des charges ponctuelles (renvoi tardif des questionnaires, diagnostic sur place)
 - Des horaires spécifiques pour les rencontres
 - Pas d'érosion de la motivation/participation (avec un suivi attentif)
 - Quantité et qualité des informations échangées jugée très bonne (N.B. les participants étaient déjà sensibilisés, mais cela était prévu à la conception)
- ❑ Projet de science participative
 - Un esprit : mettre citoyens et experts sur un pied d'égalité dans le projet
 - Un enjeu : répondre aux préoccupations des citoyens sur la gestion du radon et pouvoir faire effectuer un diagnostic par un humain si nécessaire
 - Proposer des bénéfices mutuels citoyens et experts
 - Jouer sur le mix formel et informel
 - Notion de gestion des données

..

Le déroulement du projet
Générer de la participation

- **Participation** : les raisons invoquées par les participants
 - * Recherche d'information sur les travaux (personne qui s'est informée par elle-même)
 - * Intriguée : « je connaissais un peu avant » ou souhaitant en savoir plus
 - * Sujet « intéressant et important »
 - * Projet européen : « attirant », « pas toujours l'occasion d'être impliqué dans ce genre de projet »
- **Pour un autre projet : comment augmenter la participation ?** (nonobstant le sujet)
 - * Augmenter les bénéfices à participer ?
 - * Une extension géographique du projet rend ensuite difficile la tenue d'une réunion plénière (ex: multiplier les réunions virtuelles)
 - * Etendre la campagne à des personnes n'ayant pas fait de mesure du radon : bulletin municipaux, réseaux sociaux, mobiliser des associations d'collectifs existants ... mais ces personnes seront-elles concernées par les enjeux ?
 - * Aligner le calendrier du projet avec celui d'action locale (ex. campagne de mesure) ?

Des suites

N.D.	← Réalisation d'1-2 rendez-vous terrain (Cesena)
Juillet	• Organiser une réunion de situation
Dé	• Synthèse des résultats et des enseignements • Jeu d'équipe de la démarche du projet figure dans le Livrable RadoNorm 0.9.1)
Août-septembre	• Réunion RadoNorm W P6.3.1: Présentation aux partenaires
5-6 octobre	• Rencontre annuelle RadoNorm
Fin 2022	• Livrable pour RadoNorm • Publication article dans journal scientifique ? • Valorisation locale : journal local ? journal des collectivités ? • Mise à jour de Jura d'Act ?
Fin 2022 - 17 février 2023	• Appels à projets de science citoyenne (2022-2024) par RadoNorm

Des points de vue exprimés le 22 juillet

- Le montage des appels par le projet RadonNorm est en cours et les contours ne sont pas totalement connus/ arrêtés
- Trouver des citoyens motivés est un enjeu (vu dans le projet pilote)
- Il y a une opportunité pour le réseau RSE QAI-radon de répondre à l'appel à projet. Parmi les sujets évoqués:
 - * Un développement informatique du guide intégrant les commentaires formulés par le projet pilote ? (mais le projet doit rester axé 'science citoyenne')
 - * Le sujet du projet devrait rester dans le diagnostic/ la remédiation (la sensibilisation au radon étant un enjeu moins problématique)
 - * Porter le guide dans d'autres régions, notamment là où l'accompagnement pour la gestion du radon est faible (ex. Orne, via CPIE et ARS) et/ ou la Suisse afin de le généraliser au-delà de la région Bourgogne Franche Comté
 - * Intégrer une approche psychosociologique (langage, biais, ...)
 - * Ou bien encore quelque chose de totalement différent !



Question et réaction (avant de déjeuner ?)

This is the last page of the extended data
